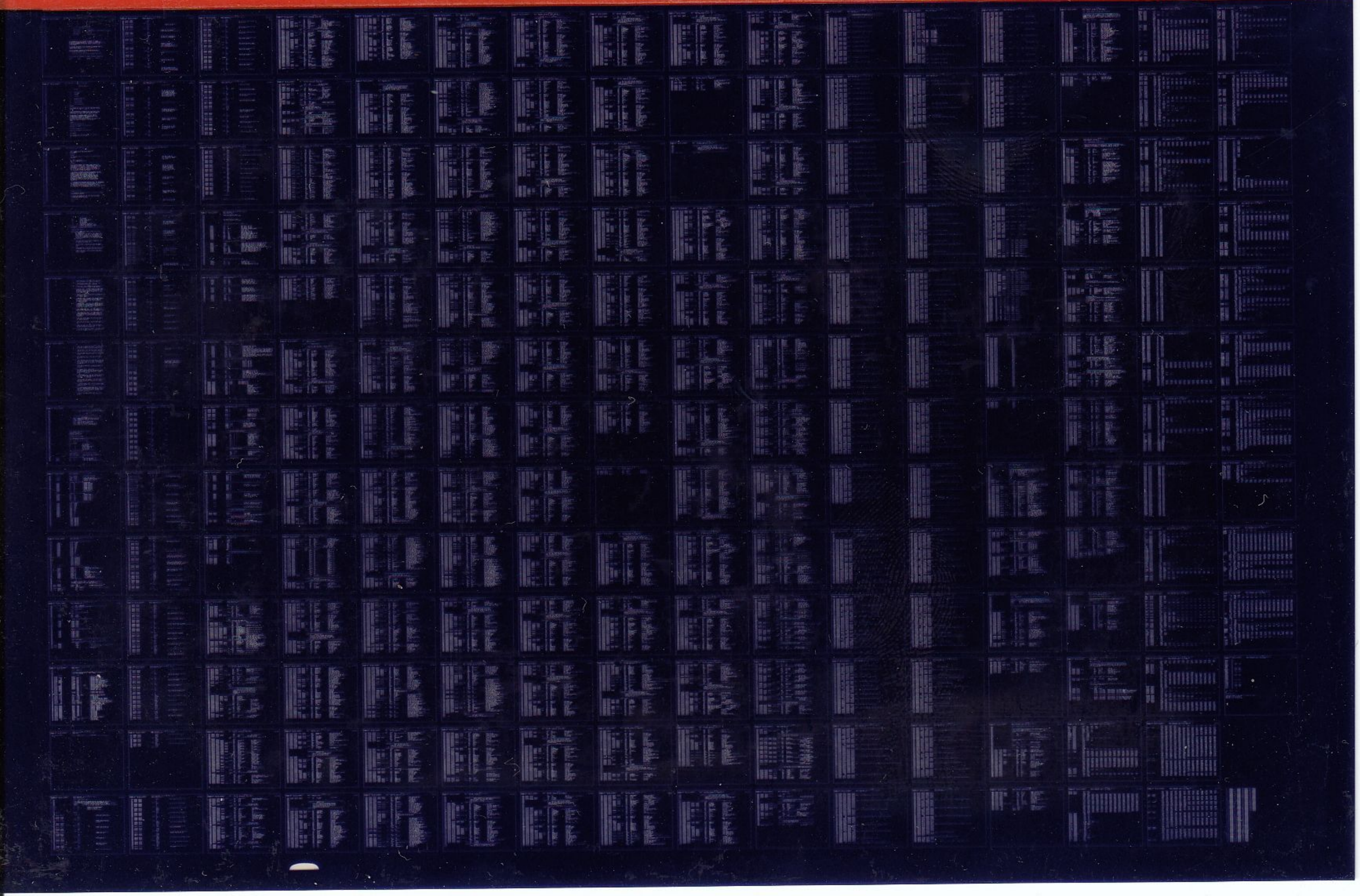
RH11-RH70

MASSBUS I/O & CTRLR
CZRHBF0

AH-9178F-MC

FICHE 1 OF 1

JAN 1980
digital
MADE IN USA



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.REM _
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IDENTIFICATION

PRODUCT CODE: AC-9176F-MC

PRODUCT NAME: CZRHBF0 MASSBUS I/O AND CONTROLLER DIAGNOSTIC

DATE CREATED: 3-AUG-79

MAINTAINER: DIAGNOSTIC GROUP

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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.

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

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.

IF A HARDWARE SWITCH REGISTER DOES NOT EXIST, THE PROGRAM WILL USE THE CONTENTS OF LOCATION 176 AS THE VALUE OF THE SWITCHES. THE PROGRAM WILL PRINT OUT THE PRESENT CONTENTS OF THE SOFTWARE SWITCH REGISTER WHEN THE PROGRAM IS STARTED. IT WILL THEN ASK FOR THE NEW CONTENTS TO BE INPUT TO THE SOFTWARE SWITCH REGISTER. TYPE CARRIAGE RETURN TO FINISH INPUT.

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

```
                                                                E 1
                        ------.             ---

                          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, REERROR 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.
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```
                        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.

                        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 MDPE 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.

                                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 .
```

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                                                H 1
                        TEST 77 - THIS IS NOT A TEST BUT IS THE ROUTINE THAT
                                ALLOWS THE DIAGNOSTIC TO TEST 4 RH'S IF PRESENT.




                        **********************************************
                                        ECO HISTORY
                        CHGE1 - ADDED CODE TO MAKE BOTH WRITE LOC'S IDENTICAL
                        CHGE2 - CHANGED BIT8 FROM LOC TO DATA REFERENCE
                        CHGE3 - CHANGED BIT0 FROM LOC TO DATA REFERENCE
                        ***************
                        CHGF1 - ADDED SOFTSWR TO .SETUP MACRO
                        CHGF2 - ADDED GETSWR FOLLOWING SETUP
                        CHGF3 - ADDED JSR PC,$TKINT FOLLOWING GETSWR
                        CHGF4 - ADDED ,X,8.,200 TO .$READ ARGUMENTS
                        **********************************************




                        -

                .TITLE  MASSBUS RH70 AND RH11 DIAGNOSTIC
                ;*COPYRIGHT (C) 1979
                ;*DIGITAL EQUIPMENT CORP.
                ;*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
```

```
000000                  PS=     177776          ;;PROCESSOR STATUS WORD
                        .EQUIV  PS,PSW
000000                  STKLMT= 177774          ;;STACK LIMIT REGISTER
000000                  PIRQ=   177772          ;;PROGRAM INTERRUPT REQUEST REGISTER
000000                  DSWR=   177570          ;;HARDWARE SWITCH REGISTER
000000                  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
000300                  PR6=    300             ;;PRIORITY LEVEL 6
000340                  PR7=    340             ;;PRIORITY LEVEL 7

                        ;*''SWITCH REGISTER'' SWITCH DEFINITIONS
100000                  SW15=   100000
040000                  SW14=   40000
020000                  SW13=   20000
010000                  SW12=   10000
004000                  SW11=   4000
002000                  SW10=   2000
001000                  SW09=   1000
000400                  SW08=   400
000200                  SW07=   200
000100                  SW06=   100
000040                  SW05=   40
000020                  SW04=   20
000010                  SW03=   10
000004                  SW02=   4
000002                  SW01=   2
000001                  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)
            100000              BIT15=  100000
            040000              BIT14=  40000
            020000              BIT13=  20000
            010000              BIT12=  10000
            004000              BIT11=  4000
            002000              BIT10=  2000
            001000              BIT09=  1000
            000400              BIT08=  400
            000200              BIT07=  200
            000100              BIT06=  100
            000040              BIT05=  40
            000020              BIT04=  20
            000010              BIT03=  10
            000004              BIT02=  4
            000002              BIT01=  2
            000001              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
            000014              BPTVEC= 14              ;;BREAKPOINT TRAP (BPT)
            000020              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
```

```
   497  000210  000137  004152                JMP     @#BEGIN3
   498                                  ;;*****************************************************************
   499                                  .SBTTL  MEMORY MANAGEMENT DEFINITIONS
   500
   501                                  ;*KT11 VECTOR ADDRESS
   502
   503           000250                 MMVEC=  250
   504
   505                                  ;*KT11 STATUS REGISTER ADDRESSES
   506
   507           177572                 SR0=    177572
   508           177574                 SR1=    177574
   509           177576                 SR2=    177576
   510           172516                 SR3=    172516
   511
   512                                  ;*KERNEL "I" PAGE DESCRIPTOR REGISTERS
   513
   514           172300                 KIPDR0= 172300
   515           172302                 KIPDR1= 172302
   516           172304                 KIPDR2= 172304
   517           172306                 KIPDR3= 172306
   518           172310                 KIPDR4= 172310
   519           172312                 KIPDR5= 172312
   520           172314                 KIPDR6= 172314
   521           172316                 KIPDR7= 172316
   522
   523                                  ;*KERNEL "I" PAGE ADDRESS REGISTERS
   524
   525           172340                 KIPAR0= 172340
   526           172342                 KIPAR1= 172342
   527           172344                 KIPAR2= 172344
   528           172346                 KIPAR3= 172346
   529           172350                 KIPAR4= 172350
   530           172352                 KIPAR5= 172352
   531           172354                 KIPAR6= 172354
   532           172356                 KIPAR7= 172356
   533
   534                                  ;;*****************************************************************
   535                                  .SBTTL  ACT11 HOOKS
   536
   537                                  ;;*****************************************************************
   538                                  ;HOOKS REQUIRED BY ACT11
   539           000214                         $SVPC=.                 ;SAVE PC
   540           000046                         .=46
   541  000046   046376                        $ENDAD                  ;;1)SET LOC.46 TO ADDRESS OF $ENDAD IN .$EOP
   542           000052                         .=52
   543  000052   000000                        .WORD   0               ;;2)SET LOC.52 TO ZERO
   544           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
```

```
  601  001224  000012                $LF:    .ASCIZ  <12>            ;;LINE FEED
  602                                ;;**********************************************************************
```

```
                                .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  055074                          EM1                             ;CORRECT BIT DID NOT SET
                                                                        ;IN RH WORD COUNT REGISTER
001230  067636                          DH1
001232  072004                          DT1
001234  072350                          DF1
                                ;ITEM 2
001236  055134                          EM2                             ;CORRECT BIT DID NOT SET
                                                                        ;IN BUS ADDRESS EXTENTION
                                                                        ;REGISTER
001240  067756                          DH2
001242  072016                          DT2
001244  072354                          DF2
                                ;ITEM 3
001246  055174                          EM3                             ;CORRECT BIT DID NOT SET
                                                                        ;IN BUS ADDRESS REGISTER
001250  070077                          DH3
001252  072030                          DT3
001254  072360                          DF3
                                ;ITEM 4
001256  055250                          EM4                             ;CORRECT BIT DID NOT SET
                                                                        ;IN RHDB REGISTER
001260  070217                          DH4
001262  072042                          DT4
001264  072364                          DF4
                                ;ITEM   5
001266  055310                          EM5                             ;NED DID NOT SET IN
                                                                        ;RHCS2 REGISTER
001270  070337                          DH5
001272  072054                          DT5
001274  072370                          DF5
                                ;ITEM 6
001276  055361                          EM6                             ;NEM LOGIC TO SET TRE
                                                                        ;AND SC BITS IN RHCS1
                                                                        ;IS NOT WORKING
001300  070337                          DH5
001302  072054                          DT5
001304  072370                          DF5
                                ;ITEM 7
001306  055575                          EM7                             ;NEM BIT DOES NOT READ AS SET
```

```
659  001310  070337                    DH5
660  001312  072054                    DT5
661  001314  072370                    DF5
662                          ;ITEM 10
663  001316  055643                    EM10                ;TRE BIT SET BUT NEM
664                                                         ;AND SC ARE NOT?
665  001320  070337                    DH5
666  001322  072054                    DT5
667  001324  072370                    DF5
668                          ;ITEM   11
669  001326  055677                    EM11          ;SC BIT SET BY ATTN OR MCPE
670                                                  ;ERROR OR SC IS SHORTED
671                                                  ;SHOULD HAVE BEEN SET BY NEM AND TRE
672  001330  070444                    DH11
673  001332  072066                    DT11
674  001334  072374                    DF11
675                          ;ITEM   12
676  001336  055740                    EM12          ;TRE BIT SET BY NEM BUT SC
677                                                  ;DID NOT SET, LOGIC BETWEEN
678                                                  ;TRE AND SC NOT WORKING
679  001340  070337                    DH5
680  001342  072054                    DT5
681  001344  072370                    DF5
682
683                          ;ITEM   13
684  001346  055760                    EM13          ;TRE BIT IS SET BUT SC
685                                                  ;READS AS CLEARED. SC
686                                                  ;LOGIC ASSOCIATED WITH TRE
687                                                  ;BIT IS NOT WORKING OR SC
688                                                  ;HAS AN OPEN GOING TO THE BUS
689  001350  070337                    DH5
690  001352  072054                    DT5
691  001354  072370                    DF5
692
693                          ;ITEM   14
694  001356  056027                    EM14          ;WCE BIT DID NOT SET, BIT 14 IN
695                                                  ;RHCS2
696
697  001360  070337                    DH5
698  001362  072054                    DT5
699  001364  072370                    DF5
700
701                          ;ITEM   15
702  001366  056053                    EM15          ;WCE BIT DID NOT SET BUT
703                                                  ;TRE AND SC IN RHCS1 ARE
704                                                  ;SET.
705
706  001370  070337                    DH5
707  001372  072054                    DT5
708  001374  072370                    DF5
709
710                          ;ITEM   16
711  001376  056077                    EM16          ;WCE AND SC ERROR BITS ARE
712                                                  ;SET TRE ERROR BIT SHOULD ALSO
713                                                  ;BE SET BUT IT READS AS CLEARED
714                                                  ;THERE MIGHT BE AN OPEN BETWEEN
```

```
                                                                ;TRE AND THE BUS
001400  070337                        DH5
001402  072054                        DT5
001404  072370                        DF5
                              ;ITEM   17
001406  056117                .       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  070337                        DH5
001412  072054                        DT5
001414  072370                        DF5
                              ;ITEM   20
001416  056166                        EM20                    ;UPE DID NOT SET IN RHCS2
001420  070337                        DH5
001422  072054                        DT5
001424  072370                        DF5
                              ;ITEM   21
001426  056217                        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  070337                        DH5
001432  072054                        DT5
001434  072370                        DF5
                              ;ITEM   22
001436  056246                        EM22                    ;TRE BIT IS SET, UPE AND SC
                                                                ;SHOULD ALSO BE SET BUT THEY
                                                                ;READ AS CLEARED
001440  070337                        DH5
001442  072054                        DT5
001444  072370                        DF5
                              ;ITEM   23
001446  056301                        EM23                    ;UPE AND TRE ARE SET BUT
                                                                ;SC DID NOT SET, LOGIC TO
                                                                ;SET SC DOES NOT SEEM TO
                                                                ;BE WORKING
001450  070337                        DH5
001452  072054                        DT5
001454  072370                        DF5
                              ;ITEM   24
001456  056320                        EM24                    ;NED DID NOT SET IN RHCS2
```

```
                                                                    D 2
 771
 772  001460  070337                    DH5
 773  001462  072054                    DT5
 774  001464  072370                    DF5
 775
 776                            ;ITEM   25
 777  001466  056351                    EM25        ;TRE AND SC ARE SET
 778                                                ;BUT THEY SHOULD HAVE BEEN
 779                                                ;SET BY NED WHICH READS
 780                                                ;AS CLEARED
 781
 782  001470  070337                    DH5
 783  001472  072054                    DT5
 784  001474  072370                    DF5
 785
 786                            ;ITEM   26
 787  001476  056403                    EM26        ;TRE BIT SET BUT NED
 788                                                ;AND SC BITS READ AS
 789                                                ;CLEARED. NED SHOULD
 790                                                ;HAVE SET CAUSING TRE
 791                                                ;TO SET WHICH IN TURN
 792                                                ;SET SC.  LOGIC NOT WORK
 793                                                ;ING CORRECTLY
 794
 795  001500  070337                    DH5
 796  001502  072054                    DT5
 797  001504  072370                    DF5
 798
 799                            ;ITEM   27
 800  001506  056431                    EM27        ;TRE BIT WAS NOT SET
 801                                                ;BY NED. TRE SET LOGIC
 802  001510  070337                    DH5         ;NOT WORKING
 803  001512  072054                    DT5
 804  001514  072370                    DF5
 805
 806                            ;ITEM   30
 807  001516  056464                    EM30        ;MXF BIT DID NOT SET
 808                                                ;IN RHCS2
 809
 810  001520  070337                    DH5
 811  001522  072054                    DT5
 812  001524  072370                    DF5
 813
 814                            ;ITEM   31
 815  001526  056521                    EM31        ;MXF BIT SHOULD BE SET
 816                                                ;IN RHCS2 BUT IT READS AS
 817                                                ;CLEARED. TRE AND SC ARE SET
 818                                                ;IN RHCS1.
 819
 820  001530  070337                    DH5
 821  001532  072054                    DT5
 822  001534  072370                    DF5
 823
 824                            ;ITEM   32
 825  001536  056560                    EM32        ;TRE BIT IS SET BUT MXF
 826                                                ;AND SC READ AS CLEARED
```

```
                                                        ;MXF AND SC BITS ARE INCORRECT
001540  070337                      DH5
001542  072054                      DT5
001544  072370                      DF5

                        ;ITEM   33
001546  056607                      EM33                ;TRE LOGIC ASSOCIATED WITH
                                                        ;MXF IS NOT WORKING
                                                        ;TRE READS AS CLEARED
                                                        ;OR TRE HAS AN OPEN GOING
                                                        ;TO THE BUS

001550  070337                      DH5
001552  072054                      DT5
001554  072370                      DF5

                        ;ITEM   34
001556  056657                      EM34                ;TESTER IS NOT CONNECT
                                                        ;TO THE MASSBUS DEVICE
                                                        ;CODE SHOULD BE A 40
001560  070532                      DH34                ;PC TEST NO. DEVICE CODE

001562  072076                      DT34                ;$ERRPC,$TSTNM,DT,0

001564  072377                      DF34                ;0,0,0

                        ;ITEM   35
001566  056727                      EM35                ;BIT IN RHCS3 WILL NOT ET

001570  071665                      DH171
001572  072326                      DT171
001574  072374                      DF11

                        ;ITEM   36
001576  056761                      EM36

001600  070612                      DH36                ;PC TEST NO. FAILING ADDRESS

001602  072112                      DT36                ;$ERRPC,$TSTNM,RHCS1,0

001604  072403                      DF36                ;0,0,0

                        ;ITEM   37
001606  057017                      EM37                ;DLT DID NOT SET IN RHCS2

001610  070607                      DH35

001612  072106                      DT35

001614  072402                      DF35

                        ;ITEM   40
001616  057050                      EM40                ;DLT IS NOT SET IN RHCS2 BUT
                                                        ;TRE AND SC READ AS SET.TRE
                                                        ;AND SC MUST HAVE BEEN SET BY A DIFFERENT ERFOR
```

```
                                        DH35
001620  070607                          DT35
001622  072106                          DF35
001624  072402
                                ;ITEM   41
001626  057210                          EM41            ;OUTPUT READY IN RHCS2
                                                        ;DID NOT SET

001630  070673                          DH41            ;PC TEST NO.

001632  072122                          DT41            ;$ERRPC,$TSTNM,0

001634  072406                          DF41            ;

                                ;ITEM   42

001636  057313                          EM42            ;ALL BITS DID NOT LOAD INTO RHWC
                                                        ; (177777)

001640  000000                          0
001642  000000                          0
001644  000000                          0

                                ;ITEM   43
001646  057364                          EM43            ;RHWC DID NOT LOAD ANY BITS (177777)
001650  000000                          0
001652  000000                          0
001654  000000                          0

                                ;ITEM   44              ;RHWC
001656  057430                          EM44            ;SOME BITS CLEARED AFTER CLEAR
                                                        ;WAS LOADED INTO RHCS2

001660  000000                          0
001662  000000                          0
001664  000000                          0

                                ;ITEM   45
001666  057522                          EM45            ;NON-EXISTANT MEMORY BIT
                                                        ;SET IN RHCS2
001670  000000                          0
001672  000000                          0
001674  000000                          0

                                ;ITEM   46
001676  057575                          EM46            ;RHBA DID NOT CLEAR AFTER CLR
                                                        ;WAS LOADED INTO RHCS2
001700  000000                          0
001702  000000                          0
001704  000000                          0

                                ;ITEM   47
001706  057656                          EM47            ;ALL BITS DID NOT LOAD INTO
                                                        ;RHBA REGISTER (177776)
001710  000000                          0
```

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                                                                G 2
939  001712  000000                    0
940  001714  000000                    0
941
942                                 ;ITEM   50
943  001716  057727                    EM50                ;LOADING TRE AFER ITS SET DOES NOT
944                                                        ;CLEAR ERRORS
945  001720  000000                    0
946  001722  000000                    0
947  001724  000000                    0
948
949                                 ;ITEM   51
950  001726  060006                    EM51                ;PGE DID NOT SET IN RHCS2
951  001730  000000                    0
952  001732  000000                    0
953  001734  000000                    0
954
955                                 ;ITEM   52
956  001736  060037                    EM52                ;THE PROM WHILE ACCESSING A
957                                                        ;REGISTER WHICH YOUR TESTER
958                                                        ;CANNOT SUPPLY INFORMATION FOR
959                                                        ;SAYS INFORMATION IS PRESENT
960
961  001740  070717                    DH52                ;PC TEST NO. ADDRESS CONT
962
963  001742  072130                    DT52                ;$ERRPC,$TSTNM,BAE,$REGO
964
965  001744  072410                    DF52                ;
966
967                                 ;ITEM   53
968  001746  060212                    EM53                ;RHCS1
969  001750  000000                    0
970  001752  000000                    0
971  001754  000000                    0
972
973                                 ;ITEM   54
974  001756  060220                    EM54                ;RHWC
975  001760  000000                    0
976  001762  000000                    0
977  001764  000000                    0
978
979                                 ;ITEM   55
980  001766  060225                    EM55                ;RHBA
981  001770  000000                    0
982  001772  000000                    0
983  001774  000000                    0
984
985                                 ;ITEM   56
986  001776  060232                    EM56                ;RHMR2
987  002000  000000                    0
988  002002  000000                    0
989  002004  000000                    0
990
991                                 ;ITEM   57
992  002006  060240                    EM57                ;RHCS2
993  002010  000000                    0
994  002012  000000                    0
```

```
 995  002014  000000                    0
 996
 997                                ;ITEM   60
 998  002016  060246                    EM60                ;RHST
 999  002020  000000                    0
1000  002022  000000                    0
1001  002024  000000                    0
1002
1003                                ;ITEM   61
1004  002026  060253                    EM61                ;RHER
1005  002030  000000                    0
1006  002032  000000                    0
1007  002034  000000                    0
1008
1009                                ;ITEM   62
1010  002036  060260                    EM62                ;RHAS
1011  002040  000000                    0
1012  002042  000000                    0
1013  002044  000000                    0
1014
1015                                ;ITEM   63
1016  002046  060265                    EM63                ;RHTDB
1017  002050  000000                    0
1018  002052  000000                    0
1019  002054  000000                    0
1020
1021                                ;ITEM   64
1022  002056  060273                    EM64                ;RHDB
1023  002060  000000                    0
1024  002062  000000                    0
1025  002064  000000                    0
1026
1027                                ;ITEM   65
1028  002066  060300                    EM65                ;RHMR1
1029  002070  000000                    0
1030  002072  000000                    0
1031  002074  000000                    0
1032
1033                                ;ITEM   66
1034  002076  060306                    EM66                ;RHDT
1035  002100  000000                    0
1036  002102  000000                    0
1037  002104  000000                    0
1038
1039                                ;ITEM   67
1040  002106  060313                    EM67                ;RHBAE
1041  002110  000000                    0
1042  002112  000000                    0
1043  002114  000000                    0
1044
1045                                ;ITEM   70
1046  002116  060321                    EM70                ;RHCS3
1047  002120  000000                    0
1048  002122  000000                    0
1049  002124  000000                    0
1050
```

```
1051                                    ;ITEM   71
1052  002126  060327                            EM71                    ;DEVICE NO DOES NOT EQUAL
1053                                                                    ;A 7 IN RHMR2 AFTER A CLEAR
1054
1055  002130  071713                            DH172
1056
1057  002132  072336                            DT172
1058
1059  002134  072442                            DF172
1060
1061                                    ;ITEM   72
1062  002136  060416                            EM72                    ;RHCS1 HAS AN ERROR BIT
1063                                                                    ;SET AFTER CLEAR OPERATION
1064
1065  002140  071075                            DH72                    ;PC TEST NO. CONTENTS OF REGISTER
1066
1067  002142  072144                            DT71
1068
1069  002144  072415                            DF71
1070
1071                                    ;ITEM   73
1072  002146  060453                            EM73                    ;ERROR BIT SET IN RHCS2
1073                                                                    ;AFTER A CLEAR OPERATION
1074
1075  002150  071075                            DH72
1076
1077  002152  072144                            DT71
1078  002154  072415                            DF71
1079
1080                                    ;ITEM   74
1081  002156  060502                            EM74                    ;ERROR BIT SET IN RHER,
1082                                                                    ;TESTER ERROR REGISTER,AFTER
1083                                                                    ;A CLEAR OPERATION
1084  002160  071075                            DH72
1085  002162  072144                            DT71
1086  002164  072415                            DF71
1087
1088                                    ;ITEM   75
1089  002166  060530                            EM75                    ;ERROR BIT SET IN RHST
1090                                                                    ;AFTER A CLEAR OPERATION
1091
1092  002170  071075                            DH72
1093  002172  072144                            DT71
1094  002174  072415                            DF71
1095                                    ;ITEM   76
1096  002176  060560                            EM76                    ;RHBA INCREMENTED BUT DID NOT CARRY
1097                                                                    ;OVER TO THE RHBAE REGISTER
1098  002200  071164                            DH76
1099  002202  072154                            DT76
1100  002204  072420                            DF76
1101                                    ;ITEM   77
1102  002206  060665                            EM77                    ;READY DID NOT SET AND RHWC
1103                                                                    ;DID NOT INCREMENTM DOING A WRITE OPERATION
1104  002210  067636                            DH1
1105  002212  072004                            DT1
1106  002214  072350                            DF1
```

```
1107                                    ;ITEM   100
1108  002216  060777                            EM100                   ;RHBA DID NOT CLEAR AFTER CLR
1109                                                                    ;WAS LOADED INTO RHCS2
1110  002220  067756                            DH2
1111  002222  072016                            DT2
1112  002224  072354                            DF2
1113                                    ;ITEM   101
1114  002226  061064                            EM101
1115  002230  067756                            DH2
1116  002232  072016                            DT2
1117  002234  072354                            DF2
1118                                    ;ITEM   102
1119  002236  061131                            EM102                   ;READY DID NOT SET IN RHCS1
1120  002240  000000                            0
1121  002242  000000                            0
1122  002244  000000                            0
1123                                    ;ITEM   103
1124  002246  061162                            EM103                   ;DOING A WRITE OPERATION RDY
1125                                                                    ;DID NOT SET AND WC DID NOT INCREMENT
1126                                                                    ;BUT INFO WAS WRITTEN TO TESTER
1127  002250  067636                            DH1
1128  002252  072004                            DT1
1129  002254  072350                            DF1
1130                                    ;ITEM   104
1131  002256  061340                            EM104                   ;DOING A WRITE OPERATION RDY
1132                                                                    ;DID NOT SET AND WC WAS NOT INCREMENTED
1133                                                                    ;AND INFO WAS NOT WRITTEN TO TESTER
1134                                                                    ;(WRITE OPERATION DID NOT WORK)
1135  002260  000000                            0
1136  002262  000000                            0
1137  002264  000000                            0
1138                                    ;ITEM   105
1139  002266  061531                            EM105                   ;RHBAE IS MESSED UP IT SHOULD
1140                                                                    ;EQUAL 40,IT DOES NOT = 37(OLD)
1141                                                                    ;AND IT DOES NOT = 0
1142  002270  071222                            DH105
1143  002272  072166                            DT105
1144  002274  072424                            DF105
1145                                    ;ITEM   106
1146  002276  061576                            EM106                   ;RHBAE DID NOT GET INCREMENTED
1147  002300  071222                            DH105
1148  002302  072166                            DT105
1149  002304  072424                            DF105
1150                                    ;ITEM   107
1151  002306  061624                            EM107                   ;READ REV. OPERATIONS DID NOT
1152  002310  000000                            0                       ;READ FROM TESTER TO STORAGE LOCATION
1153  002312  000000                            0                       ;(RBUS)
1154  002314  000000                            0
1155                                    ;ITEM   110
1156  002316  061733                            EM110                   ;RHBAE = 0 IT SHOULD = 40
1157                                                                    ;AFTER A ONE WORD WRITE
1158  002320  000000                            0
1159  002322  000000                            0
1160  002324  000000                            0
1161                                    ;ITEM   111
1162  002326  062025                            EM111                   ;A17 DID NOT SET AFTER BA WAS INCREMENTED
```

```
1163  002330  071267                    DH111
1164  002332  072202                    DT111
1165  002334  072424                    DF105
1166                          ;ITEM     112
1167  002336  062100                    EM112                ;BA DID NOT INCREMENT
1168  002340  071267                    DH111
1169  002342  072202                    DT111
1170  002344  072424                    DF105
1171                          ;ITEM     113
1172  002346  062125                    EM113                ;RHBA INCREMENTED BUT IT DID
1173                                                         ;NOT CARRY TO A16 + A17 IN RHCS1
1174  002350  071267                    DH111
1175  002352  072202                    DT111
1176  002354  072424                    DF105
1177                          ;ITEM     114
1178  002356  062222                    EM114                ;OUTPUT READY WAS NOT NEGATED
1179                                                         ;AFTER CLR WAS LOADED INTO RHCS2
1180  002360  000000                    0
1181  002362  000000                    0
1182  002364  000000                    0
1183                          ;ITEM     115
1184  002366  062320                    EM115                ;ALL BITS DID NOT READ TO STORAGE
1185  002370  000000                    0                    ;LOCATION (RBUF) DURING A READ REV. OPERATION
1186  002372  000000                    0
1187  002374  000000                    0
1188                          ;ITEM     116
1189  002376  062432                    EM116                ;MDPE DID NOT SET IN RHCS2
1190  002400  000000                    0
1191  002402  000000                    0
1192  002404  000000                    0
1193                          ;ITEM     117
1194  002406  062464                    EM117                ;INFO DID NOT WITE TO TESTER
1195                                                         ;DOING A WRITE REV. OPERATION
1196  002410  071601                    DH147
1197  002412  072304                    DT147
1198  002414  072420                    DF76
1199                          ;ITEM     120
1200  002416  062562                    EM120                ;TRE AND SC DO NOT SEEM TO HAVE
1201                                                         ;BEEN SET BY MDPE
1202  002420  070444                    DH11
1203  002422  072066                    DT11
1204  002424  072374                    DF11
1205                          ;ITEM     121
1206  002426  062623                    EM121                ;TRE IS ONLY BIT SET ,MDPE AND
1207                                                         ;SC SHOULD ALSO BE SET
1208  002430  071334                    DH121
1209  002432  072216                    DT121
1210  002434  072420                    DF76
1211                          ;ITEM     122
1212  002436  062706                    EM122                ;SC NOT SET AFTER MDPE AND TRE SET
1213  002440  071334                    DH121
1214  002442  072216                    DT121
1215  002444  072420                    DF76
1216                          ;ITEM     123
1217  002446  062740                    EM123                ;TRE AND SC WERE SET EITHER BY
1218                                                         ;AN ERROR OTHER THAN PGE,OR PGE
```

```
1219
1220  002450  000000                          0                       ;HAS AN OPEN GOING TO THE BUS
1221  002452  000000                          0
1222  002454  000000                          0
1223                                ;ITEM     124
1224  002456  063013                          EM124                   ;DBL NOT SET AFTER A 4 WORD WRITE
1225                                                                  ;FROM AN EVEN ADDRESS
1226  002460  000000                          0
1227  002462  000000                          0
1228  002464  000000                          0
1229                                ;ITEM     125
1230  002466  063106                          EM125                   ;DBL SET AFTER DOING A 1 WORD WRITE
1231                                                                  ;FROM AN EVEN ADDRESS
1232  002470  000000                          0
1233  002472  000000                          0
1234  002474  000000                          0
1235                                ;ITEM     126
1236  002476  063202                          EM126                   ;DBL SET ON A 3 WORD WRITE
1237                                                                  ;FROM AN EVEN ADDRESS
1238  002500  000000                          0
1239  002502  000000                          0
1240  002504  000000                          0
1241                                ;ITEM     127
1242  002506  063273                          EM127                   ;DBL DID NOT SET AFTER A 2 WORD
1243                                                                  ;WRITE FROM AN EVEN ADDRESS
1244  002510  000000                          0
1245  002512  000000                          0
1246  002514  000000                          0
1247                                ;ITEM     130
1248  002516  063371                          EM130                   ;MCPE SET BUT SC READS AS CLEARED
1249  002520  071372                          DH130
1250  002522  072230                          DT130
1251  002524  072403                          DF36
1252                                ;ITEM     131
1253  002526  063443                          EM131                   ;MCPE DID NOT SET
1254  002530  071372                          DH130
1255  002532  072230                          DT130
1256  002534  070612                          DH36
1257                                ;ITEM     132
1258  002536  063475                          EM132                   ;WCE LO (EW) DID NOT SET IN RHCS3
1259  002540  071420                          DH132
1260  002542  072240                          DT132
1261  002544  072431                          DF132
1262                                ;ITEM     133
1263  002546  063531                          EM133                   ;WCE HI (OW) SET ALONG WITH
1264                                                                  ;WCE LO IN RHCS3
1265  002550  071420                          DH132
1266  002552  072240                          DT132
1267  002554  072431                          DF132
1268                                ;ITEM     134
1269  002556  063632                          EM134                   ;WCE LO IS SET IN RHCS3 BUT
1270                                                                  ;WCE IS NOT SET IN RHCS2
1271  002560  071420                          DH132
1272  002562  072240                          DT132
1273  002564  072431                          DF132
1274                                ;ITEM     135
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```
 1275  002566  063713                    EM135                   ;WCE HI DID NOT SET IN RHCS3
 1276  002570  071420                    DH132
 1277  002572  072240                    DT132
 1278  002574  072431                    DF132
 1279                            ;ITEM   136
 1280  002576  063747                    EM136                   ;WCE HI SET BUT WCE DID NOT SET IN RHCS2
 1281  002600  071420                    DH132
 1282  002602  072240                    DT132
 1283  002604  072431                    DF132
 1284                            ;ITEM   137
 1285  002606  064030                    EM137                   ;WCE LO SET WITH WCE HI IN RHCS3
 1286  002610  071420                    DH132
 1287  002612  072240                    DT132
 1288  002614  072431                    DF132
 1289                            ;ITEM   140
```

```
1290  002616  064131                  EM140                   ;WRITE OPERATION DID NOT INC WC
1291  002620  000000                  0
1292  002622  000000                  0
1293  002624  000000                  0
1294                          ;ITEM   141
1295  002626  064206                  EM141                   ;BA WAS NOT INC AFTER A WRITE
1296  002630  000000                  0
1297  002632  000000                  0
1298  002634  000000                  0
1299                          ;ITEM   142
1300  002636  064262                  EM142                   ;INFO WAS NOT WRITTEN TO TESTER
1301  002640  071476                  DH142
1302  002642  072256                  DT142
1303  002644  072420                  DF76
1304                          ;ITEM   143
1305  002646  064334                  EM143                   ;READ OPERATION DID NOT INC WC
1306  002650  000000                  0
1307  002652  000000                  0
1308  002654  000000                  0
1309                          ;ITEM   144
1310  002656  064410                  EM144                   ;BA WAS NOT INC AFTER A READ
1311  002660  000000                  0
1312  002662  000000                  0
1313  002664  000000                  0
1314                          ;ITEM   145
1315  002666  064476                  EM145                   ;INFO DID NOT READ FROM TESTER
1316  002670  071476                  DH142
1317  002672  072256                  DT142
1318  002674  072420                  DF76
1319                          ;ITEM   146
1320  002676  064543                  EM146                   ;THIS IS FOR PRINTED CONTENTS
1321                                                          ;OF THE RH REGISTERS
1322  002700  071534                  DH146
1323  002702  072270                  DT146
1324  002704  072424                  DF105
1325                          ;ITEM   147
1326  002706  064614                  EM147                   ;ALL BITS DID NOT GET TRANSFERED
1327                                                          ;DURING A READ OPERATION
1328  002710  071601                  DH147
1329  002712  072304                  DT147
1330  002714  072420                  DF76
1331                          ;ITEM   150
1332  002716  064705                  EM150                   ;READ OPERATION DID NOT SEEM TO WORK
1333  002720  071601                  DH147
1334  002722  072304                  DT147
1335  002724  072420                  DF76
1336                          ;ITEM   151
1337  002726  065037                  EM151                   ;ALL BITS DID NOT WRITE TO TESTER
1338  002730  071601                  DH147
1339  002732  072304                  DT147
1340  002734  072420                  DF76
1341                          ;ITEM   152
1342  002736  065141                  EM152                   ;WRITE OPERATION DID NOT WRITE
1343                                                          ;TO TESTER
1344  002740  071601                  DH147
1345  002742  072304                  DT147
```

```
1346  002744  072420                    DF76
1347                              ;ITEM   153
1348  002746  065211                    EM153           ;DBL SET ON A 2 WORD TRANSFER
1349                                                    ;WITH BAI SET
1350  002750  000000                    0
1351  002752  000000                    0
1352  002754  000000                    0
1353                              ;ITEM   154
1354  002756  065275                    EM154           ;DBL SET ON A 1 WORD READ FROM
1355                                                    ;AN EVEN ADDRESS
1356  002760  000000                    0
1357  002762  000000                    0
1358  002764  000000                    0
1359                              ;ITEM   155
1360  002766  065366                    EM155           ;DBL SET ON A 2 WORD WRITE REV
1361                                                    ;WITH BAI SET
1362  002770  000000                    0
1363  002772  000000                    0
1364  002774  000000                    0
1365                              ;ITEM   156
1366  002776  065454                    EM156           ;DBL SET ON A 2 WORD WRITE FROM
1367                                                    ;FROM AN ODD ADDRESS
1368  003000  000000                    0
1369  003002  000000                    0
1370  003004  000000                    0
1371                              ;ITEM   157
1372  003006  065545                    EM157           ;DBL DID NOT SET ON A 2 WORD
1373                                                    ;WRITE REV FROM AN EVEN ADDRESS
1374  003010  000000                    0
1375  003012  000000                    0
1376  003014  000000                    0
1377                              ;ITEM   160
1378  003016  065641                    EM160           ;DBL SET ON A 2 WORD WRITE REV
1379                                                    ;FROM AN ODD ADDRESS
1380  003020  000000                    0
1381  003022  000000                    0
1382  003024  000000                    0
1383                              ;ITEM   161
1384  003026  065730                    EM161           ;DBL SET ON A 3 WORD WRITE REV
1385                                                    ;FROM AN ODD ADDRESS
1386  003030  000000                    0
1387  003032  000000                    0
1388  003034  000000                    0
1389                              ;ITEM   162
1390  003036  066017                    EM162           ;DBL DID NOT SET ON A ? WORD
1391  003040  000000                    0
1392  003042  000000                    0
1393  003044  000000                    0
1394                              ;ITEM   163
1395  003046  066106                    EM163           ;DBL SET ON A 2 WORD READ
1396                                                    ;FROM AN ODD ADDRESS
1397  003050  000000                    0
1398  003052  000000                    0
1399  003054  000000                    0
1400                              ;ITEM   164
1401  003056  066164                    EM164           ;DBL SET ON A 2 WORD READ REV
```

```
1402                                                        ;FROM AN ODD ADDRESS
1403  003060  000000                    0
1404  003062  000000                    0
1405  003064  000000                    0
1406                            ;ITEM   165
1407  003066  066253                    EM165               ;DBL DID NOT SET ON A 2 WORD
1408                                                        ;READ REV FROM AN EVEN ADDRESS
1409  003070  000000                    0
1410  003072  000000                    0
1411  003074  000000                    0
1412                            ;ITEM   166
1413  003076  066351                    EM166               ;DBL SET ON A 3 WORD READ FROM
1414                                                        ;AN EVEN ADDRESS
1415  003100  000000                    0
1416  003102  000000                    0
1417  003104  000000                    0
1418                            ;ITEM   167
1419  003106  066430                    EM167               ;DBL DID NOT SET ON A 3 WORD
1420                                                        ;READ REV FROM AN EVEN ADDRESS
1421  003110  000000                    0
1422  003112  000000                    0
1423  003114  000000                    0
1424                            ;ITEM   170
1425  003116  000000                    0
1426  003120  071637                    DH170
1427  003122  072316                    DT170
1428  003124  072437                    DF170
1429                            ;ITEM   171
1430  003126  066527                    EM171               ;TRE READS AS SET,PGE AND SC
1431                                                        ;READ AS CLEARED.PGE AND SC
1432                                                        ;SHOULD ALSO BE SET
1433  003130  000000                    0
1434  003132  000000                    0
1435  003134  000000                    0
1436                            ;ITEM   172
1437  003136  066601                    EM172               ;PGE AND TRE READ AS SET SC
1438                                                        ;READS AS CLEARED
1439  003140  000000                    0
1440  003142  000000                    0
1441  003144  000000                    0
1442                            ;ITEM   173
1443  003146  066622                    EM173               ;READY DID NOT CAUSE AN INTRUPT
1444                                                        ;WITH IE SET IN RHCS1
1445  003150  000000                    0
1446  003152  000000                    0
1447  003154  000000                    0
1448                            ;ITEM   174
1449  003156  066706                    EM174               ;IE WILL NOT SET IN RHCS1
1450  003160  000000                    0
1451  003162  000000                    0
1452  003164  000000                    0
1453                            ;ITEM   175
1454  003166  066737                    EM175               ;IE HAS AN OPEN GOING TO THE BUS
1455  003170  000000                    0
1456  003172  000000                    0
1457  003174  000000                    0
```

```
1458
1459  003176  066777                ;ITEM   176
1460  003200  071334                        EM176                   ;TRE IS SET DLT AND SC SHOULD ALSO BE SET
1461  003202  072216                        DH121
1462  003204  072420                        DT121
1463                                         DF76
1464  003206  067032                ;ITEM   177
1465  003210  071334                        EM177                   ;DLT AND TRE ARE SET ,SC READS AS CLEARED
1466  003212  072216                        DH121
1467  003214  072420                        DT121
1468                                         DF76
1469  003216  067077                ;ITEM   200
1470  003220  070673                        EM200                   ;HIBITE LOBYTE GATE FOR WC NG
1471  003222  072122                        DH41
1472  003224  072406                        DT41
1473                                         DF41
1474  003226  067161                ;ITEM   201
1475  003230  070673                        EM201                   ;HIBYTE LOBYTE GATE FOR DB NG
1476  003232  072122                        DH41
1477  003234  072406                        DT41
1478                                         DF41
1479  003236  067243                ;ITEM   202
1480  003240  070673                        EM202                   ;HIBYTE LOBYTE GATE FOR BA IS NG
1481  003242  072122                        DH41
1482  003244  072406                        DT41
1483                                         DF41
1484  003246  067325                ;ITEM   203
1485  003250  070673                        EM203                   ;RHBA HAS WRONG ADDRESS
1486  003252  072122                        DH41
1487  003254  072406                        DT41
1488                                         DF41
1489  003256  067405                ;ITEM   204
1490  003260  070673                        EM204                   ;TESTER DATA BUFFER HAS WRONG INFO
1491  003262  072122                        DH41
1492  003264  072406                        DT41
1493                                         DF41
1494  003266  067472                ;ITEM   205
1495  003270  070673                        EM205                   ;RH DID NOT INTERUPT
1496  003272  072122                        DH41
1497  003274  072406                        DT41
1498                                         DF41
1499  003276  067556                ;ITEM   206
1500  003300  070673                        EM206                   ;RHWC SHOULD BE ZERO
1501  003302  072122                        DH41
1502  003304  072406                        DT41
1503                                         DF41
1504  003306  067602                ;ITEM   207
1505  003310  000000                        EM207                   ;TRANSFER WAS DONE ON PORT B
1506  003312  000000                        0
1507  003314  000000                        0
1508                                         0
1509                                ;RH REGISTERS
1510
1511
1512  003316  000774                RHVEC:774                               ;RH VECTOR ADDRESS
1513                                ;;*****************************************************************
```

```
                                ;WORD COUNT REGISTER (RHWC)
                                ;EACH BIT IS CALLED BY BIT NUMBER



                                ;BUS ADDRESS REGISTER (RHBA)
                                ;EACH BIT IS CALLED BY BIT NUMBER



                                ;CONTROL AND STATUS REGISTER 2 (RHCS2)

000001                          US1=    1               ;UNIT SELECT (BIT #0)
000002                          US2=    2               ;UNIT SELECT (BIT #1)
000004                          US4=    4               ;UNIT SELECT (BIT #2)
000010                          BAI=    10              ;BUS ADDRESS INCREMENT INHIBIT (BIT #3)
000020                          PAT=    20              ;INVERT PARITY CHECK FOR MCPE
000040                          CLR=    40              ;CLEAR (BIT #5)
000100                          IR=     100             ;INPUT READY (BIT #6)
000200                          OR=     200             ;OUTPUT READY (BIT #7)
000400                          MPE=    400             ;MASS BUS PARITY ERROR (BIT #8)
001000                          MXF=    1000            ;MISSED TRANSFER ERROR (BIT #9)
002000                          PGE=    2000            ;PROGRAM ERROR (BIT #10)
004000                          NEM=    4000            ;NON EXISTANT MEMORY (BIT #11)
010000                          NED=    10000           ;NON EXISTANT DRIVE (BIT #12)
020000                          UPE=    20000           ;UNIBUS PARITY ERROR (BIT #13)
040000                          WCE=    40000           ;WRITE CHECK ERROR (BIT #14)
100000                          DLT=    100000          ;DATA LATE (BIT #15)

                                ;CONTROL AND STATUS REGISTER 3 (RHCS3)

000001                          IPCK0=  1               ;INVERT PARITY,ON LOW BYTE OF EVEN WORD (BIT #0)
000002                          IPCK1=  2               ;INVERT PARITY,ON HI BYTE OF EVEN WORD (BIT #1)
000004                          IPCK2=  4               ;INVERT PARITY,ON LOW BYTE OF ODD WORD(BIT #2)
000010                          IPCK3=  10              ;INVERT PARITY,ON HI BYTE OF ODD WORD(BIT #3)
000100                          IE3=    100             ;INTERUPT ENABLE,SAME AS BIT 6 OF RHCS1 (BIT #6)
002000                          DBL=    2000            ;DOUBLE WORD OPERATION,SET WHEN LAST MEMORY TRANSFER WAS
004000                          WCELO=  4000            ;WRITE CHECK ERROR EVEN WORD (BIT #11)
010000                          WCEHI=  10000           ;WRITE CHECK ERROR ODD WORD (BIT #12)
020000                          DPELO=  20000           ;DATA PARITY ERROR EVEN WORD (BIT #13)
040000                          DPEHI=  40000           ;DATA PARITY ERROR ODD WORD (BIT #14)
100000                          APE=    100000          ;ADDRESS PARITY ERROR (BIT #15)
                                ;DATA BUFFER REGISTER (RHDB)
                                ;EACH BIT IS CALLED BY BIT NUMBER



                                ;CONTROL AND STATUS 1 REGISTER. (#00)

000001                          GO=     1               ;GO (BIT #0)
000100                          IE=     100             ;INTERRUPT ENABLE (BIT #6)
000200                          RDY=    200             ;READY (BIT #7)
000400                          A16=    400             ;HIGH ORDER UNIBUS BITS (BIT #8)
001000                          A17     1000            ;HIGH ORDER UNIBUS BITS (BIT #9)
```

```
1570    002000          PSEL=   2000            ;PORT SELECT (BIT #10)
1571    004000          DVA=    4000            ;DEVICE AVAILABLE (BIT #11)
1572    020000          MCPE=   20000           ;MASSBUSS PARITY ERROR (BIT #13)
1573    040000          TRE=    40000           ;TRANSFER ERROR (BIT #14)
1574    000100          TREB=   100             ;TRE BIT FOR A BYTE OPERATION
1575    100000          SC=     100000          ;SPECIAL CONDITION (BIT #15)
1576
1577                    ;STATUS REGISTER (RHST) (#01)
1578
1579    000200          DRY=    200             ;DRIVE READY (BIT #7)
1580    000400          DPR=    400             ;DRIVE PRESENT (BIT #8)
1581    010000          MOL=    10000           ;MEDIUM ON-LINE (BIT #12)
1582    020000          PIP=    20000           ;POSITIONING OPERATION IN PROGRESS (BIT #13)
1583    040000          ERR=    40000           ;COMPOSIT ERROR. (BIT #14)
1584    100000          ATA=    100000          ;ATTENTION ACTIVE (BIT #15)
1585
1586                    ;ERROR REGISTER #01 (RHER) (#02)
1587    000001          ILF=    1               ;ILLEGAL FUNCTION (BIT #0)
1588    000004          RMR=    4               ;REGISTER MODIFICATION REFUSED (BIT #2)
1589    000010          CPE=    10              ;CONTROL PARITY ERROR(BIT #3)
1590    000020          DPE=    20              ;DATA PARITY ERROR(BIT #4)
1591    000040          RMBEX=  40              ;MASSBUS EXCEPTION ,WHEN SET CAUSES AN ABORT OF A DATA T
1592    000100          RFAIL=  100             ;MASSBUS POWER FAIL(BIT #6)
1593    010000          DTE=    10000           ;DRIVE TIMING ERROR (BIT #12)
1594    020000          OPI=    20000           ;OPERATION INCOMPLETE (BIT #13)
1595
```

```
1596                                    ;DIAGNOSTIC REGISTER (RHMR1) (#03)
1597
1598            000001                  DMD=    1                       ;DIAGINOSTIC MODE (BIT #0)
1599            000002                  MCLK=   2                       ;MAINTAINCE CLOCK (BIT #1)
1600            000004                  FERR=   4                       ;FORCE ERROR (BIT #2)
1601            000010                  ICPA=   10                      ;INVERT CONTROL PARITY,CAUSES PARITY TO BE EVEN WHEN SET
1602            000020                  IDPA=   20                      ;INVERT DATA PARITY,CAUSES DATA PARITY TOBE EVEN WHEN SE
1603            000040                  DPCA=   40                      ;DISABLE PARITY CHECK,INHIBITS PARITY CHECK ON BOTH C AN
1604            000100                  NEBL=   100                     ;NO END OF BLOCK,INHIBITS TESTER FROM GENERATING END OF
1605            000200                  DTRM=   200                     ;WHEN SET DELAYS TRA FROM BEING ASSERTED FOR 500NS (BIT
1606            000400                  DOCC=   400                     ;DISSABLE OCCUPY (BIT #8)
1607            001000                  SLKM=   1000                    ;SYNC CLOCK MINIMUM WIDTH ,WHEN SET CHANGES SYNC CLOCK T
1608            002000                  ISLK=   2000                    ;INVERT SYNC CLOCK,WHEN SET INVERTS SYNC CLOCK,NO EFFECT
1609            004000                  ENPS=   4000                    ;ENABLE PATTERN SHIFT,WHEN SET CAUSES A 16 OR 18 BIT ROT
1610            010000                  BMD18=  10000                   ;18 BIT MODE (BIT #12)
1611
1612                                    ;ATTENTION SUMMARY PSEUDO-REGISTER (RHAS) (#04)
1613
1614            000001                  AT0=    1                       ;DEVICE 0 (BIT #0)
1615            000002                  AT1=    2                       ;DEVICE 1 (BIT #1)
1616            000004                  AT2=    4                       ;DEVICE 2 (BIT #2)
1617            000010                  AT3=    10                      ;DEVICE 3 (BIT #3)
1618            000020                  AT4=    20                      ;DEVICE 4 (BIT #4)
1619            000040                  AT5=    40                      ;DEVICE 5 (BIT #5)
1620            000100                  AT6=    100                     ;DEVICE 6 (BIT #6)
1621            000200                  AT7=    200                     ;DEVICE 7 (BIT #7)
1622
1623                                    ;TRANSFER CONTROL REGISTER (#5)
1624
1625            000001                  DN0=    1                       ;DRIVE NUBER BIT #0 (BIT #0)
1626            000002                  DN1=    2                       ;DRIVE NUMBER BIT #1 (BIT #1)
1627            000004                  DN2=    4                       ;DRIVE NUMBER BIT #2 (BIT #2)
1628            000010                  SCLK=   10                      ;SYNC CLOCK RANGE BIT ,WHEN CLEAR SYNC CLOCK IS 0.4-2.6
1629                                                                    ;WHEN SET 2.0-10.6 MICRO SECONDS (BIT #3)
1630            000020                  GAP=    20                      ;GAP SIZE BIT,SETS GAP SIZE TO 5 MICRUSECONDS WHEN CLEAR
1631            000040                  BL0=    40                      ;BLOCK SIZE BIT 0 (BIT #5)
1632            000100                  BL1=    100                     ;BLOCK SIZE BIT 1(BIT #6)
1633            000200                  BL2=    200                     ;BLOCK SIZE BIT 2(BIT #7)
1634
1635                                    ;RH70 I/O REGISTERS LOCATED IN RH
1636
1637  003320    160100                  ADD1:   160100          ;BASE ADDRESS RH #1
1638  003322    160200                  ADD2:   160200          ;BASE ADDRESS RH #2
1639  003324    160300                  ADD3:   160300          ;BASE ADDRESS RH #3
1640  003326    160400                  ADD4:   160400          ;BASE ADDRESS RH #4
1641  003330    000000                  RHCS1:  0                       ;CONTROL AND STATUS 1
1642  003332    000000                  RHWC:   0                       ;WORD COUNT
1643  003334    000000                  RHBA:   0                       ;BUS ADDRESS
1644  003336    000000                  RHMR2:  0                       ;TRANSFER CONTROL REGISTER
1645  003340    000000                  RHCS2:  0                       ;CONTROL AND STATUS 2
1646  003342    000000                  RHST:   0                       ;TESTER STATUS
1647  003344    000000                  RHER:   0                       ;ERROR REGISTER
1648  003346    000000                  RHAS:   0                       ;ATTENTION SUMMARY REG
1649  003350    000000                  RHTDB:  0                       ;TESTER DATA REGISTER
1650  003352    000000                  RHDB:   0                       ;DATA BUFFER
1651  003354    000000                  RHMR1:  0                       ;DIAGNOSTIC (MAINTENCE) REGISTER
```

```
1652  003356  000000                RHDT:   0                       ;DRIVE TYPE REGISTER
1653  003360  000000                RHBAE:  0                       ;BUS ADDRESS EXTENTION
1654  003362  000000                RHCS3:  0                       ;CONTROL AND STATUS 3
1655  003364  000000                RHCS1B: 0                       ;HIGH BYTE OF RHCS1 REG.
1656
1657  003366  000000                DEVIC1: 0                       ;ADDRESS OF RH #1
1658  003370  000000                DEVIC2: 0                       ;ADDRESS OF RH #2
1659  003372  000000                DEVIC3: 0                       ;ADDRESS OF RH #3
1660  003374  000000                DEVIC4: 0                       ;ADDRESS OF RH #4
1661
1662  003376  000000                DEVCNT: 0                       ;DEVICE COUNTER
1663  003400  000000                DEVIC5: 0                       ;USED TO CONSTRUCT REG. ADDRESSES
1664
1665                                ;OFF11 WILL BE USED AS A CALCULATION LOCATION
1666
1667  003402  000000                OFF11:  0               ;REG. CALCULATION LOCATION
1668          177740                LERADD= 177740                  ;LOW ERROR ADDRESS REG.
1669          177742                HERADD= 177742                  ;HIGH ERROR ADDRESS REG
1670          177744                MEMERR= 177744                  ;MEMORY SYSTEM ERROR REG
1671  003404  000000                REGEND: 0                       ;REGISTER ENDING ADDRESS
1672  003406  000000                VECADD: 0                       ;VECTOR ADDRESS
1673  003410  000000                RETAIN: 0
1674
1675                                ;;**************************************************************************
1676                                        ;REGISTER STORAGE ADDRESSES
1677                                ;;**************************************************************************
1678
1679  003412  000000                        AS:     0               ;ATTENTION SUMMARY
1680  003414  000000                        BA:     0               ;BUS ADDRESS
1681  003416  000000                        BAE:    0               ;BUS ADDRESS EXTENTION
1682  003420  000000                        CS1:    0               ;CONTROL AND STATUS 1
1683  003422  000000                        CS2:    0               ;CONTROL AND STATUS 2
1684  003424  000000                        CS3:    0               ;CONTROL AND STATUS 3
1685  003426  000000                        DB:     0               ;DATA BUFFER
1686  003430  000000                        DR:     0               ;DIAGNOSTIC REGISTER
1687  003432  000000                        DS1:    0               ;TESTER STATUS
1688  003434  000000                        DT:     0               ;DRIVE TYPE
1689  003436  000000                        ER1:    0               ;ERROR REGISTER
1690  003440  000000                        TC:     0               ;TRANSFER CONTROL
1691  003442  000000                        TDR:    0               ;TESTER DATA REGISTER
1692  003444  000000                        WC:     0               ;WORD COUNT
1693
1694                                ;;**************************************************************************
1695                                        ;BITS AND BIT PATTERNS
1696                                ;;**************************************************************************
1697
1698          052525                        AB=     52525           ;ALTERNATE BIT PATTERN
1699          125252                        OAB=    125252          ;OPPOSITE ALTERNATE BIT PATTERN
1700          000000                        ZERO=   0               ;CONSTANT ZERO
1701          000001                        ONE=    1               ;CONSTANT 1
1702          000002                        TWO=    2               ;CONSTANT 2
1703                                ;;**************************************************************************
1704
1705                                        ;FUNCTION CODES
1706                                ;;**************************************************************************
1707          000001                NOOP    01                      ;NO OPERATION,RESETS GO BIT
```

```
1708                                    ;;*****************************************************************
1709            000051                  WRCH0=  51                      ;THESE WRCH BITS ARE WRITE/CHECK
1710            000052                  WRCH1=  52                      ;CODES ,IF THE CODE IS AN ODD
1711            000053                  WRCH2=  53                      ;NUMBER THE GO BIT IS INCLUDED
1712            000054                  WRCH3=  54                      ;IF THEY ARE EVEN GO BIT IS NOT INCLUDED
1713            000055                  WRCH4=  55
1714            000056                  WRCH5=  56
1715            000057                  WRCH6=  57
1716
1717                                    ;;*****************************************************************
1718
1719            000071                  READ0=  71                      ;READ CODES
1720            000072                  READ1=  72                      ;IF THE CODE IS AN ODD NUMBER
1721            000073                  READ2=  73                      ;THE GO BIT IS INCLUDED
1722            000074                  READ3=  74
1723            000075                  READ4=  75
1724            000076                  READ5=  76
1725            000077                  READ6=  77
1726
1727                                    ;;*****************************************************************
1728
1729            000061                  WRITE0= 61                      ;WRITE CODES
1730            000062                  WRITE1= 62                      ;IF THE CODE IS AN ODD NUMBER
1731            000063                  WRITE2= 63                      ;THE GO BIT IS INCLUDED
1732            000064                  WRITE3= 64                      ;IF IT IS EVEN THE GO BIT
1733            000065                  WRITE4= 65                      ;IS NOT INCLUDED
1734            000066                  WRITE5= 66
1735            000067                  WRITE6= 67
1736
1737                                    ;;*****************************************************************
1738
1739            000011                  DRCLR=  11                      ;CLEARS ALL ERROR BITS IN THE DRIVE
1740                                                                    ;AND SETS THE DRIVE READY BIT
1741                                    ;;*****************************************************************
1742
1743            000031                  SEARCH= 31                      ;SETS A ONE SHOT WHICH SETS
1744                                                                    ;ATA AFTER 100USEC + OR MINUS 20%
1745
1746                                    ;;*****************************************************************
1747                                            ;WATBIT STORAGE LOCATIONS
1748                                    ;;*****************************************************************
1749
1750  003446    000000                  BITCNT: 0                       ;BIT COUNTER
1751  003450    000000                  LOOCNT: 0                       ;LOOP CPUNT
1752  003452    000000                  PASS:   0                       ;PASS COUNT FOR THE LARGE TRANSFER TEST
1753                                    ;;*****************************************************************
1754                                            ;THIS IS WHERE THE TEST NUMBER IS STORED JUST
1755                                            ;BEFORE IT IS PRINTED OUT.....................
1756                                    ;;*****************************************************************
1757
1758  003454    000000                  TSTNM:  0                       ;TEST NO. STORAGE
1759  003456    000000                  OFFSET: 0                       ;OFFSET FOR ERROR HEADER
1760  003460    000000                  HEDDAD: 0                       ;USE TO FIND HEADER ERROR MESSAGE
1761                                    ;;*****************************************************************
1762                                            ;THESE ARE THE READ WRITE BUFFERS
1763                                    ;;*****************************************************************
```

```
1764            004000          .=4000
1765  004000    000000          EVENAD: 0                       ;EVEN ADDRESS
1766  004002    000000          ODDAD:  0                       ;ODD ADDRESS
1767            004100          .=4100
1768  004100    000000          RBUF:   0
1769  004102    000000          RBUF1:  0
1770  004104    000000          RBUF2:  0
1771  004106    000000          RBUF3:  0
1772  004110    000000          RBUF4:  0
1773  004112    000000          RBUF5:  0
1774  004114    000000          RBUF6:  0
1775  004116    000000          RBUF7:  0
1776
1777                            ;;*****************************************************************
1778                            ;       THESE ARE FOR THE CLEARS TEST
1779                            ;;*****************************************************************
1780
1781  004120    177777          MINUS:  -1
1782  004122    000000          BEFORE: 0
1783
1784  004124    000000          $CS1:   0
1785  004126    000000          $CS2:   0
1786  004130    000000          $CS3:   0
1787  004132    000000          $ST:    0
1788  004134    000000          $ER:    0
1789  004136    000000          $RHBA:  0
1790  004140    000000          $RHDB:  0
1791  004142    000000          $RHWC:  0
```

```
1792                                    ;;**********************************************************************
1793
1794  004144  005000                    BEGIN:  CLR     R0                      ;GET SKIP FLAG READY
1795  004146  005100                            COM     R0                      ;SET SKIP FLAG
1796  004150  000421                            BR      START                   ;GO TO START
1797  004152  005000                    BEGIN3: CLR     R0                      ;GET SKIP FLAG READY
1798  004154  005037  001174                    CLR     $REG5                   ;CLR ALTERNATE START FLAG
1799  004160  005137  001174                    COM     $REG5                   ;SET FOR ALTERNATE START
1800  004164  000413                            BR      START                   ;START PROGRAM
1801  004166  005000                    BEGIN2: CLR     R0                      ;GET R0 READY
1802  004170  005100                            COM     R0                      ;TO BE COMPLIMENTED
1803  004172  000137  004602                    JMP     @#TST1                  ;ENTER DIAG. FOR NEXT PASS
1804  004176  012737  000074  003404  BEGIN1: MOV     #74,@#REGEND
1805  004204  012737  000774  003406          MOV     #774,@#VECADD
1806  004212  005000                            CLR     R0                      ;CLEAR THE SKIP FLAG
1807                                    ;;**********************************************************************
1808
1809  004214                            START:
1810                                    .SBTTL  INITIALIZE THE COMMON TAGS
1811                                    ;;CLEAR THE COMMON TAGS ($CMTAG) AREA
1812  004214  012706  001100                    MOV     #$CMTAG,R6      ;;FIRST LOCATION TO BE CLEARED
1813  004220  005026                            CLR     (R6)+           ;;CLEAR MEMORY LOCATION
1814  004222  022706  001140                    CMP     #SWR,R6 ;;DONE?
1815  004226  001374                            BNE     .-6             ;;LOOP BACK IF NO
1816  004230  012706  000750                    MOV     #STACK,SP       ;;SETUP THE STACK POINTER
1817                                    ;;INITIALIZE A FEW VECTORS
1818  004234  012737  072644  000020            MOV     #$SCOPE,@#IOTVEC ;;IOT VECTOR FOR SCOPE ROUTINE
1819  004242  012737  000340  000022            MOV     #340,@#IOTVEC+2 ;;LEVEL 7
1820  004250  012737  074322  000030            MOV     #$ERROR,@#EMTVEC ;;EMT VECTOR FOR ERROR ROUTINE
1821  004256  012737  000340  000032            MOV     #340,@#EMTVEC+2 ;;LEVEL 7
1822  004264  012737  076030  000034            MOV     #$TRAP,@#TRAPVEC ;;TRAP VECTOR FOR TRAP CALLS
1823  004272  012737  000340  000036            MOV     #340,@#TRAPVEC+2;LEVEL 7
1824  004300  012737  073116  000024            MOV     #$PWRDN,@#PWRVEC ;;POWER FAILURE VECTOR
1825  004306  012737  000340  000026            MOV     #340,@#PWRVEC+2 ;;LEVEL 7
1826  004314  005037  001212                    CLR     $TIMES          ;;INITIALIZE NUMBER OF ITERATIONS
1827  004320  005037  001214                    CLR     $ESCAPE         ;;CLEAR THE ESCAPE ON ERROR ADDRESS
1828  004324  112737  000001  001115            MOVB    #1,$ERMAX       ;;ALLOW ONE ERROR PER TEST
1829  004332  012737  004332  001106            MOV     #.,$LPADR       ;;INITIALIZE THE LOOP ADDRESS FOR SCOPE
1830  004340  012737  004340  001110            MOV     #.,$LPERR       ;;SETUP THE ERROR LOOP ADDRESS
1831                                    ;;SIZE FOR A HARDWARE SWITCH REGISTER. IF NOT FOUND OR IT IS
1832                                    ;;EQUAL TO A "-1", SETUP FOR A SOFTWARE SWITCH REGISTER.
1833  004346  013746  000004                    MOV     @#ERRVEC,-(SP)  ;;SAVE ERROR VECTOR
1834  004352  012737  004406  000004            MOV     #64$,@#ERRVEC   ;;SET UP ERROR VECTOR
1835  004360  012737  177570  001140            MOV     #DSWR,SWR       ;;SETUP FOR A HARDWARE SWICH REGISTER
1836  004366  012737  177570  001142            MOV     #DDISP,DISPLAY  ;;AND A HARDWARE DISPLAY REGISTER
1837  004374  022777  177777  174536            CMP     #-1,@SWR        ;;TRY TO REFERENCE HARDWARE SWR
1838  004402  001012                            BNE     66$             ;;BRANCH IF NO TIMEOUT TRAP OCCURRED
1839                                                                    ;;AND  THE HARDWARE SWR IS NOT = -1
1840  004404  000403                            BR      65$             ;;BRANCH IF NO TIMEOUT
1841  004406  012716  004414          64$:     MOV     #65$,(SP)       ;;SET UP FOR TRAP RETURN
1842  004412  000002                            RTI
1843  004414  012737  000176  001140  65$:     MOV     #SWREG,SWR      ;;POINT TO SOFTWARE SWR
1844  004422  012737  000174  001142            MOV     #DISPREG,DISPLAY
1845  004430  012637  000004          66$:     MOV     (SP)+,@#ERRVEC  ;;RESTORE ERROR VECTOR
1846
1847                                    .SBTTL  GET VALUE FOR SOFTWARE SWITCH REGISTER
```

```
 1848  004434  005737  000042                  TST     @#42            ;;ARE WE RUNNING UNDER XXDP/ACT?
 1849  004440  001006                          BNE     67$             ;;BRANCH IF YES
 1850  004442  023727  001140  000176          CMP     SWR,#SWREG      ;;SOFTWARE SWITCH REG SELECTED?
 1851  004450  001005                          BNE     68$             ;;BRANCH IF NO
 1852  004452  104406                          GTSWR                   ;;GET SOFT-SWR SETTINGS
 1853  004454  000403                          BR      68$
 1854  004456  112737  000001  001134  67$:    MOVB    #1,$AUTOB       ;;SET AUTO-MODE INDICATOR
 1855  004464                          68$:
 1856  004464  004737  074500                  JSR     PC,$TKINT
 1857  004470  005700                          TST     R0                      ;WAS IT A RESTART
 1858  004472  100443                          BMI     AROUND                  ;YES,SKIP TYPING
 1859  004474  104401  004502                  TYPE    ,70$            ;;TYPE ASCIZ STRING
 1860  004500  000427                          BR      69$             ;;GET OVER THE ASCIZ
 1861                          ;;70$:  .ASCIZ  <15><12>/RH 11 AND 70 I O AND CONTROLLER DIAGNOSTIC/
 1862  004560                          69$:
 1863  004560  104401  004566                  TYPE    ,72$            ;;TYPE ASCIZ STRING
 1864  004564  000406                          BR      71$             ;;GET OVER THE ASCIZ
 1865                          ;;72$:  .ASCIZ  <15><12>/CZRHB-D /
 1866  004602                          71$:
 1867  004602                          AROUND:
 1868
 1869                          ;;*******************************************************************
 1870                          ;*TEST 1        THIS IS THE RH ADRESS DECODE TEST
 1871                                  ;*THIS PROGRAM WILL ALLOW THE OPERATOR TO SAY
 1872                                  ;*WHICH RH IS ON THE BUS AND WHAT ITS BASE
 1873                                  ;*ADDRESS IS.  THE RH IS THEN TESTED FOR A
 1874                                  ;*RESPONSE AND CHECKED FOR A TESTER BEING
 1875                                  ;*CONNECTED.
 1876                          ;;*******************************************************************
 1877  004602  000004                  TST1:   SCOPE
 1878  004604  012737  000001  001212          MOV     #1,$TIMES       ;;DO 1 ITERATION
 1879  004612  012737  047234  000114          MOV     #PARITY,@#114
 1880  004620  012706  000750                  MOV     #STACK,SP
 1881  004624  012737  000340  000116          MOV     #340,@#116
 1882  004632  012737  047002  000004          MOV     #TIEOUT,@#ERRVEC        ;SET UP TIMEOUT
 1883  004640  012737  000340  000006          MOV     #340,@#ERRVEC+2         ;SETUP PRIORTY
 1884  004646  005700                          TST     R0                      ;SKIP TYPOUT ?
 1885  004650  001403                          BEQ     SKIPIN                  ;NO
 1886  004652  005000                          CLR     R0                      ;CLEAR SKIP FLAG
 1887  004654  000137  006606                  JMP     @#TST2                  ;GET OUT OF TEST
 1888  004660  005001                  SKIPIN: CLR     R1                      ;GET R1 READY
 1889  004662  005737  001174                  TST     $REG5                   ;IS IT AN ALTERNATE START
 1890  004666  001402                          BEQ     SLEUTH                  ;NO
 1891  004670  000137  004700                  JMP     KONG                    ;YES DO ALTERNATE SETUP
 1892  004674  000137  005122          SLEUTH: JMP     AD1ERR                  ;DO REGULAR SETUP
 1893  004700  005037  001174          KONG:   CLR     $REG5                   ;RESET ALT. START FLAG
 1894  004704  104401  004712                  TYPE    ,65$            ;;TYPE ASCIZ STRING
 1895  004710  000416                          BR      64$             ;;GET OVER THE ASCIZ
 1896                          ;;65$:  .ASCIZ  <15><12>/TYPE BASE ADDRESS FOR RH /
 1897  004746                          64$:
 1898  004746  104412                          RDOCT
 1899  004750  012637  003366                  MOV     (SP)+,DEVIC1            ;GET BASE ADDRESS
 1900  004754  104401  004762                  TYPE    ,67$            ;;TYPE ASCIZ STRING
 1901  004760  000415                          BR      66$             ;;GET OVER THE ASCIZ
 1902                          ;;67$:  .ASCIZ  <15><12>/TYPE RH VECTOR ADDRESS /
 1903  005014                          66$:
```

```
1904  005014  104412                          RDOCT
1905  005016  012637  003406                  MOV     (SP)+,VECADD            ;GET VECTOR ADDRESS
1906  005022  104401  005030                  TYPE    ,69$                ;;TYPE ASCIZ STRING
1907  005026  000426                          BR      68$                 ;;GET OVER THE ASCIZ
1908                                  ;;69$:   .ASCIZ  <15><12>/HOW MANY REGISTERS ARE YOU JUMPERED FOR /
1909  005104                          68$:
1910  005104  104412                          RDOCT
1911  005106  012637  003404                  MOV     (SP)+,REGEND            ;GET NUMBER OF REG
1912  005112  006137  003404                  ROL     REGEND                  ;MULT BY 2
1913  005116  000137  005436                  JMP     GI1                     ;GO CREATE ADDRESSES
1914  005122  013737  003320  003366  AD1ERR: MOV     ADD1,DEVIC1             ;SETUP DEVICE 1
1915  005130  012737  005222  000004          MOV     #AD2ERR,ERRVEC          ;FOR TIMEOUT
1916  005136  005777  176160                  TST     @ADD2                   ;IS THERE A DEVICE
1917  005142  013737  003322  003370          MOV     ADD2,DEVIC2             ;YES
1918  005150  012737  005242  000004          MOV     #AD3ERR,ERRVEC          ;FOR TIMEOUT
1919  005156  005777  176142                  TST     @ADD3                   ;IS THERE A DEVICE
1920  005162  013737  003324  003372          MOV     ADD3,DEVIC3             ;YES
1921  005170  012737  005262  000004          MOV     #AD4ERR,ERRVEC          ;FOR TIMEOUT
1922  005176  005777  176124                  TST     @ADD4                   ;IS THERE A DEVICE
1923  005202  013737  003326  003374          MOV     ADD4,DEVIC4             ;YES
1924  005210  012737  047002  000004          MOV     #TIEOUT,ERRVEC          ;REPLACE TIMEOUT
1925  005216  000137  006110                  JMP     RESTAR              ;TEST DEVICES
1926  005222  005037  003370          AD2ERR: CLR     DEVIC2                  ;NO DEVICE 2
1927  005226  012737  047002  000004          MOV     #TIEOUT,ERRVEC          ;REPLACE TIMEOUT
1928  005234  022626                          CMP     (SP)+,(SP)+             ;CORRECT STACK
1929  005236  000137  006110                  JMP     RESTAR                  ;TEST DEVICES
1930  005242  005037  003372          AD3ERR: CLR     DEVIC3                  ;NO DEVICE 3
1931  005246  012737  047002  000004          MOV     #TIEOUT,ERRVEC          ;REPLACE TIMEOUT
1932  005254  022626                          CMP     (SP)+,(SP)+             ;CORRECT STACK
1933  005256  000137  006110                  JMP     RESTAR                  ;TEST DEVICES
1934  005262  005037  003374          AD4ERR: CLR     DEVIC4                  ;NO DEVICE 4
1935  005266  012737  047002  000004          MOV     #TIEOUT,ERRVEC          ;REPLACE TIMEOUT
1936  005274  022626                          CMP     (SP)+,(SP)+             ;CORRECT STACK
1937  005276  000137  006110                  JMP     RESTAR                  ;TEST DEVICES
1938  005302  005737  000042          GIGO:   TST     @#42                    ;IS THERE A MONITOR
1939  005306  001402                          BEQ     GIG1                    ;NO
1940  005310  000137  046206                  JMP     $EOP                    ;YES EXIT
1941  005314  022737  160100  003366  GIG1:   CMP     #160100,DEVIC1          ;ARE WE HERE AFTER 210
1942  005322  001402                          BEQ     SA200                   ;NO, 200
1943  005324  000137  004700                  JMP     KONG                    ;GET NEW ADDRESS FOR 210
1944  005330                          SA200:
1945  005330  104401  005336                  TYPE    ,65$                ;;TYPE ASCIZ STRING
1946  005334  000420                          BR      64$                 ;;GET OVER THE ASCIZ
1947                                  ;;65$:   .ASCIZ  <15><12>/TYPE BASE ADDRESS FOR RH #1 /
1948  005376                          64$:
1949  005376  104412                          RDOCT
1950  005400  012637  003366                  MOV     (SP)+,DEVIC1            ;GET BASE ADDRESS FOR RH1
1951  005404  105737  001103                  TSTB    $ERFLG                  ;ARE WE HERE BECAUSE OF AN ADDRFSS ERROR
1952  005410  001405                          BEQ     GO1                     ;NO,GET READY FOR NEXT ADDRESS
1953  005412  005737  003366                  TST     DEVIC1                  ;IS IT A ZERO
1954  005416  001007                          BNE     GI1                     ;NO
1955  005420  000137  005314                  JMP     GIG1                    ;NEED FIRST ADDRESS
1956  005424  005737  003366          GO1:    TST DEVIC1                      ;DID HE CORRECT WITH A 0
1957  005430  001012                          BNE     GIGO1                   ;GET BASE FOR RH # 2
1958  005432  000137  005314                  JMP     GIG1                    ;NEED ADDRESS
1959  005436  013737  003366  003400  GI1:    MOV     DEVIC1,DEVIC5           ;GET READY TO CREATE REG. ADDRESS
```

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 1960  005444  012737  005302  003410          MOV     #GIGO,RETAIN            ;SAVE RETURN ADDRESS
 1961  005452  000137  006202                  JMP     GIG04                   ;CONSTRUCT REGISTER ADDRESSES
 1962  005456  005737  000042          GIG01:  TST     @#42                    ;IS THER A MONITOR
 1963  005462  001402                          BEQ     GIG2                    ;NO
 1964  005464  000137  046206                  JMP     $EOP                    ;EXIT
 1965  005470                          GIG2:
 1966  005470  104401  005476                  TYPE    ,65$                ;;TYPE ASCIZ STRING
 1967  005474  000420                          BR      64$                 ;;GET OVER THE ASCIZ
 1968                                  ;;65$:  .ASCIZ  <15><12>/TYPE BASE ADDRESS FOR RH #2 /
 1969  005536                          64$:
 1970  005536  104412                          RDOCT                           ;GET VALUE
 1971  005540  012637  003370                  MOV     (SP)+,DEVIC2            ;SAVE ADDRESS
 1972  005544  105737  001103                  TSTB    $ERFLG                  ;ARE WE HERE BECAUSE OF ERROR
 1973  005550  001405                          BEQ     GO2                     ;NO
 1974  005552  005737  003370                  TST     DEVIC2                  ;IS IT 0
 1975  005556  001007                          BNE     GI2                     ;NO
 1976  005560  000137  045430                  JMP     RESTAT                  ;SET UP FOR RH #1
 1977  005564  005737  003370          GO2:    TST     DEVIC2                  ;IS IT 0
 1978  005570  001012                          BNE     GIGO2                   ;NO,GET NEXT ADDRESS
 1979  005572  000137  006110                  JMP     RESTAR                  ;CREATE ADDRESS FOR RH#1
 1980  005576  013737  003370  003400  GI2:    MOV     DEVIC2,DEVIC5           ;GET READY TO CREATE
 1981  005604  012737  005456  003410          MOV     #GIGO1,RETAIN           ;SAVE RETURN ADDRESS
 1982  005612  000137  006202                  JMP     GIG04                   ;CREATE REG. ADDRESSES
 1983  005616  005737  000042          GIGO2:  TST     @#42                    ;IS THERE A MONITOR
 1984  005622  001402                          BEQ     GIG3                    ;NO
 1985  005624  000137  046206                  JMP     $EOP                    ;EXIT
 1986  005630                          GIG3:
 1987  005630  104401  005636                  TYPE    ,65$                ;;TYPE ASCIZ STRING
 1988  005634  000420                          BR      64$                 ;;GET OVER THE ASCIZ
 1989                                  ;;65$:  .ASCIZ  <15><12>/TYPE BASE ADDRESS FOR RH #3 /
 1990  005676                          64$:
 1991  005676  104412                          RDOCT
 1992  005700  012637  003372                  MOV     (SP)+,DEVIC3            ;SAVE ADDRESS
 1993  005704  105737  001103                  TSTB    $ERFLG                  ;ARE WE HERE DO TO ERROR
 1994  005710  001405                          BEQ     GO3                     ;NO
 1995  005712  005737  003372                  TST      DEVIC3                 ;IS IT 0
 1996  005716  001007                          BNE     GI3                     ;NO
 1997  005720  000137  045430                  JMP     RESTAT                  ;RESTART PASS
 1998  005724  005737  003372          GO3:    TST     DEVIC3                  ;IS IT 0
 1999  005730  001012                          BNE     GIGO3                   ;GET NEXT ADDRESS
 2000  005732  000137  006110                  JMP     RESTAR                  ;CREATE RH#1 ADDRESSES
 2001  005736  013737  003372  003400  GI3:    MOV     DEVIC3,DEVIC5           ;SETUP TO CREATE ADDRESS
 2002  005744  012737  005616  003410          MOV     #GIGO2,RETAIN           ;SAVE RETURN ADDRESS
 2003  005752  000137  006202                  JMP     GIG04                   ;CREATE ADDRESSES
 2004  005756  005737  000042          GIGO3:  TST     @#42                    ;IS THERE A MONITOR
 2005  005762  001402                          BEQ     GIG4                    ;NO
 2006  005764  000137  046206                  JMP     $EOP                    ;EXIT
 2007  005770                          GIG4:
 2008  005770  104401  005776                  TYPE    ,65$                ;;TYPE ASCIZ STRING
 2009  005774  000420                          BR      64$                 ;;GET OVER THE ASCIZ
 2010                                  ;;65$:  .ASCIZ  <15><12>/TYPE BASE ADDRESS FOR RH #4 /
 2011  006036                          64$:
 2012  006036  104412                          RDOCT
 2013  006040  012637  003374                  MOV     (SP)+,DEVIC4            ;SAVE ADDRESS
 2014  006044  105737  001103                  TSTB    $ERFLG                  ;ARE WE HERE BECAUSE OF ERROR
 2015  006050  001405                          BEQ     GO4                     ;NO
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2016  006052  005737  003374          TST     DEVIC4                  ;IS IT 0
2017  006056  001004                  BNE     GI4                     ;NO
2018  006060  000137  045430          JMP     RESTAT                  ;RESTART PASS
2019  006064  000137  006110  GO4:    JMP     RESTAR                  ;GO SET UP REG. ADDRESSES
2020  006070  013737  003374  003400  GI4:    MOV     DEVIC4,DEVIC5   ;GET READY TO CREATE REG. ADDRESSES
2021  006076  012737  005756  003410          MOV     #GIGO3,RETAIN   ;STORE RETURN ADDRESS
2022  006104  000137  006202          JMP     GIGO4                   ;GO CREATE ADDRESSES
2023  006110  013737  003366  003400  RESTAR: MOV     DEVIC1,DEVIC5   ;GET READY TO CREATE REG. ADDRESSES
2024  006116  012737  005302  003410          MOV     #GIGO,RETAIN    ;SAVE RETURN ADDRESS
2025  006124  104401  006132          TYPE    ,65$            ;;TYPE ASCIZ STRING
2026  006130  000421                  BR      64$             ;;GET OVER THE ASCIZ
2027                          ;;65$:  .ASCIZ  <15><12>/TESTING RH #1 AT BASE ADDRESS /
2028  006174                  64$:
2029  006174  013746  003366          MOV     DEVIC1,-(SP)    ;;SAVE DEVIC1 FOR TYPEOUT
2030  006200  104402                  TYPOC                   ;;GO TYPE--OCTAL ASCII(ALL DIGITS)
2031  006202  013737  003400  003402  GIGO4:  MOV     DEVIC5,@#OFF11          ;SETUP FOR ADDRESSES
2032  006210  012702  003330          MOV     #RHCS1,R2               ;SET UP WHERE TO PUT THEM
2033  006214  013722  003402  4$:     MOV     @#OFF11,(R2)+           ;SETUP ADDRESS
2034  006220  062737  000002  003402  ADD     #TWO,@#OFF11            ;SETUP NEXT ADDRESS
2035  006226  022702  003360          CMP     #RHBAE,R2               ;ARE ALL ADDRESSES SET UP
2036  006232  001401                  BEQ     3$                      ;IS INFORMATION CORRECT?
2037  006234  000767                  BR      4$                      ;NO SETUP NEW ADDRESS
2038  006236  013737  003400  003402  3$:     MOV     DEVIC5,@#OFF11
2039  006244  063737  003404  003402          ADD     REGEND,@#OFF11
2040  006252  013737  003402  003360          MOV     @#OFF11,RHBAE           ;WITH CORRECT ADDRESS
2041  006260  062737  000002  003402          ADD     #2,@#OFF11              ;SETUP RHCS3 ADDRESS
2042  006266  013737  003402  003362          MOV     @#OFF11,RHCS3           ;WITH CORRECT ADDRESS
2043  006274  013737  003330  003364          MOV     RHCS1,RHCS1B            ;SETUP RHCS1B WITH
2044  006302  005237  003364          INC     RHCS1B                  ;HIGH BYTE ADDRESS OF RHCS1
2045  006306  013746  000004  TSTADD: MOV     @#ERRVEC,-(SP)          ;SAVE TIOUT VALUE
2046  006312  012737  006372  000004          MOV     #ADDERR,@#ERRVEC        ;SETUP NEW TIOUT VALUE
2047  006320  012777  000007  175012          MOV     #7,@RHCS2               ;SETUP UNIT NO.
2048  006326  005777  174776          TST     @RHCS1                  ;WILL RH RESPOND
2049  006332  022777  000040  175016          CMP     #40,@RHDT               ;IS A TESTER THERE
2050  006340  001403                  BEQ     1$                      ;YES ,CONTINUE
2051  006342  104034                  ERROR   34                      ;TESTER IS NOT CONNECTED
2052  006344  000137  006374          JMP     ADDERR+2                ;BAD ADDRESS
2053  006350  122777  000007  174760  1$:     CMPB    #7,@RHMR2               ;IS THERE ALSO A 7 FOR UNIT NO.
2054  006356  001403                  BEQ     2$                      ;YES,CONTINUE
2055  006360  104071                  ERROR   71                      ;BAD ADDRESS
2056  006362  000137  006374          JMP     ADDERR+2
2057  006366  005726          2$:     TST     (SP)+                   ;CORRECT STACK
2058  006370  000406                  BR      RHTEST                  ;YES AN RH IS THERE
2059  006372  022626          ADDERR: CMP     (SP)+,(SP)+             ;CORRECT STACK
2060  006374  012637  000004          MOV     (SP)+,@#ERRVEC          ;REPLACE OLD TIOUT VALUE
2061  006400  104036                  ERROR   36                      ;RH DID NOT RESPOND
2062  006402  000177  175002          JMP     @RETAIN                 ;GET CORRECT BASE ADDRESS
2063  006406  012637  000004  RHTEST: MOV     (SP)+,@#ERRVEC          ;REPLACE TIEOUT VALUE
2064  006412  005701                  TST     R1                      ;IS IT A 70
2065  006414  001433                  BEQ     RH70TT                  ;YES,LETS MAKE SURE
2066  006416  013746  000004          MOV     @#ERRVEC,-(SP)          ;SAVE TIME OUT VALUE
2067  006422  012737  006574  000004          MOV     #RH11,@#ERRVEC          ;CHECK FOR AN RH11
2068  006430  012777  000117  174724          MOV     #IPCK0!IPCK1!IPCK2!IPCK3!IE3,@RHCS3
2069                                                                  ;SET ALL BITS IN RHCS3
2070  006436  012637  000004          MOV     (SP)+,@#ERRVEC          ;REPLACE TIMEOUT
2071  006442  RH11BA:
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2072  006442  104401  006450            TYPE    ,65$            ;;TYPE ASCIZ STRING
2073  006446  000413                    BR      64$             ;;GET OVER THE ASCIZ
2074                                ;;65$:  .ASCIZ  <15><12>/TESTING FOR AN RH70/
2075  006476                        64$:
2076  006476  005001                    CLR     R1                      ;SET UP RH70 FLAG
2077  006500  000137  006602            JMP     RH11+6                  ;EXIT
2078  006504  013746  000004    RH70TT: MOV     @#ERRVEC,-(SP)          ;SAVE LOCATION 4
2079  006510  012737  006530  000004  MOV     #FAKE70,@#ERRVEC        ;REPLACE ADDRESS
2080  006516  012777  000117  174636  MOV     #IPCK0!IPCK1!IPCK2!IPCK3!IE3,@RHCS3
2081                                                                  ;SET ALL BITS
2082  006524  000137  006576            JMP     RH11+2                  ;EXIT TEST
2083  006530  022626              FAKE70: CMP     (SP)+,(SP)+             ;CORRECT STACK
2084  006532  012637  000004            MOV     (SP)+,@#ERRVEC          ;CORRECT TIMEOUT
2085  006536  005001              RH70BA: CLR     R1                      ;GET FLAG READY
2086  006540  005101                    COM     R1                      ;SET FOR RH11
2087  006542  104401  006550            TYPE    ,65$            ;;TYPE ASCIZ STRING
2088  006546  000411                    BR      64$             ;;GET OVER THE ASCIZ
2089                                ;;65$:  .ASCIZ  <15><12>/TESTING AN RH11/
2090  006572                        64$:
2091  006572  000403                    BR      ERR1
2092  006574  022626              RH11:   CMP     (SP)+,(SP)+             ;CORRECT STACK POINTER
2093  006576  012637  000004            MOV     (SP)+,@#ERRVEC          ;REPLACE TIMEOUT VALUE
2094  006602  004737  050244      ERR1:   JSR     R7,ERRTST
2095                                ;;**************************************************************
2096                                ;*TEST 2         CLEAR TEST
2097                                        ;*THIS TEST CHECKS THAT ALL
2098                                        ;*ERROR BITS ARE CLEARED AFTER
2099                                        ;*THE CLEAR BIT WAS LOADED INTO
2100                                        ;*RHCS2 REGISTER.............
2101                                ;;**************************************************************
2102  006606  000004               TST2:   SCOPE
2103  006610  012737  000001  001212      MOV     #1,$TIMES       ;;DO 1 ITERATION
2104  006616  005037  001210             CLR     $TMP5                   ;GET READY TO
2105  006622  005137  001210             COM     $TMP5                   ;SET UP FOR JSR ROUTINE
2106                                ;;**************************************************************
2107                                        ;*THIS TEST IS ALSO ENTERED AT THE LABLE CLEER
2108                                        ;*AT THE END OF ALL THE ERROR BIT TESTS TO SEE
2109                                        ;*THAT A CLEAR WILL CLEAR THE ERROR BIT SET
2110                                ;;**************************************************************
2111  006626  012777  000040  174504  CLEER:  MOV     #CLR,@RHCS2             ;TELL IT TO CLEAR
2112  006634  012777  000007  174476          MOV     #7,@RHCS2               ;SETJP UNIT NO.
2113  006642  122777  000007  174466          CMPB    #7,@RHMR2               ;HAS DEVICE BEEN SET TO 7
2114  006650  001107                         BNE     1$                      ;NO,FIND WHAT BIT WAS NOT SET
2115                                ;;**************************************************************
2116                                        ;*THE TEST IS ENTERED HERE IF THE ERROR BIT BEING
2117                                        ;*FORCED SET DID NOT SET TO SEE IF ANY OTHER ERROR
2118                                        ;*BIT DID SET.............
2119                                ;;**************************************************************
2120  006652  005701               12$:    TST     R1                      ;IS IT AN 11 OR A 70
2121  006654  100417                       BMI     15$                     ;IT'S A 70
2122  006656  005737  004122               TST     BEFORE                  ;ARE WE HERE FOR SHORTS
2123  006662  001406                       BEQ     14$                     ;NO
2124  006664  033777  004130  174470       BIT     $CS3,@RHCS3             ;ANY EXTRA ERROR BITS
2125  006672  001410                       BEQ     15$                     ;NO
2126  006674  000137  007230               JMP     13$                     ;WE FOUND AN ERROR
2127  006700  032777  174000  174454  14$:    BIT     #WCELO!WCEHI!DPELO!DPEHI!APE,@RHCS3
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2128
2129  006706  001412                          BEQ     5$                      ;TEST ERROR BITS
2130  006710  000137  007230                  JMP     13$                     ;NO ERROR BITS SET
2131  006714  005737  004122          15$:    TST     BEFORE                  ;GO REPORT ERROR BITS
2132  006720  001405                          BEQ     5$                      ;ARE WE HERE FOR SHORTS
2133  006722  033777  004124  174400          BIT     $CS1,@RHCS1             ;NO
2134  006730  001070                          BNE     2$                      ;YES SEE IF THERE ARE ANY
2135  006732  000404                          BR      16$                     ;NONE FOUND
2136  006734  032777  160000  174366  5$:     BIT     #TRE!SC!MCPE,@RHCS1     ;GO CHECK THE NEXT ONE
2137  006742  001063                          BNE     2$                      ;ANY ERROR BITS SET IN CS1
2138  006744  005737  004122          16$:    TST     BEFORE                  ;YES,FIND THEM
2139  006750  001405                          BEQ     6$                      ;ARE WE HERE FOR SHORTS
2140  006752  033777  004126  174360          BIT     $CS2,@RHCS2             ;NO
2141  006760  001065                          BNE     3$                      ;ANY SHORTS
2142  006762  000404                          BR      17$                     ;YES
2143  006764  032777  177400  174346  6$:     BIT     #MPE!MXF.PGE!NEM!NED!UPE!WCE!DLT,@RHCS2 ;NO,CONTINUE
2144                                                                          ;ARE ANY ERROR BITS SET IN CS2
2145  006772  001060                          BNE     3$                      ;YES ,FIND THEM
2146  006774  005737  004122          17$:    TST     BEFORE                  ;ARE WE HERE FOR SHORTS
2147  007000  001405                          BEQ     7$                      ;NO
2148  007002  033777  004132  174332          BIT     $ST,@RHST               ;ANY SHORTS ?
2149  007010  001076                          BNE     9$                      ;YES
2150  007012  000404                          BR      18$                     ;CONTINUE
2151  007014  032777  140000  174320  7$:     BIT     #ERR!ATA,@RHST          ;ARE ANY ERROR BITS SET IN ER1
2152  007022  001071                          BNE     9$                      ;YES ,GO FIND THEM
2153  007024  005737  004122          18$:    TST     BEFORE                  ;ARE WE HERE FOR SHORTS
2154  007030  001405                          BEQ     8$                      ;NO
2155  007032  033777  004134  174304          BIT     $ER,@RHER               ;YES ,SEE IF THER ARE ANY
2156  007040  001046                          BNE     4$                      ;WE FOUND SOME
2157  007042  000404                          BR      19$                     ;CONTINUE
2158  007044  032777  030175  174272  8$:     BIT     #ILF!RMR!CPE!DPE!RMBEX!RFAIL!DTE!OPI,@RHER
2159                                                                          ;ANY ERRORS IN RHER REG.
2160  007052  001041                          BNE     4$                      ;YES,GO FIND THEM
2161  007054  005737  001210          19$:    TST     $TMP5                   ;IS IT BEING USED AS A SUBROUTINE
2162  007060  001501                          BEQ     LEAVE                   ;YES
2163  007062  005037  001210                  CLR     $TMP5                   ;SETUP SUB ROUTINE FLAG
2164  007066  000477                          BR      ERR2                    ;WAS THERE ANY ERRORS
2165  007070  004737  050070          1$:     JSR     R7,FOUND                ;DEVICE NO. ERROR
2166  007074  017737  174240  004100          MOV     @RHCS2,RBUF             ;GET CONTENTS
2167  007102  104071                          ERROR   71                      ;DEVICE NO. NOT =7
2168  007104  004737  046416                  JSR     R7,WATBIT               ;FIND BIT NOT SET
2169  007110  000660                          BR      12$                     ;TEST REST OF ERROR BITS
2170  007112  004737  047750          2$:     JSR     R7,FINDIT               ;RHCS1 IN ERROR
2171  007116  017737  174206  004100          MOV     @RHCS1,RBUF             ;GET CONTENTS
2172  007124  104072                          ERROR   72                      ;ERROR BIT SET IN CS1
2173  007126  004737  046416                  JSR     R7,WATBIT               ;WHAT BIT IS SET
2174  007132  000704                          BR      16$                     ;TEST REST OF REGISTERS
2175  007134  004737  047774          3$:     JSR     R7,LOOKFO               ;ERROR IN RHCS2
2176  007140  017737  174174  004100          MOV     @RHCS2,RBUF             ;GET CONTENTS
2177  007146  104073                          ERROR   73                      ;BIT SET IN CS2
2178  007150  004737  046416                  JSR     R7,WATBIT               ;TELL WHAT BIT
2179  007154  000707                          BR      17$                     ;CONTINUE TEST
2180  007156  004737  050020          4$:     JSR     R7,LOOKED               ;RHER HAS A BIT SET
2181  007162  017737  174156  004100          MOV     @RHER,RBUF              ;GET CONTENTS
2182  007170  104074                          ERROR   74                      ;ER1 HAS AN ERROR BIT SET
2183  007172  004737  046416                  JSR     R7,WATBIT               ;TELL WHAT BIT
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2184  007176  005737  001210            TST     $TMP5                   ;IS IT BEING USED AS A SUBROUTINE
2185  007202  001430                    BEQ     LEAVE                   ;YES
2186  007204  000430                    BR      ERR2                    ;WAS THERE ANY ERRORS
2187  007206  004737  050044  9$:       JSR     R7,FIND                 ;RHST HAS AN ERROR BIT SET
2188  007212  017737  174124  004100    MOV     @RHST,RBUF              ;GET CONTENTS
2189  007220  104075                    ERROR   75                      ;ERROR IN RHST
2190  007222  004737  046416            JSR     R7,WATBIT               ;TELL WHAT BIT
2191  007226  000676                    BR      T8$                     ;CONTINUE TEST
2192  007230  004737  050114  3$:       JSR     R7,CS3ERR               ;CLEAR UNWANTED BITS
2193  007234  017737  174122  004100    MOV     @RHCS3,RBUF             ;GET REG. CONTENTS
2194  007242  104176                    ERROR   176                     ;RHCS3 HAS AN ERROR BIT SET
2195  007244  004737  046416            JSR     R7,WATBIT               ;TELL WHAT BITS
2196  007250  000137  006714            JMP     15$                     ;CONT CHECK
2197  007254  000137  006652            JMP     12$                     ;START JSR WHYFO
2198  007260  000137  007254  WHYFO:    JMP     .-4                     ;FIND ERROR BITS SET
2199  007264  000207          LEAVE:    RTS     R7                      ;GO BACK TO PROGRAM THAT SENT YOU HERE
2200  007266  004737  050244  ERR2:     JSR     R7,ERRTST
2201                                    ;;**************************************************************
2202                                    ;*TEST 3         THIS TEST SEES IF THE TESTER IS CONNECTED
2203                                            ;*THIS TEST SEES IF THE DEVICE CODE IS
2204                                            ;*A 40 TO SAY AN RH SIMULATOR IS ATTACHED
2205                                    ;;**************************************************************
2206  007272  000004          TST3:     SCOPE
2207  007274  012777  000040  174036            MOV     #CLR,@RHCS2             ;CLEAR TESTER
2208  007302  012777  000007  174030            MOV     #7,@RHCS2               ;UNIT SEVEN
2209  007310  017737  174042  001172            MOV     @RHDT,$REG4             ;GET DRIVE TYPE
2210  007316  022737  000040  001172            CMP     #40,$REG4               ;IS IT THE TESTER
2211  007324  001401                            BEQ     ERR4                    ;WAS  THERE AN ERROR
2212  007326  104034                            ERROR   34                      ;TESTER NOT CONNECTED
2213  007330  004737  050244          ERR4:     JSR     R7,ERRTST               ;
2214
2215
2216                                    ;;**************************************************************
2217                                    ;*TEST 4         WC CLEAR TEST
2218                                            ;*THIS TEST WILL SEE THAT WHEN A CLEAR IS GIVEN
2219                                            ;*THE WORD COUNT REGISTER REMAINS THE SAME
2220                                    ;;**************************************************************
2221  007334  000004          TST4:     SCOPE
2222  007336  012737  000001  001212            MOV     #1,$TIMES       ;;DO 1 ITERATION
2223  007344  012777  177777  173760            MOV     #-1,@RHWC               ;MAKE WC NEGITIVE
2224  007352  022777  177777  173754            CMP     #-1,@RHWC               ;WAS IT LOADED CORRECTLY
2225  007360  001056                            BNE     WCERR1                  ;NO,ALL BITS DID NOT SET
2226  007362  012777  000040  173750  HERE:     MOV     #CLR,@RHCS2             ;TELL DEVICE TO CLEAR
2227  007370  017737  173734  003420            MOV     @RHCS1,CS1              ;SAVE RHCS1
2228  007376  017737  173730  003444            MOV     @RHWC,WC                ;SAVE WORD COUNT
2229  007404  017737  173724  003414            MOV     @RHBA,BA                ;SAVE BUS ADDRESS
2230  007412  005701                            TST     R1                      ;IS IT AN RH11
2231  007414  001406                            BEQ     87$                     ;NO IT'S A 70
2232  007416  005037  003416                    CLR     BAE                     ;CLEAR BAE
2233  007422  005037  003424                    CLR     CS3                     ;CLEAR CS3
2234  007426  000137  007446                    JMP     86$                     ;CONTINUE
2235  007432  017737  173722  003416  87$:      MOV     @RHBAE,BAE              ;SAVE BUS ADDRESS EXTENSION
2236  007440  017737  173716  003424            MOV     @RHCS3,CS3              ;SAVE RHCS3
2237  007446  017737  173666  003422  86$:      MOV     @RHCS2,CS2              ;SAVE CS2
2238  007454  017737  173662  003432            MOV     @RHST,DS1               ;SAVE TESTER STATUS
2239  007462  017737  173656  003436            MOV     @RHER,ER1               ;SAVE ERROR REGISTER
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2240  007470  017737  173654  003442          MOV     @RHTDB,TDR          ;SAVE TESTER DATA REG.
2241  007476  017737  173634  003440          MOV     @RHMR2,TC           ;SAVE MR2 TESTER REG.
2242  007504  005777  173622                  TST     @RHWC               ;DID IT CLEAR
2243  007510  001434                          BEQ     WCERR2              ;YES,CLEAR SHOULD NOT CLEAR WC
2244  007512  000137  007632                  JMP     @#DOIT              ;GO TO NEXT CHECK
2245  007516  005777  173610          WCERR1: TST     @RHWC               ;DID ANY BITS LOAD
2246  007522  001416                          BEQ     1$                  ;NO
2247  007524  012737  177777  001162          MOV     #-1,$REGO           ;SAVE WHAT WC SHOULD HAVE BEEN
2248  007532  017737  173574  003444          MOV     @RHWC,WC            ;SAVE CONTENTS OF WC
2249  007540  104042                          ERROR   42                  ;ALL BITS DID NOT SET
2250  007542  013737  003444  001200          MOV     WC,$TMP1            ;SETUP FOR WATBIT
2251  007550  004737  046416                  JSR     R7,WATBIT           ;FIND THE BIT(S)
2252  007554  000137  007362                  JMP     @#HERE              ;SEE IF BITS SET CLEAR
2253  007560  013737  177777  001162  1$:     MOV     -1,$REGO            ;SETUP FOR ERROR
2254  007566  017737  173540  003444          MOV     @RHWC,WC            ;GET BAD DATA
2255  007574  104043                          ERROR   43                  ;WC DID NOT LOAD ANY BITS
2256  007576  000137  007632                  JMP     @#DOIT              ;GO TO NEXT REG. TEST
2257  007602  012737  177777  001162  WCERR2: MOV     #-1,$REGO           ;SETUP GOOD DATA
2258  007610  017737  173516  003444          MOV     @RHWC,WC            ;GET BAD DATA
2259  007616  013737  003444  001200          MOV     WC,$TMP1            ;SETUP FOR WATBIT
2260  007624  104044                          ERROR   44                  ;SOME BITS CLEARED IN WC
2261  007626  004737  046416                  JSR     R7,WATBIT           ;FIND THE BITS THAT CLEARED
2262  007632  004737  006626          DOIT:   JSR     R7,CLEER            ;CLEAR ERRORS
2263  007636  004737  050244                  JSR     R7,ERRTST
```

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

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

                        ;;*********************************************************************
007642  000004           TST5:   SCOPE
007644  012777  177776  173462 ITDO:  MOV     #-2,@RHBA               ;SET ALL BITS IN RHBA
007652  022777  177776  173454        CMP     #-2,@RHBA               ;ARE THEY ALL SET
007660  001066                       BNE     1$                      ;ALL THE BITS DID NOT SET
007662  012777  000040  173450       MOV     #CLR,@RHCS2             ;TELL IT TO CLEAR
007670  017737  173434  003420       MOV     @RHCS1,CS1              ;SAVE RHCS1
007676  017737  173430  003444       MOV     @RHWC,WC                ;SAVE WORD COUNT
007704  017737  173424  003414       MOV     @RHBA,BA                ;SAVE BUS ADDRESS
007712  005701                       TST     R1                      ;IS IT AN RH11
007714  001406                       BEQ     87$                     ;NO IT'S A 70
007716  005037  003416               CLR     BAE                     ;CLEAR BAE
007722  005037  003424               CLR     CS3                     ;CLEAR CS3
007726  000137  007746               JMP     86$                     ;CONTINUE
007732  017737  173422  003416 87$:  MOV     @RHBAE,BAE              ;SAVE BUS ADDRESS EXTENSION
007740  017737  173416  003424       MOV     @RHCS3,CS3              ;SAVE RHCS3
007746  017737  173366  003422 86$:  MOV     @RHCS2,CS2              ;SAVE CS2
007754  017737  173362  003432       MOV     @RHST,DS1               ;SAVE TESTER STATUS
007762  017737  173356  003436       MOV     @RHER,ER1               ;SAVE ERROR REGISTER
007770  017737  173354  003442       MOV     @RHTDB,TDR              ;SAVE TESTER DATA REG.
007776  017737  173334  003440       MOV     @RHMR2,TC               ;SAVE MR2 TESTER REG.
010004  005777  173324               TST     @RHBA                   ;IS IT ZERO
010010  001421                       BEQ     TOIT                    ;TEST IS GOOD
010012  005037  001162               CLR     $REG0                   ;CREATE GOOD DATA
010016  017737  173312  001200       MOV     @RHBA,$TMP1             ;SETUP FOR WATBIT
010024  104045                       ERROR   45                      ;RHBA DID NOT CLEAR
010026  004737  046416               JSR     R7,WATBIT               ;FIND BITS STILL SET
010032  000137  010054               JMP     @#TOIT                  ;GO TO NEXT REG. TES1
010036  012737  177776  001162 1$:   MOV     #-2,$REG0               ;SETUP GOOD DATA
010044  017737  173264  001200       MOV     @RHBA,$TMP1             ;SETUP FOR WATBIT
010052  104046                       ERROR   46                      ;BITS DID NOT SET IN RHBA
010054                       TOIT:
010054  004737  006626               JSR     R7,CLEER                ;CLEAR ERRORS
010060  004737  050244               JSR     R7,ERRTST
                        ;;*********************************************************************
                        ;*TEST 6         RHBAE CLEAR TEST
                                ;*THIS TEST CHECKS THAT WHEN A CLEAR IS GENERATED
                                ;*THE BUS ADDRESS EXTENSION REGISTER IS CLEARED
                        ;;*********************************************************************
010064  000004           TST6:   SCOPE
010066  005701                       TST     R1                      ;IS IT A 70 OR AN 11
010070  100510                       BMI     TST7            ;;SKIP OVER TEST FOR RH11
010072  012777  000077  173260 WATFOR: MOV     #77,@RHBAE              ;SET ALL BITS IN RHBAE
010100  022777  000077  173252        CMP     #77,@RHBAE              ;ARE THEY ALL SET
010106  001066                       BNE     1$                      ;ALL THE BITS DID NOT SET
010110  012777  000040  173222       MOV     #CLR,@RHCS2             ;TELL IT TO CLEAR
010116  017737  173206  003420       MOV     @RHCS1,CS1              ;SAVE RHCS1
010124  017737  173202  003444       MOV     @RHWC,WC                ;SAVE WORD COUNT
010132  017737  173176  003414       MOV     @RHBA,BA                ;SAVE BUS ADDRESS
010140  005701                       TST     R1                      ;IS IT AN RH11
```

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2320  010142  001406                          BEQ     87$                     ;NO IT'S A 70
2321  010144  005037  003416                  CLR     BAE                     ;CLEAR BAE
2322  010150  005037  003424                  CLR     CS3                     ;CLEAR CS3
2323  010154  000137  010174                  JMP     86$                     ;CONTINUE
2324  010160  017737  173174  003416  87$:    MOV     @RHBAE,BAE              ;SAVE BUS ADDRESS EXTENSION
2325  010166  017737  173170  003424          MOV     @RHCS3,CS3              ;SAVE RHCS3
2326  010174  017737  173140  003422  86$:    MOV     @RHCS2,CS2              ;SAVE CS2
2327  010202  017737  173134  003432          MOV     @RHST,DS1               ;SAVE TESTER STATUS
2328  010210  017737  173130  003436          MOV     @RHER,ER1               ;SAVE ERROR REGISTER
2329  010216  017737  173126  003442          MOV     @RHTDB,TDR              ;SAVE TESTER DATA REG.
2330  010224  017737  173106  003440          MOV     @RHMR2,TC               ;SAVE MR2 TESTER REG.
2331  010232  005777  173122                  TST     @RHBAE                  ;IS IT ZERO
2332  010236  001421                          BEQ     WATFIV                  ;TEST IS GOOD
2333  010240  005037  001162                  CLR     $REG0                   ;CREATE GOOD DATA
2334  010244  017737  173110  001200          MOV     @RHBAE,$TMP1            ;SETUP FOR WATBIT
2335  010252  104100                          ERROR   100                     ;RHBAE DID NOT CLEAR
2336  010254  004737  046416                  JSR     R7,WATBIT               ;FIND BITS STILL SET
2337  010260  000137  010302                  JMP     @#WATFIV                        ;GO TO NEXT REG. TEST
2338  010264  012737  000077  001162  1$:     MOV     #77,$REG0               ;SETUP GOOD DATA
2339  010272  017737  173062  001200          MOV     @RHBAE,$TMP1            ;SETUP FOR WATBIT
2340  010300  104101                          ERROR   101                     ;BITS DID NOT SET IN RHBAE
2341  010302                          WATFIV:
2342  010302  004737  006626                  JSR     R7,CLEER                ;CLEAR ERRORS
2343  010306  004737  050244                  JSR     R7,ERRTST
2344                                  ;;**************************************************************
2345                                  ;*TEST 7         RHDB CLEAR TEST
2346                                  ;*THIS TEST CHECKS THAT WHEN A CLEAR IS GENERATED
2347                                  ;*OUTPUT READY IS NEGATED
2348                                  ;;**************************************************************
2349  010312  000004                  TST7:   SCOPE
2350  010314  012777  177777  173030          MOV     #-1,@RHDB               ;SET ALL BITS IN RHDB
2351  010322  005037  003446                  CLR     BITCNT                  ;CLEAR BIT COUNTER
2352  010326  032777  000200  173004  18$:     BIT     #OR,@RHCS2              ;IS OR SET
2353  010334  001015                          BNE     DBMG                    ;BIT IS SET
2354  010336  005237  003446                  INC     BITCNT                  ;COUNT UP
2355  010342  001371                          BNE     18$                     ;NOT FINISHED COUNTING
2356  010344  005037  003446                  CLR     BITCNT                  ;GET READY TO DO IT AGAIN
2357  010350  032777  000200  172762  19$:     BIT     #OR,@RHCS2              ;IS IT SET YET?
2358  010356  001004                          BNE     DBMG                    ;YES
2359  010360  005237  003446                  INC     BITCNT                  ;COUNT UP
2360  010364  001401                          BEQ     DBMG                    ;BIT IS NOT GOING TO SET
2361  010366  000770                          BR      19$
2362  010370                          DBMG:
2363  010370  017737  172734  003420          MOV     @RHCS1,CS1              ;SAVE RHCS1
2364  010376  017737  172730  003444          MOV     @RHWC,WC                ;SAVE WORD COUNT
2365  010404  017737  172724  003414          MOV     @RHBA,BA                ;SAVE BUS ADDRESS
2366  010412  005701                          TST     R1                      ;IS IT AN RH11
2367  010414  001406                          BEQ     87$                     ;NO IT'S A 70
2368  010416  005037  003416                  CLR     BAE                     ;CLEAR BAE
2369  010422  005037  003424                  CLR     CS3                     ;CLEAR CS3
2370  010426  000137  010446                  JMP     86$                     ;CONTINUE
2371  010432  017737  172722  003416  87$:    MOV     @RHBAE,BAE              ;SAVE BUS ADDRESS EXTENSION
2372  010440  017737  172716  003424          MOV     @RHCS3,CS3              ;SAVE RHCS3
2373  010446  017737  172666  003422  86$:    MOV     @RHCS2,CS2              ;SAVE CS2
2374  010454  017737  172662  003432          MOV     @RHST,DS1               ;SAVE TESTER STATUS
2375  010462  017737  172656  003436          MOV     @RHER,ER1               ;SAVE ERROR REGISTER
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2376  010470  017737  172654  003442          MOV     @RHTDB,TDR              ;SAVE TESTER DATA REG.
2377  010476  017737  172634  003440          MOV     @RHMR2,TC               ;SAVE MR2 TESTER REG.
2378  010504  032777  000200  172626          BIT     #OR,@RHCS2              ;IS OUTPUT READY SET
2379  010512  001001                          BNE     HURTS                   ;YES ,CONTINUE TEST
2380  010514  104041                          ERROR   41                      ;OUTPUT READY DID NOT SET
2381  010516  022777  177777  172626  HURTS:  CMP     #-1,@RHDB               ;DID INFO GET LOADED TO DB
2382  010524  005037  003446                  CLR     BITCNT                  ;CLEAR BIT COUNTER
2383  010530  032777  000200  172602  18$:    BIT     #OR,@RHCS2              ;IS OR SET
2384  010536  001015                          BNE     DBMSG                   ;BIT IS SET
2385  010540  005237  003446                  INC     BITCNT                  ;COUNT UP
2386  010544  001371                          BNE     18$                     ;NOT FINISHED COUNTING
2387  010546  005037  003446                  CLR     BITCNT                  ;GET READY TO DO IT AGAIN
2388  010552  032777  000200  172560  19$:    BIT     #OR,@RHCS2              ;IS IT SET YET?
2389  010560  001004                          BNE     DBMSG                   ;YES
2390  010562  005237  003446                  INC     BITCNT                  ;COUNT UP
2391  010566  001401                          BEQ     DBMSG                   ;BIT IS NOT GOING TO SET
2392  010570  000770                          BR      19$
2393  010572                          DBMSG:
2394  010572  012777  000040  172540          MOV     #CLR,@RHCS2             ;TELL IT TO CLEAR
2395  010600  005037  003446                  CLR     BITCNT                  ;CLEAR THE COUNTER
2396  010604  032777  000200  172526  18$:    BIT     #OR,@RHCS2              ;DID OUTPUT READY CLEAR
2397  010612  001403                          BEQ     SNAFOO                  ;YES GET OUT OF LOOP
2398  010614  005237  003446                  INC     BITCNT                  ;INCREMENT COUNT LOOP
2399  010620  001371                          BNE     18$                     ;CONTINUE LOOP IF NO CARRY
2400  010622  032777  000200  172510  SNAFOO: BIT     #OR,@RHCS2              ;IS OUTPUT READY CLEARED
2401  010630  001403                          BEQ     1$                      ;YES,EXIT TEST
2402  010632  104114                          ERROR   114                     ;OUTPUT READY NOT CLEARED
2403                                                                          ;BY SETTING CLR IN RHCS2
2404  010634  004737  007260                  JSR     R7,WHYFO                ;ANY ERROR BITS SET
2405  010640  004737  006626          1$:     JSR     R7,CLEER                ;CLEAR ERRORS
2406  010644  004737  050244                  JSR     R7,ERRTST
2407                                  ;;**********************************************************************
2408                                  ;*TEST 10        PROM REGISTER DECODE TEST
2409                                          ;*THIS TEST CHECKS THAT THE PROM
2410                                          ;*CAN ACCESS ALL REGISTERS
2411                                  ;;**********************************************************************
2412  010650  000004                  TST10:  SCOPE
2413  010652  023727  003366  160100          CMP     DEVIC1,#160100          ;CHECK FOR WHAT REG END
2414  010660  001000                          BNE     1$                      ;WE ARE OK
2415  010662  013704  003356          1$:     MOV     RHDT,R4                 ;SETUP TO TEST RH11
2416  010666  005724                          TST     (R4)+                   ;CORRECT ADDRESS
2417  010670  023704  003360                  CMP     RHBAE,R4                ;ARE ALL REGISTERS CHECKED
2418  010674  001526                          BEQ     ERR3                    ;WERE THERE ANY ERRORS
2419  010676  005724                  2$:     TST     (R4)+                   ;TEST REGISTER
2420  010700  001004                          BNE     3$                      ;SOME INFORMATION WAS FOUND
2421  010702  023704  003360                  CMP     RHBAE,R4                ;ARE ALL REGISTERS CHECKED
2422  010706  001521                          BEQ     ERR3                    ;WAS THERE ANY ERRORS
2423  010710  000772                          BR      2$                      ;TEST NOT COMPLETED
2424  010712  005744                  3$:     TST     -(R4)                   ;CORRECT ADDRESS
2425  010714  010437  003416                  MOV     R4,BAE                  ;SAVE ADDRESS
2426  010720  011437  001162                  MOV     (R4),$REG0              ;GET CONTENTS
2427  010724  017737  172416  003412          MOV     @RHAS,AS                ;GET ATTENTION SUMMARY
2428  010732  104052                          ERROR   52                      ;FALSE INFO IN FAKE REGISTER
2429  010734  005003                          CLR     R3                      ;GET OFFSET READY
2430  010736  013737  003330  003420          MOV     RHCS1,CS1               ;GET ADDRESS TO START CHECKING
2431  010744  027737  172450  001162  29$:    CMP     @CS1,$REG0              ;HAS A REGISTER BEEN FOUND THAT COMPARES
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2432  010752  001412                          BEQ     28$                     ;YES,PRINT IT OUT
2433  010754  023737  003356  003420  30$:    CMP     RHDT,CS1                ;IS IT LAST REG IN RH11
2434  010762  001473                          BEQ     ERR3                    ;WAS THERE ANY ERRORS
2435  010764  062737  000002  003420          ADD     #TWO,CS1                ;NO,CORRECT FOR NEXT CHECK
2436  010772  062703  000004                  ADD     #4,R3                   ;CORRECT OFFSET
2437  010776  000762                          BR      29$                     ;CONTINUE TEST
2438  011000  032737  020000  177570  28$:    BIT     #SW13,@#177570          ;SKIP ERROR PRINTOUT
2439  011006  001024                          BNE     55$                     ;SKIP MESSAGE
2440  011010  104401  011016                  TYPE    ,65$            ;;TYPE ASCIZ STRING
2441  011014  000421                          BR      64$             ;;GET OVER THE ASCIZ
2442                                ;;65$:    .ASCIZ  <15><12>/REGISTER CONTENTS COMPARES TO:/
2443  011060                        64$:
2444  011060  000163  011064        55$:    JMP     27$(R3)                 ;PRINT REGISTER
2445  011064  104053                27$:    ERROR   53                      ;RHCS1
2446  011066  000732                        BR      30$                     ;CONTINUE TEST
2447  011070  104054                        ERROR   54                      ;RHWC
2448  011072  000730                        BR      30$                     ;CONTINUE TEST
2449  011074  104055                        ERROR   55                      ;RHBA
2450  011076  000726                        BR      30$                     ;CONTINUE TEST
2451  011100  104056                        ERROR   56                      ;RHMR2
2452  011102  000724                        BR      30$                     ;CONTINUE TEST
2453  011104  104057                        ERROR   57                      ;RHCS2
2454  011106  000722                        BR      30$                     ;CONTINUE TEST
2455  011110  104060                        ERROR   60                      ;RHST
2456  011112  000720                        BR      30$                     ;CONTINUE TEST
2457  011114  104061                        ERROR   61                      ;RHER
2458  011116  000716                        BR      30$                     ;CONTINUE TEST
2459  011120  104062                        ERROR   62                      ;RHAS
2460  011122  000714                        BR      30$                     ;CONTINUE TEST
2461  011124  104063                        ERROR   63                      ;RHTDB
2462  011126  000712                        BR      30$                     ;CONTINUE TEST
2463  011130  104064                        ERROR   64                      ;RHDB
2464  011132  000710                        BR      30$                     ;CONTINUE TEST
2465  011134  104065                        ERROR   65                      ;RHMR1
2466  011136  000706                        BR      30$                     ;CONTINUE TEST
2467  011140  104066                        ERROR   66                      ;RHDT
2468  011142  000704                        BR      30$                     ;CONTINUE TEST
2469  011144  104067                        ERROR   67                      ;RHBAE
2470  011146  000702                        BR      30$                     ;CONTINUE TEST
2471  011150  104070                        ERROR   70                      ;RHCS3
2472  011152  004737  050244          ERR3:   JSR     R7,ERRTST
2473  011156  004737  006626                  JSR     R7,CLEER                ;CLEAR ERRORS
2474
2475                                ;;**************************************************************
2476                                ;*TEST 11        RHCS3 TEST
2477                                ;*THIS TEST CHECKS THE READ/WRITE BITS
2478                                ;*IN THE RHCS3 REGISTER CAN BE CLEARED AND SET.
2479                                ;;**************************************************************
2480  011162  000004                TST11:  SCOPE
2481  011164  012777  000040  172146        MOV     #CLR,@RHCS2             ;CLEAR TESTER
2482  011172  012777  000007  172140        MOV     #7,@RHCS2               ;SETUP UNIT SEVEN
2483  011200  005701                        TST     R1                      ;IS IT AN RH70
2484  011202  001122                        BNE     TST12           ;;THIS IS A RH11
2485  011204  012737  000004  003450        MOV     #4,LOOCNT               ;SETUP LOOP COUT OF FOUR
2486  011212  012737  000001  001162        MOV     #1,$REG0                ;SETUP BIT TO BE TESTED
2487  011220  013777  001162  172134  1$:    MOV     $REG0,@RHCS3            ;SET THE BIT
```

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2488  011226  017737  172130  003424          MOV     @RHCS3,CS3              ;SAVE CONTENTS OF RHCS3
2489  011234  013737  003424  001200          MOV     CS3,$TMP1               ;SETUP FOR WHAT BIT IF NEEDED
2490  011242  123777  001162  172112          CMPB    $REG0,@RHCS3            ;IS THE BIT SET?
2491  011250  001022                          BNE     2$                      ;NO,GO TO ERROR
2492  011252  006137  001162                  ROL     $REG0                   ;SETUP TO TEST NEXT BIT
2493  011256  005337  003450                  DEC     LOOCNT                  ;-1 TO THE LOOP COUNT
2494  011262  001356                          BNE     1$                      ;TEST NEXT BIT
2495  011264  012737  000100  001162          MOV     #IE3,$REG0              ;SET INTERRUPT BIT
2496  011272  013777  001162  172062          MOV     $REG0,@RHCS3            ;SET BIT
2497  011300  017737  172056  003424          MOV     @RHCS3,CS3                      ;SAVE CONTENTS
2498  011306  023777  001162  172046          CMP     $REG0,@RHCS3                    ;IS BIT SET?
2499  011314  001451                          BEQ     ERR5                    ;WAS THERE AN ERROR
2500  011316                          2$:
2501  011316  017737  172006  003420          MOV     @RHCS1,CS1              ;SAVE RHCS1
2502  011324  017737  172002  003444          MOV     @RHWC,WC                ;SAVE WORD COUNT
2503  011332  017737  171776  003414          MOV     @RHBA,BA                ;SAVE BUS ADDRESS
2504  011340  005701                          TST     R1                      ;IS IT AN RH1'
2505  011342  001406                          BEQ     87$                     ;NO IT'S A 70
2506  011344  005037  003416                  CLR     BAE                     ;CLEAR BAE
2507  011350  005037  003424                  CLR     CS3                     ;CLEAR CS3
2508  011354  000137  011374                  JMP     86$                     ;CONTINUE
2509  011360  017737  171774  003416  87$:    MOV     @RHBAE,BAE              ;SAVE BUS ADDRESS EXTENSION
2510  011366  017737  171770  003424          MOV     @RHCS3,CS3              ;SAVE RHCS3
2511  011374  017737  171740  003422  86$:    MOV     @RHCS2,CS2              ;SAVE CS2
2512  011402  017737  171734  003432          MOV     @RHST,DS1               ;SAVE TESTER STATUS
2513  011410  017737  171730  003436          MOV     @RHER,ER1               ;SAVE ERROR REGISTER
2514  011416  017737  171726  003442          MOV     @RHTDB,TDR              ;SAVE TESTER DATA REG.
2515  011424  017737  171706  003440          MOV     @RHMR2,TC               ;SAVE MR2 TESTER REG.
2516  011432  104035                          ERROR   35                      ;BIT DID NOT SET
2517  011434  004737  046416                  JSR     R7,WATBIT               ;TELL WHAT BIT POSITION IS NO GOOD
2518  011440  004737  050244          ERR5:   JSR     R7,ERRTST
2519  011444  004737  006626                  JSR     R7,CLEER                ;CLEAR ERRORS
2520
2521                                  ;;*********************************************************************
2522                                  ;*TEST 12        RHWC BIT TEST
2523                                        ;*THIS TEST CHECKS THE WORD COUNT REGISTER
2524                                        ;*TO SEE IF ALL BITS CAN BE SET AND CLEARED
2525                                        ;*AND CHECKS THE REGISTER USING ALTERNATE BITS
2526                                        ;*SET (52525) AND USING (125252) TO MAKE SURE
2527                                        ;*IT WORKS WITH ALTERNATE PATTERN.
2528                                  ;;*********************************************************************
2529  011450  000004                  TST12:  SCOPE
2530  011452  012737  000001  001162          MOV     #ONE,$REG0              ;SET UP REFERANCE WORD
2531  011460  013777  001162  171644  RHWCT:  MOV     $REG0,@RHWC             :MOVE BIT INTO WORD COUNT REGISTER
2532  011466  023777  001162  171636          CMP     $REG0,@RHWC             ;IS BIT SET?
2533  011474  001454                          BEQ     1$                      ;YES,CONTINUE BIT TEST
2534  011476  013737  003444  001200          MOV     WC,$TMP1                ;SETUP FOR WATBIT PROG.
2535  011504  004737  046416                  JSR     R7,WATBIT               ;GO TO WATBIT PROGRAM
2536  011510  017737  171614  003420          MOV     @RHCS1,CS1              ;SAVE RHCS1
2537  011516  017737  171610  003444          MOV     @RHWC,WC                ;SAVE WORD COUNT
2538  011524  017737  171604  003414          MOV     @RHBA,BA                ;SAVE BUS ADDRESS
2539  011532  005701                          TST     R1                      ;IS IT AN RH11
2540  011534  001406                          BEQ     87$                     ;NO IT'S A 70
2541  011536  005037  003416                  CLR     BAE                     ;CLEAR BAE
2542  011542  005037  003424                  CLR     CS3                     ;CLEAR CS3
2543  011546  000137  011566                  JMP     86$                     ;CONTINUE
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2544  011552  017737  171602  003416  87$:    MOV     @RHBAE,BAE              ;SAVE BUS ADDRESS EXTENSION
2545  011560  017737  171576  003424          MOV     @RHCS3,CS3              ;SAVE RHCS3
2546  011566  017737  171546  003422  86$:    MOV     @RHCS2,CS2              ;SAVE CS2
2547  011574  017737  171542  003432          MOV     @RHST,DS1               ;SAVE TESTER STATUS
2548  011602  017737  171536  003436          MOV     @RHER,ER1               ;SAVE ERROR REGISTER
2549  011610  017737  171534  003442          MOV     @RHTDB,TDR              ;SAVE TESTER DATA REG.
2550  011616  017737  171514  003440          MOV     @RHMR2,TC               ;SAVF MR2 TESTER REG.
2551  011624  104001                          ERROR   1                       ;BIT WAS NOT SET IN RHWC REG
2552  011626  005737  001162          1$:     TST     $REG0                   ;WAS IT BIT 15 THAT WAS LAST TESTED
2553  011632  100403                          BMI     RHWCA                   ;YES ,GO TO NEXT PART OF TEST
2554  011634  006137  001162                  ROL     $REG0                   ;NO,THEN TEST NEXT BIT
2555  011640  000707                          BR      RHWCT                   ;DO BIT TEST AGAIN
2556  011642  012737  052525  001162  RHWCA:  MOV     #AB,$REG0               ;SET UP ALTERNATE BIT PATTERN
2557  011650  013777  001162  171454          MOV     $REG0,@RHWC             ;SET ALTERNATE BITS
2558  011656  017737  171450  003444          MOV     @RHWC,WC                ;SAVE RHWC CONTENTS
2559  011664  023777  001162  171440          CMP     $REG0,@RHWC             ;ARE THEY ALL SET?
2560  011672  001457                          BEQ     1$                      ;YES,CONTINUE TEST
2561  011674  013737  003444  001200          MOV     WC,$TMP1                ;SETUP FOR WATBIT PROG.
2562  011702  004737  046416                  JSR     R7,WATBIT               ;GO TO WATBIT PROGRAM
2563  011706  017737  171416  003420          MOV     @RHCS1,CS1              ;SAVE RHCS1
2564  011714  017737  171412  003444          MOV     @RHWC,WC                ;SAVE WORD COUNT
2565  011722  017737  171406  003414          MOV     @RHBA,BA                ;SAVE BUS ADDRESS
2566  011730  005701                          TST     R1                      ;IS IT AN RH11
2567  011732  001406                          BEQ     87$                     ;NO IT'S A 70
2568  011734  005037  003416                  CLR     BAE                     ;CLEAR BAE
2569  011740  005037  003424                  CLR     CS3                     ;CLEAR CS3
2570  011744  000137  011764                  JMP     86$                     ;CONTINUE
2571  011750  017737  171404  003416  87$:    MOV     @RHBAE,BAE              ;SAVE BUS ADDRESS EXTENSION
2572  011756  017737  171400  003424          MOV     @RHCS3,CS3              ;SAVE RHCS3
2573  011764  017737  171350  003422  86$:    MOV     @RHCS2,CS2              ;SAVE CS2
2574  011772  017737  171344  003432          MOV     @RHST,DS1               ;SAVE TESTER STATUS
2575  012000  017737  171340  003436          MOV     @RHER,ER1               ;SAVE ERROR REGISTER
2576  012006  017737  171336  003442          MOV     @RHTDB,TDR              ;SAVE TESTER DATA REG.
2577  012014  017737  171316  003440          MOV     @RHMR2,TC               ;SAVE MR2 TESTER REG.
2578  012022  104001                          ERROR   1                       ;TEST FAILED
2579  012024  012737  125252  001162          MOV     #0AB,$REG0              ;SET UP ALTERNATE OPPISITE BITS
2580  012032  013777  001162  171272  1$:     MOV     $REG0,@RHWC             ;SET OPPISITE ALTERNATE BITS
2581  012040  017737  171266  003444          MOV     @RHWC,WC                ;SAVE CONTENTS OF RHWC
2582  012046  023777  001162  171256          CMP     $REG0,@RHWC             ;ARE CORRECT BITS SET?
2583  012054  001454                          BEQ     ERR6                    ;WAS THERE AN ERROR
2584  012056  013737  003444  001200          MOV     WC,$TMP1                ;SETUP FOR WATBIT PROG.
2585  012064  004737  046416                  JSR     R7,WATBIT               ;GO TO WATBIT PROGRAM
2586  012070                          GOOF:
2587  012070  017737  171234  003420          MOV     @RHCS1,CS1              ;SAVE RHCS1
2588  012076  017737  171230  003444          MOV     @RHWC,WC                ;SAVE WORD COUNT
2589  012104  017737  171224  003414          MOV     @RHBA,BA                ;SAVE BUS ADDRESS
2590  012112  005701                          TST     R1                      ;IS IT AN RH11
2591  012114  001406                          BEQ     87$                     ;NO IT'S A 70
2592  012116  005037  003416                  CLR     BAE                     ;CLEAR BAE
2593  012122  005037  003424                  CLR     CS3                     ;CLEAR CS3
2594  012126  000137  012146                  JMP     86$                     ;CONTINUE
2595  012132  017737  171222  003416  87$:    MOV     @RHBAE,BAE              ;SAVE BUS ADDRESS EXTENSION
2596  012140  017737  171216  003424          MOV     @RHCS3,CS3              ;SAVE RHCS3
2597  012146  017737  171166  003422  86$:    MOV     @RHCS2,CS2              ;SAVE CS2
2598  012154  017737  171162  003432          MOV     @RHST,DS1               ;SAVE TESTER STATUS
2599  012162  017737  171156  003436          MOV     @RHER,ER1               ;SAVE ERROR REGISTER
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 2600  012170  017737  171154  003442          MOV     @RHTDB,TDR              ;SAVE TESTER DATA REG.
 2601  012176  017737  171134  003440          MOV     @RHMR2,TC               ;SAVE MR2 TESTER REG.
 2602  012204  104001                          ERROR   1                       ;OPPISITE BIT TEST FAILED
 2603  012206  013737  003332  004142  ERR6:   MOV     RHWC,$RHWC              ;GET READY TO TEST BYTES
 2604  012214  012777  000000  171110          MOV     #ZERO,@RHWC             ;CLEAR WC FIRST
 2605  012222  113777  004120  171712          MOVB    MINUS,@$RHWC            ;CHECK LOBYTE
 2606  012230  022777  000377  171074          CMP     #377,@RHWC              ;ANY EXTRA BITS
 2607  012236  001401                          BEQ     HIBYTE                  ;OK SO FAR
 2608  012240  104200                          ERROR   200                     ;HIBYTE GATE NOT WORKING PROPERLY
 2609  012242  005237  004142          HIBYTE: INC     $RHWC                   ;GET READY FOR NEXT BYTE
 2610  012246  012777  000000  171056          MOV     #ZERO,@RHWC             ;CLEAR WC
 2611  012254  113777  004121  171660          MOVB    MINUS+1,@$RHWC          ;CHECK THE HI BYTE
 2612  012262  022777  177400  171042          CMP     #177400,@RHWC           ;IS IT OK
 2613  012270  001401                          BEQ     ALRIGT                  ;ITS OK
 2614  012272  104200                          ERROR   200                     ;LOBYTE GATE NOT WORKING PROPERLY
 2615  012274  004737  050244          ALRIGT: JSR     R7,ERRTST
 2616  012300  012777  000000  171024          MOV     #ZERO,@RHWC             ;CLEAR WORD COUNT
 2617  012306  004737  006626                  JSR     R7,CLEER                ;CLEAR ERROKS
 2618
 2619
 2620                                  ;;*****************************************************************
 2621                                  ;*TEST 13        RHBAE BIT TEST
 2622                                          ;*THIS TEST TESTS THE RHBAE REGISTER
 2623                                          ;*ONLY IF THE RH IS AN RH70,RH11'S
 2624                                          ;*DO NOT HAVE AN RHBAE REGISTER
 2625                                  ;;*****************************************************************
 2626  012312  000004                  TST13:  SCOPE
 2627  012314  005701                          TST     R1                      ;IS RH AN RH70
 2628  012316  001104                          BNE     TST14           ;;NO PASS OVER TEST
 2629  012320  012737  000001  001162          MOV     #1,$REG0                ;SET UP BIT TEST
 2630  012326  013777  001162  171024  BAETST: MOV     $REG0,@RHBAE            ;SET BIT IN RHBAE REGISTER
 2631  012334  017737  171020  003416          MOV     @RHBAE,BAE              ;SAVE CONTENTS OF RHBAE REGISTER
 2632  012342  023777  001162  171010          CMP     $REG0,@RHBAE            ;IS IT SET?
 2633  012350  001454                          BEQ     1$                      ;YES CONTINUE TEST
 2634  012352  013737  003416  001200          MOV     BAE,$TMP1               ;SETUP FOR WATBIT PROG.
 2635  012360  004737  046416                  JSR     R7,WATBIT               ;GO TO WATBIT PROGRAM
 2636  012364  017737  170740  003420          MOV     @RHCS1,CS1              ;SAVE RHCS1
 2637  012372  017737  170734  003444          MOV     @RHWC,WC                ;SAVE WORD COUNT
 2638  012400  017737  170730  003414          MOV     @RHBA,BA                ;SAVE BUS ADDRESS
 2639  012406  005701                          TST     R1                      ;IS IT AN RH11
 2640  012410  001406                          BEQ     87$                     ;NO IT'S A 70
 2641  012412  005037  003416                  CLR     BAE                     ;CLEAR BAE
 2642  012416  005037  003424                  CLR     CS3                     ;CLEAR CS3
 2643  012422  000137  012442                  JMP     86$                     ;CONTINUE
 2644  012426  017737  170726  003416  87$:    MOV     @RHBAE,BAE              ;SAVE BUS ADDRESS EXTENSION
 2645  012434  017737  170722  003424          MOV     @RHCS3,CS3              ;SAVE RHCS3
 2646  012442  017737  170672  003422  86$:    MOV     @RHCS2,CS2              ;SAVE CS2
 2647  012450  017737  170666  003432          MOV     @RHST,DS1               ;SAVE TESTER STATUS
 2648  012456  017737  170662  003436          MOV     @RHER,ER1               ;SAVE ERROR REGISTER
 2649  012464  017737  170660  003442          MOV     @RHTDB,TDR              ;SAVE TESTER DATA REG.
 2650  012472  017737  170640  003440          MOV     @RHMR2,TC               ;SAVE MR2 TESTER REG.
 2651  012500  104002                          ERROR   2                       ;BIT DID NIT SET
 2652  012502  022737  000040  001162  1$:     CMP     #40,$REG0               ;IS IT LAST BIT TO BE TESTED
 2653  012510  001403                          BEQ     ERR7                    ;WAS THERE AN ERROR
 2654  012512  006137  001162                  ROL     $REG0                   ;NO,SET UP FOR NEXT BIT
 2655  012516  000703                          BR      BAETST                  ;CONTINUE TEST
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2656  012520  004737  006626          ERR7:   JSR     R7,CLEER                ;CLEAR ERRORS
2657  012524  004737  050244                  JSR     R7,ERRTST
2658
2659
2660                                  ;;*********************************************************************
2661                                  ;*TEST 14        RHBA BIT TEST
2662                                  ;*THIS TEST TESTS THE BUS ADDRESS REGISTER
2663                                  ;*BY FIRST ALTERNATLY SETTING AND CLEARING
2664                                  ;*BITS IN THE BA REGISTER AND THEN BY USING
2665                                  ;*AN ALTERNATE BIT PATTERN (52525) AND AN
2666                                  ;*OPPOSITE BIT PATTERN (125252).
2667                                  ;;*********************************************************************
2668  012530  000004                  TST14:  SCOPE
2669
2670  012532  012737  000002  001162          MOV     #TWO,$REG0              ;SET UP BIT TEST
2671  012540  013777  001162  170560  BATST:  MOV     $REG0,@RHBA             ;SET BIT IN RHBA REGISTER
2672  012546  017737  170562  003414          MOV     @RHBA,BA                ;SAVE CONTENTS OF BA REGISTER
2673  012554  023777  001162  170552          CMP     $REG0,@RHBA             ;ARE CORRECT BITS SET
2674  012562  001454                          BEQ     1$                      ;YES,CONTINUE TEST
2675  012564  013737  003414  001200          MOV     BA,$TMP1                ;SETUP FOR WATBIT PROG.
2676  012572  017737  170532  003420          MOV     @RHCS1,CS1              ;SAVE RHCS1
2677  012600  017737  170526  003444          MOV     @RHWC,WC                ;SAVE WORD COUNT
2678  012606  017737  170522  003414          MOV     @RHBA,BA                ;SAVE BUS ADDRESS
2679  012614  005701                          TST     R1                      ;IS IT AN RH11
2680  012616  001406                          BEQ     87$                     ;NO IT'S A 70
2681  012620  005037  003416                  CLR     BAE                     ;CLEAR BAE
2682  012624  005037  003424                  CLR     CS3                     ;CLEAR CS3
2683  012630  000137  012650                  JMP     86$                     ;CONTINUE
2684  012634  017737  170520  003416  87$:    MOV     @RHBAE,BAE              ;SAVE BUS ADDRESS EXTENSION
2685  012642  017737  170514  003424          MOV     @RHCS3,CS3              ;SAVE RHCS3
2686  012650  017737  170464  003422  86$:    MOV     @RHCS2,CS2              ;SAVE CS2
2687  012656  017737  170460  003432          MOV     @RHST,DS1               ;SAVE TESTER STATUS
2688  012664  017737  170454  003436          MOV     @RHER,ER1               ;SAVE ERROR REGISTER
2689  012672  017737  170452  003442          MOV     @RHTDB,TDR              ;SAVE TESTER DATA REG.
2690  012700  017737  170432  003440          MOV     @RHMR2,TC               ;SAVE MR2 TESTER REG..
2691  012706  104003                          ERROR   3                       ;NO,CORRECT BITS ARE NOT SET
2692  012710  004737  046416                  JSR     R7,WATBIT               ;GO TO WATBIT PROGRAM
2693  012714  005737  001162          1$:     TST     $REG0                   ;WAS BIT 15 THE LAST BIT TESTED
2694  012720  100403                          BMI     BATSTA                  ;YES,GO TO ALTERNATE BIT TEST
2695  012722  006137  001162                  ROL     $REG0                   ;NO,SET UP TO TEST NEXT BIT
2696  012726  000704                          BR      BATST                   ;CONTINUE BIT TEST
2697  012730  012737  052525  001162  BATSTA: MOV     #AB,$REG0               ;SET UP BIT PATTERN
2698  012736  042737  000001  001162          BIC     #ONE,$REG0              ;CLEAR BIT 0 POSITION
2699  012744  013777  001162  170362          MOV     $REG0,@RHBA             ;SET BITS IN RHBA REGISTER
2700  012752  017737  170356  003414          MOV     @RHBA,BA                ;SAVE CONTENTS OF BA REGISTER
2701  012760  023777  001162  170346          CMP     $REG0,@RHBA             ;ARE CORRECT BITS SET
2702  012766  001454                          BEQ     1$                      ;YES,CONTINUE TEST
2703  012770  013737  003414  001200          MOV     BA,$TMP1                ;SETUP FOR WATBIT PROG.
2704  012776  017737  170326  003420          MOV     @RHCS1,CS1              ;SAVE RHCS1
2705  013004  017737  170322  003444          MOV     @RHWC,WC                ;SAVE WORD COUNT
2706  013012  017737  170316  003414          MOV     @RHBA,BA                ;SAVE BUS ADDRESS
2707  013020  005701                          TST     R1                      ;IS IT AN RH11
2708  013022  001406                          BEQ     87$                     ;NO IT'S A 70
2709  013024  005037  003416                  CLR     BAE                     ;CLEAR BAE
2710  013030  005037  003424                  CLR     CS3                     ;CLEAR CS3
2711  013034  000137  013054                  JMP     86$                     ;CONTINUE
```

```
2712  013040  017737  170314  003416  87$:    MOV     @RHBAE,BAE              ;SAVE BUS ADDRESS EXTENSION
2713  013046  017737  170310  003424          MOV     @RHCS3,CS3              ;SAVE RHCS3
2714  013054  017737  170260  003422  86$:    MOV     @RHCS2,CS2              ;SAVE CS2
2715  013062  017737  170254  003432          MOV     @RHST,DS1               ;SAVE TESTER STATUS
2716  013070  017737  170250  003436          MOV     @RHER,ER1               ;SAVE ERROR REGISTER
2717  013076  017737  170246  003442          MOV     @RHTDB,TDR              ;SAVE TESTER DATA REG.
2718  013104  017737  170226  003440          MOV     @RHMR2,TC               ;SAVE MR2 TESTER REG.
2719  013112  104003                          ERROR   3                       ;NO,CORRECT BITS ARE NOT SET
2720  013114  004737  046416                  JSR     R7,WATBIT               ;GO TO WATBIT PROGRAM
2721  013120  012737  125252  001162  1$:     MOV     #0AB,$REG0              ;SET UP OPPOSITE ALTERNATE BIT TEST
2722  013126  013777  001162  170200          MOV     $REG0,@RHBA             ;SET BITS IN RHBA REGISTER
2723  013134  017737  170174  003414          MOV     @RHBA,BA                ;SAVE CONTENTS OF BA REGISTER
2724  013142  023777  001162  170164          CMP     $REG0,@RHBA             ;ARE CORRECT BITS SET
2725  013150  001454                          BEQ     ERR10                   ;WAS THERE AN ERROR
2726  013152  013737  003414  001200          MOV     BA,$TMP1                ;SETUP FOR WATBIT PROG.
2727  013160                          GOOFED:
2728  013160  017737  170144  003420          MOV     @RHCS1,CS1              ;SAVE RHCS1
2729  013166  017737  170140  003444          MOV     @RHWC,WC                ;SAVE WORD COUNT
2730  013174  017737  170134  003414          MOV     @RHBA,BA                ;SAVE BUS ADDRESS
2731  013202  005701                          TST     R1                      ;IS IT AN RH11
2732  013204  001406                          BEQ     87$                     ;NO IT'S A 70
2733  013206  005037  003416                  CLR     BAE                     ;CLEAR BAE
2734  013212  005037  003424                  CLR     CS3                     ;CLEAR CS3
2735  013216  000137  013236                  JMP     86$                     ;CONTINUE
2736  013222  017737  170132  003416  87$:    MOV     @RHBAE,BAE              ;SAVE BUS ADDRESS EXTENSION
2737  013230  017737  170126  003424          MOV     @RHCS3,CS3              ;SAVE RHCS3
2738  013236  017737  170076  003422  86$:    MOV     @RHCS2,CS2              ;SAVE CS2
2739  013244  017737  170072  003432          MOV     @RHST,DS1               ;SAVE TESTER STATUS
2740  013252  017737  170066  003436          MOV     @RHER,ER1               ;SAVE ERROR REGISTER
2741  013260  017737  170064  003442          MOV     @RHTDB,TDR              ;SAVE TESTER DATA REG.
2742  013266  017737  170044  003440          MOV     @RHMR2,TC               ;SAVE MR2 TESTER REG.
2743  013274  104003                          ERROR   3                       ;NO,CORRECT BITS ARE NOT SET
2744  013276  004737  046416                  JSR     R7,WATBIT               ;GO TO WATBIT PROGRAM
2745  013302  013737  003334  004136  ERR10:  MOV     RHBA,$RHBA              ;GET READY TO TEST BYTES
2746  013310  012777  000000  170016          MOV     #ZERO,@RHBA             ;ZERO THE BUS ADDRESS
2747  013316  113777  004120  170612          MOVB    MINUS,@$RHBA            ;MOVE THE BYTE
2748  013324  022777  000376  170002          CMP     #376,@RHBA              ;DID IT GET THERE ALRIGHT
2749  013332  001401                          BEQ     99$                     ;YES,CHECK NEXT BYTE
2750  013334  104202                          ERROR   202                     ;HIGH BYTE DOES NOT SEEM TO BE WORKING
2751  013336  005237  004136          99$:    INC     $RHBA                   ;GET READY FOR NEXT BYTE
2752  013342  012777  000000  167764          MOV     #ZERO,@RHBA             ;ZERO THE BUS ADDRESS
2753  013350  113777  004121  170560          MOVB    MINUS+1,@$RHBA          ;MOVE TO UPPER BYTE
2754  013356  022777  177400  167750          CMP     #177400,@RHBA           ;DID IT GET THERE ALRIGHT
2755  013364  001401                          BEQ     98$                     ;YES,EXIT TEST
2756  013366  104202                          ERROR   202                     ;LOBYTE IS NOT WORKING PROPERLY
2757  013370  004737  006626          98$:    JSR     R7,CLEER                ;CLAER ERRORS
2758  013374  004737  050244                  JSR     R7,ERRTST
2759
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                        ;;*****************************************************************
                        ;*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)
                        ;;*****************************************************************
013400  000004          TST15:  SCOPE

013402  005037  003450          CLR     LOOCNT          ;CLEAR LOOP COUNT
013406  012737  000001  001162  MOV     #ONE,$REG0      ;SET UP BIT TEST
013414  013777  001162  167730  DBTST:  MOV     $REG0,@RHDB     ;SET BIT IN RHDB REGISTER
013422  005037  003446          CLR     BITCNT          ;CLEAR BIT COUNTER
013426  032777  000200  167674  18$:    BIT     #RDY,@RHCS1     ;IS RDY SET
013434  001015                  BNE     ABLE            ;BIT IS SET
013436  005237  003446          INC     BITCNT          ;COUNT UP
013442  001371                  BNE     18$             ;NOT FINISHED COUNTING
013444  005037  003446          CLR     BITCNT          ;GET READY TO DO IT AGAIN
013450  032777  000200  167652  19$:    BIT     #RDY,@RHCS1     ;IS IT SET YET?
013456  001004                  BNE     ABLE            ;YES
013460  005237  003446          INC     BITCNT          ;COUNT UP
013464  001401                  BEQ     ABLE            ;BIT IS NOT GOING TO SET
013466  000770                  BR      19$
013470                  ABLE:
013470  017737  167634  003420  MOV     @RHCS1,CS1      ;SAVE RHCS1
013476  017737  167630  003444  MOV     @RHWC,WC        ;SAVE WORD COUNT
013504  017737  167624  003414  MOV     @RHBA,BA        ;SAVE BUS ADDRESS
013512  005701                  TST     R1              ;IS IT AN RH11
013514  001406                  BEQ     87$             ;NO IT'S A 70
013516  005037  003416          CLR     BAE             ;CLEAR BAE
013522  005037  003424          CLR     CS3             ;CLEAR CS3
013526  000137  013546          JMP     86$             ;CONTINUE
013532  017737  167622  003416  87$:    MOV     @RHBAE,BAE      ;SAVE BUS ADDRESS EXTENSION
013540  017737  167616  003424          MOV     @RHCS3,CS3      ;SAVE RHCS3
013546  017737  167566  003422  86$:    MOV     @RHCS2,CS2      ;SAVE CS2
013554  017737  167562  003432          MOV     @RHST,DS1       ;SAVE TESTER STATUS
013562  017737  167556  003436          MOV     @RHER,ER1       ;SAVE ERROR REGISTER
013570  017737  167554  003442          MOV     @RHTDB,TDR      ;SAVE TESTER DATA REG.
013576  017737  167534  003440          MOV     @RHMR2,TC       ;SAVE MR2 TESTER REG.
013604  032777  000200  167516          BIT     #RDY,@RHCS1     ;IS READY SET
013612  001003                  BNE     RDYSET          ;SKIP ERROR
013614  104102                  ERROR   102             ;READY DID NOT SET
013616  004737  007260          JSR     R7,WHYFO        ;ANY ERRORS SET
013622  032777  000200  167510  RDYSET: BIT     #OR,@RHCS2      ;IS OR SET?
013630  001004                  BNE     ORSET           ;YES,IT'S SET
013632  017737  167514  003426  MOV     @RHDB,DB        ;SAVE CONTENTS OF RHDB REGISTER
013640  104041                  ERROR   41              ;OUTPUT READY DID NOT SET
013642  017737  167504  003426  ORSET:  MOV     @RHDB,DB        ;SAVE CONTENTS OF REGISTER
013650  023737  001162  003426          CMP     $REG0,DB        ;IS CORRECT BIT SET?
013656  001406                  BEQ     1$              ;YES,CONTINUE TEST
013660  013737  003426  001200          MOV     DB,$TMP1        ;SETUP FOR WATBIT PROG.
013666  104004                  ERROR   4               ;NO,CORRECT BIT IS NOT SET
013670  004737  046416          JSR     R7,WATBIT       ;GO TO WATBIT PROGRAM
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2816  013674  005737  001162          1$:     TST     $REG0                   ;WAS BIT 15 THE LAST BIT TESTED
2817  013700  100415                          BMI     DBTSTA                  ;YES,GO TO ALTERNATE BIT PATTERN TEST
2818  013702  022737  000001  003450          CMP     #ONE,LOOCNT             ;IS IT FIRST TIME
2819  013710  001404                          BEQ     2$                      ;NO, IT'S SECOND
2820  013712  005237  003450                  INC     LOOCNT                  ;YES,
2821  013716  000137  013414                  JMP     DBTST                   ;CONTINUE TEST
2822  013722  005037  003450          2$:     CLR     LOOCNT                  ;CLEAR LOOP COUNT
2823  013726  006137  001162                  ROL     $REG0                   ;NO,SET UP TO TEST NEXT BIT
2824  013732  000630                          BR      DBTST                   ;GO AND TEST BIT
2825  013734  022737  000001  003450  DBTSTA: CMP     #ONE,LOOCNT             ;IS IT FIRST TIME
2826  013742  001404                          BEQ     1$                      ;NO
2827  013744  005237  003450                  INC     LOOCNT                  ;INCREMENT LOOP COUNTER
2828  013750  000137  013414                  JMP     DBTST                   ;DO AGAIN
2829  013754  012737  052525  001162  1$:     MOV     #AB,$REG0               ;SET UP BIT PATTERN TEST
2830  013762  013777  001162  167362          MOV     $REG0,@RHDB             ;SET BITS IN REGISTER
2831  013770  005037  003446                  CLR     BITCNT                  ;CLEAR BIT COUNTER
2832  013774  032777  000200  167336  18$:    BIT     #OR,@RHCS2              ;IS OR SET
2833  014002  001015                          BNE     DBOUT                   ;BIT IS SET
2834  014004  005237  003446                  INC     BITCNT                  ;COUNT UP
2835  014010  001371                          BNE     18$                     ;NOT FINISHED COUNTING
2836  014012  005037  003446                  CLR     BITCNT                  ;GET READY TO DO IT AGAIN
2837  014016  032777  000200  167314  19$:    BIT     #OR,@RHCS2              ;IS IT SET YET?
2838  014024  001004                          BNE     DBOUT                   ;YES
2839  014026  005237  003446                  INC     BITCNT                  ;COUNT UP
2840  014032  001401                          BEQ     DBOUT                   ;BIT IS NOT GOING TO SET
2841  014034  000770                          BR      19$
2842  014036                          DBOUT:
2843  014036  017737  167266  003420          MOV     @RHCS1,CS1              ;SAVE RHCS1
2844  014044  017737  167262  003444          MOV     @RHWC,WC                ;SAVE WORD COUNT..
2845  014052  017737  167256  003414          MOV     @RHBA,BA                ;SAVE BUS ADDRESS
2846  014060  005701                          TST     R1                      ;IS IT AN RH11
2847  014062  001406                          BEQ     87$                     ;NO IT'S A 70
2848  014064  005037  003416                  CLR     BAE                     ;CLEAR BAE
2849  014070  005037  003424                  CLR     CS3                     ;CLEAR CS3
2850  014074  000137  014114                  JMP     86$                     ;CONTINUE
2851  014100  017737  167254  003416  87$:    MOV     @RHBAE,BAE              ;SAVE BUS ADDRESS EXTENSION
2852  014106  017737  167250  003424          MOV     @RHCS3,CS3              ;SAVE RHCS3
2853  014114  017737  167220  003422  86$:    MOV     @RHCS2,CS2              ;SAVE CS2
2854  014122  017737  167214  003432          MOV     @RHST,DS1               ;SAVE TESTER STATUS
2855  014130  017737  167210  003436          MOV     @RHER,ER1               ;SAVE ERROR REGISTER
2856  014136  017737  167206  003442          MOV     @RHTDB,TDR              ;SAVE TESTER DATA REG.
2857  014144  017737  167166  003440          MOV     @RHMR2,TC               ;SAVE MR2 TESTER REG.
2858  014152  032777  000200  167160          BIT     #OR,@RHCS2              ;IS OUTPUT READY ?
2859  014160  001001                          BNE     2$                      ;YES CONTINUE TEST
2860  014162  104041                          ERROR   41                      ;OUTPUT READY DID@NOT SET
2861  014164  023777  001162  167160  2$:     CMP     $REG0,@RHDB             ;ARE CORRECT BITS SET?
2862  014172  001411                          BEQ     1$                      ;YES,CONTINUE TESTS
2863  014174  017737  167152  003426          MOV     @RHDB,DB                ;SAVE CONTENTS OF REGISTER
2864  014202  013737  003426  001200          MOV     DB,$TMP1                ;SETUP FOR WATBIT TEST
2865  014210  104004                          ERROR   4                       ;NO,CORRECT BITS ARE NOT SET
2866  014212  004737  046416                  JSR     R7,WATBIT               ;GO TO WATBIT PROGRAM
2867  014216  012737  125252  001162  1$:     MOV     #OAB,$REG0              ;SET UP OPPISITE ALTERNATE BIT PATTERN TEST
2868  014224  013777  001162  167120          MOV     $REG0,@RHDB             ;SET BITS IN REGISTER
2869  014232  005037  003446                  CLR     BITCNT                  ;CLEAR BIT COUNTER
2870  014236  032777  000200  167074  18$:    BIT     #OR,@RHCS2              ;IS OR SET
2871  014244  001015                          BNE     OABTST                  ;BIT IS SET
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2872  014246  005237  003446                    INC     BITCNT                  ;COUNT UP
2873  014252  001371                            BNE     18$                     ;NOT FINISHED COUNTING
2874  014254  005037  003446                    CLR     BITCNT                  ;GET READY TO DO IT AGAIN
2875  014260  032777  000200  167052  19$:      BIT     #OR,@RHCS2              ;IS IT SET YET?
2876  014266  001004                            BNE     OABTST                  ;YES
2877  014270  005237  003446                    INC     BITCNT                  ;COUNT UP
2878  014274  001401                            BEQ     OABTST                  ;BIT IS NOT GOING TO SET
2879  014276  000770                            BR      19$
2880  014300                            OABTST:
2881  014300                            MYSTIC:
2882  014300  017737  167024  003420            MOV     @RHCS1,CS1              ;SAVE RHCS1
2883  014306  017737  167020  003444            MOV     @RHWC,WC                ;SAVE WORD COUNT
2884  014314  017737  167014  003414            MOV     @RHBA,BA                ;SAVE BUS ADDRESS
2885  014322  005701                            TST     R1                      ;IS IT AN RH11
2886  014324  001406                            BEQ     87$                     ;NO IT'S A 70
2887  014326  005037  003416                    CLR     BAE                     ;CLEAR BAE
2888  014332  005037  003424                    CLR     CS3                     ;CLEAR CS3
2889  014336  000137  014356                    JMP     86$                     ;CONTINUE
2890  014342  017737  167012  003416  87$:      MOV     @RHBAE,BAE              ;SAVE BUS ADDRESS EXTENSION
2891  014350  017737  167006  003424            MOV     @RHCS3,CS3              ;SAVE RHCS3
2892  014356  017737  166756  003422  86$:      MOV     @RHCS2,CS2              ;SAVE CS2
2893  014364  017737  166752  003432            MOV     @RHST,DS1               ;SAVE TESTER STATUS
2894  014372  017737  166746  003436            MOV     @RHER,ER1               ;SAVE ERROR REGISTER
2895  014400  017737  166744  003442            MOV     @RHTDB,TDR              ;SAVE TESTER DATA REG.
2896  014406  017737  166724  003440            MOV     @RHMR2,TC               ;SAVE MR2 TESTER REG.
2897  014414  032777  000200  166716            BIT     #OR,@RHCS2              ;IS OUTPUT READY SET
2898  014422  001001                            BNE     2$                      ;YES
2899  014424  104041                            ERROR   41                      ;OUTPUT READY DID NOT SET
2900  014426  017737  166720  003426  2$:       MOV     @RHDB,DB                ;SAVE CONTENTS OF REGISTER
2901  014434  023737  001162  003426            CMP     $REG0,DB                ;ARE CORRECT BITS SET?
2902  014442  001406                            BEQ     ERR11                   ;WAS THERE AN ERROR
2903  014444  013737  003426  001200            MOV     DB,$TMP1                ;SETUP FOR WATBIT PROG.
2904  014452  104004                            ERROR   4                       ;CORRECT BITS ARE NOT SET
2905  014454  004737  046416                    JSR     R7,WATBIT               ;GO TO WATBIT PROGRAM
2906  014460  004737  006626  ERR11:            JSR     R7,CLEER                ;CLEAR ERRORS
2907  014464  004737  050244                    JSR     R7,ERRTST
2908
2909
2910
2911                                    ;;*****************************************************************
2912                                    ;*TEST 16       RHWC OPERATIONAL TEST
2913                                            ;*THIS TEST CHECKS THAT WHEN THE WORD COUNT
2914                                            ;*REGISTER IS INCREMENTED IT IS CARRYED TO THE
2915                                            ;*HIGHEST BIT AND IS RETURNED TO ZERO
2916                                    ;;*****************************************************************
2917  014470  000004                    TST16:  SCOPE
2918  014472  012777  177777  166632            MOV     #-1,@RHWC               ;SETUP FOR 1 WORD
2919  014500  012777  000007  166632            MOV     #7,@RHCS2               ;SETUP UNIT 7
2920  014506  005701                            TST     R1                      ;IS IT AN RH11
2921  014510  100403                            BMI     1$                      ;YES
2922  014512  012777  000000  166640            MOV     #ZERO,@RHBAE            ;SETUP BUS ADDRESS EXTENSION
2923  014520  012777  001204  166606  1$:       MOV     #$TMP3,@RHBA            ;SETUP BUS ADDRESS
2924  014526  012777  000061  166574            MOV     #WRITE0,@RHCS1
2925  014534  005037  003446                    CLR     BITCNT                  ;CLEAR BIT COUNTER
2926  014540  032777  000200  166562  18$:      BIT     #RDY,@RHCS1             ;IS RDY SET
2927  014546  001015                            BNE     6$                      ;BIT IS SET
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2928  014550  005237  003446                    INC     BITCNT                  ;COUNT UP
2929  014554  001371                            BNE     18$                     ;NOT FINISHED COUNTING
2930  014556  005037  003446                    CLR     BITCNT                  ;GET READY TO DO IT AGAIN
2931  014562  032777  000200  166540  19$:      BIT     #RDY,@RHCS1             ;IS IT SET YET?
2932  014570  001004                            BNE     6$                      ;YES
2933  014572  005237  003446                    INC     BITCNT                  ;COUNT UP
2934  014576  001401                            BEQ     6$                      ;BIT IS NOT GOING TO SET
2935  014600  000770                            BR      19$
2936  014602                            6$:
2937  014602  017737  166522  003420            MOV     @RHCS1,CS1              ;SAVE RHCS1
2938  014610  017737  166516  003444            MOV     @RHWC,WC                ;SAVE WORD COUNT
2939  014616  017737  166512  003414            MOV     @RHBA,BA                ;SAVE BUS ADDRESS
2940  014624  005701                            TST     R1                      ;IS IT AN RH11
2941  014626  001406                            BEQ     87$                     ;NO IT'S A 70
2942  014630  005037  003416                    CLR     BAE                     ;CLEAR BAE
2943  014634  005037  003424                    CLR     CS3                     ;CLEAR CS3
2944  014640  000137  014660                    JMP     86$                     ;CONTINUE
2945  014644  017737  166510  003416  87$:      MOV     @RHBAE,BAE              ;SAVE BUS ADDRESS EXTENSION
2946  014652  017737  166504  003424            MOV     @RHCS3,CS3              ;SAVE RHCS3
2947  014660  017737  166454  003422  86$:      MOV     @RHCS2,CS2              ;SAVE CS2
2948  014666  017737  166450  003432            MOV     @RHST,DS1               ;SAVE TESTER STATUS
2949  014674  017737  166444  003436            MOV     @RHER,ER1               ;SAVE ERROR REGISTER
2950  014702  017737  166442  003442            MOV     @RHTDB,TDR              ;SAVE TESTER DATA REG.
2951  014710  017737  166422  003440            MOV     @RHMR2,TC               ;SAVE MR2 TESTER REG.
2952  014716  032777  000200  166404            BIT     #RDY,@RHCS1             ;IS READY SET
2953  014724  001007                            BNE     2$                      ;YES
2954  014726  005777  166400                    TST     @RHWC                   ;DOES WC=0
2955  014732  001425                            BEQ     3$                      ;YES
2956  014734  022777  177777  166370            CMP     #-1,@RHWC               ;IS IT EQUAL TO OLD
2957  014742  001410                            BEQ     4$                      ;YES,SEE IF DATA WAS WRITTEN
2958  014744  005777  166362          2$:       TST     @RHWC                   ;DID WC INCREMENT ?
2959  014750  001435                            BEQ     8$                      ;YES,EXIT TEST
2960  014752  005037  001162                    CLR     $REG0                   ;SETUP GOOD DATA
2961  014756  104077                            ERROR   77                      ;RDY DID NOT SET, WC DID NOT CLEAR
2962  014760  004737  007260                    JSR     R7,WHYFO                ;ARE ANY ERROR BITS SET
2963  014764  023777  001204  166356  4$:       CMP     $TMP3,@RHTDB            ;WAS INFO WRITTEN TO TESTER
2964  014772  001414                            BEQ     5$                      ;INFO WAS WRITTEN TO TESTER
2965  014774  005037  001162                    CLR     $REG0                   ;SETUP GOOD DATA
2966  015000  104123                            ERROR   123                     ;WRITE OPERATION DID NOT WORK
2967  015002  000137  015044                    JMP     8$                      ;RH DID NOT START OPERATION
2968  015006  023777  001204  166334  3$:       CMP     $TMP3,@RHTDB
2969  015014  001010                            BNE     7$
2970  015016  104102                            ERROR   102                     ;RDY BIT NOT SET
2971                                                                            ;INFORMATION WAS WRITTEN TO TEST DB
2972  015020  000137  015044                    JMP     8$
2973  015024  005037  001162          5$:       CLR     $REG0                   ;SETUP GOOD DATA
2974  015030  104103                            ERROR   103                     ;DURING A WRITE OPERATION RDY
2975                                                                            ;DID NOT SET, WC DID NOT INCREMENT
2976                                                                            ;BUT CORRECT INFO DID GET WRITTEN
2977                                                                            ;TO TESTER
2978  015032  000137  015044                    JMP     8$
2979
2980  015036  104104                    7$:     ERROR   104                     ;RDY BIT DID NOT SET AFTER
2981                                                                            ;A WRITE OPERATION, WC WAS INC
2982                                                                            ;AND INF WAS NOT WRITTEN TO
2983                                                                            ;TESTER
```

```
 2984  015040  004737  007260                  JSR     R7,WHYFO                ;WAS AN ERROR SET
 2985  015044  004737  006626          8$:     JSR     R7,CLEER                ;CLEAR ERRORS
 2986  015050  004737  050244                  JSR     R7,ERRTST               ;WAS THER ANY ERRORS
 2987
 2988                                  ;;*********************************************************************
 2989                                  ;*TEST 17        RHBA OPERATIONAL TEST
 2990                                  ;*THIS TEST CHECKS THAT THE BUS ADDRESS REGISTER
 2991                                  ;*WILL CARRY THROUGH TO THE HIGHEST BIT
 2992                                  ;*IN THE BUS ADDRESS EXTENSION REGISTER OR BIT A17
 2993                                  ;*IN THE RHCS1 REGISTER AFTER IT IS INCREMENTED
 2994                                  ;;*********************************************************************
 2995  015054  000004                  TST17:  SCOPE
 2996  015056  012737  000001  001212          MOV     #1,$TIMES       ;;DO 1 ITERATION
 2997
 2998  015064  005701                          TST     R1                      ;IS IT AN 11 OR A 70
 2999  015066  100403                          BMI     1$                      ;IT'S AN RH11
 3000  015070  012777  000037  166262          MOV     #37,@RHBAE              ;SETUP BAE IN RH70
 3001  015076  012777  177776  166230  1$:     MOV     #177776,@RHBA           ;SETUP BA
 3002  015104  012777  177777  166220          MOV     #-1,@RHWC               ;SETUP WORD COUNT
 3003  015112  005701                          TST     R1                      ;IS IT A RH70
 3004  015114  001404                          BEQ     34$                     ;YES
 3005  015116  012777  000461  166204          MOV     #A16!WRITE0,@RHCS1      ;TELL IT TO WRITE
 3006  015124  000403                          BR      35$                     ;SKIP OVER 70 CODE
 3007  015126  112777  000061  166174  34$:    MOVB    #WRITE0,@RHCS1          ;TELL IT TO WRITE
 3008  015134                          35$:
 3009  015134  005037  003446                  CLR     BITCNT                  ;CLEAR BIT COUNTER
 3010  015140  032777  000200  166162  18$:    BIT     #RDY,@RHCS1             ;IS RDY SET
 3011  015146  001015                          BNE     2$                      ;BIT IS SET
 3012  015150  005237  003446                  INC     BITCNT                  ;COUNT UP
 3013  015154  001371                          BNE     18$                     ;NOT FINISHED COUNTING
 3014  015156  005037  003446                  CLR     BITCNT                  ;GET READY TO DO IT AGAIN
 3015  015162  032777  000200  166140  19$:    BIT     #RDY,@RHCS1             ;IS IT SET YET?
 3016  015170  001004                          BNE     2$                      ;YES
 3017  015172  005237  003446                  INC     BITCNT                  ;COUNT UP
 3018  015176  001401                          BEQ     2$                      ;BIT IS NOT GOING TO SET
 3019  015200  000770                          BR      19$
 3020  015202                          2$:
 3021  015202  017737  166122  003420          MOV     @RHCS1,CS1              ;SAVE RHCS1
 3022  015210  017737  166116  003444          MOV     @RHWC,WC                ;SAVE WORD COUNT
 3023  015216  017737  166112  003414          MOV     @RHBA,BA                ;SAVE BUS ADDRESS
 3024  015224  005701                          TST     R1                      ;IS IT AN RH11
 3025  015226  001406                          BEQ     87$                     ;NO IT'S A 70
 3026  015230  005037  003416                  CLR     BAE                     ;CLEAR BAE
 3027  015234  005037  003424                  CLR     CS3                     ;CLEAR CS3
 3028  015240  000137  015260                  JMP     86$                     ;CONTINUE
 3029  015244  017737  166110  003416  87$:    MOV     @RHBAE,BAE              ;SAVE BUS ADDRESS EXTENSION
 3030  015252  017737  166104  003424          MOV     @RHCS3,CS3              ;SAVE RHCS3
 3031  015260  017737  166054  003422  86$:    MOV     @RHCS2,CS2              ;SAVE CS2
 3032  015266  017737  166050  003432          MOV     @RHST,DS1               ;SAVE TESTER STATUS
 3033  015274  017737  166044  003436          MOV     @RHER,ER1               ;SAVE ERROR REGISTER
 3034  015302  017737  166042  003442          MOV     @RHTDB,TDR              ;SAVE TESTER DATA REG.
 3035  015310  017737  166022  003440          MOV     @RHMR2,TC               ;SAVE MR2 TESTER REG.
 3036  015316  005701                          TST     R1                      ;IS IT AN 11 OR A 70
 3037  015320  001406                          BEQ     12$                     ;DO RH70 PART OF TEST
 3038  015322  032777  001000  166000          BIT     #A17,@RHCS1             ;DID A17 GET SET
 3039  015330  001022                          BNE     4$                      ;YES
```

```
3040  015332  000137  015444                 JMP     5$                      ;CONT. FOR RH11
3041  015336  022777  000040  166014  12$:   CMP     #40,@RHBAE              ;DID BAE INC
3042  015344  001414                         BEQ     4$                      ;BAE INCREMENTED
3043  015346  022777  000037  166004         CMP     #37,@RHBAE              ;IS BAE OLD VALUE
3044  015354  001420                         BEQ     3$                      ;BAE DID NOT INCREMENT
3045  015356  005777  165776                 TST     @RHBAE                  ;IS BAE ZERO
3046  015362  001425                         BEQ     9$                      ;BAE IS ZERO
3047  015364  104105                         ERROR   105                     ;BAE GOT MESSED UP DOING A WRITE
3048  015366  004737  007260                 JSR     R7,WHYFO                ;DID AN ERROR OTHER THAN NEM CAVSIT
3049  015372  000137  015462                 JMP     10$
3050  015376  005777  165732          4$:    TST     @RHBA                   ;DID BA INCREMENT ?
3051  015402  001443                         BEQ     8$                      ;YES ,EXIT TEST
3052  015404  104112                         ERROR   112                     ;BA DID NOT INCREMENT
3053  015406  004737  007260                 JSR     R7,WHYFO                ;WAS AN ERROR BIT SET
3054  015412  000137  015512                 JMP     8$                      ;EXIT TEST
3055  015416  104106                  3$:    ERROR   106                     ;BAE DID NOT INCREMENT
3056  015420  004737  007260                 JSR     R7,WHYFO                ;WAS AN ERROR BIT SET
3057  015424  000137  015512                 JMP     8$                      ;EXIT TEST
3058  015430  104107                  6$:    ERROR   107                     ;BAE INCREMENTED OK BUT A17 +
3059                                                                         ;A16 DID NOT INC PROPERLY IN RHCS1
3060  015432  000137  015512                 JMP     8$                      ;EXIT TEST
3061  015436  104110                  9$:    ERROR   110                     ;RHBAE IS ZERO
3062  015440  000137  015512                 JMP     8$                      ;BIT 5 IN BAE SHOULD BE SET
3063  015444  033777  000400  165656  5$:    BIT     A16,@RHCS1              ;IS A 16 SET
3064  015452  001003                         BNE     10$                     ;YES, BA DID NOT INCREMENT
3065  015454  104111                         ERROR   111                     ;A17 DID NOT SET WHEN BA WAS
3066                                                                         ;INC
3067  015456  000137  015512                 JMP     8$                      ;EXIT TEST
3068  015462  005777  165646          10$:   TST     @RHBA                   ;DOES BA =0
3069  015466  001403                         BEQ     11$                     ;YES, BA INCREMENTED
3070  015470  104112                         ERROR   112                     ;BA DID NOT INCREMENT
3071  015472  000137  015512                 JMP     8$                      ;EXIT TEST
3072  015476  005701                  11$:   TST     R1                      ;IS IT A 70 OR 11
3073  015500  100403                         BMI     13$                     ;GO TO CORRECT ERROR
3074  015502  104076                         ERROR   76                      ;BA INCREMENTED BUT DID NOT
3075                                                                         ;CARRY TO BAE
3076  015504  000137  015512                 JMP     8$                      ;GET OUT OF TEST
3077  015510  104113                  13$:   ERROR   113                     ;BA INCREMENTED BUT IT DID NOT
3078                                                                         ;CARRY OVER TO A17 + A16
3079  015512  004737  006626          8$:    JSR     R7,CLEER                ;CLEAR ERRORS
3080  015516  004737  050244                 JSR     R7,ERRTST               ;WAS THERE ANY ERRORS
3081
3082                                ;;*************************************************************
3083                                ;*TEST 20        NEM,TRE,SC BIT TEST
3084                                        ;*THIS TEST WILL CHECK THAT NON EXISTING MEMORY
3085                                        ;*WILL SET THE TRE AND SC BIT IN RHCS1 REGISTER
3086                                ;;*************************************************************
3087  015522  000004                 TST20:  SCOPE
3088  015524  005701                         TST     R1
3089  015526  001404                         BEQ     40$
3090  015530  013777  003362  165576         MOV     RHCS3,@RHBA
3091  015536  000403                         BR      41$
3092
3093  015540  012777  177702  165566  40$:   MOV     #177702,@RHBA           ;SET UP BUS ADDRESS
3094  015546  005701                  41$:   TST     R1                      ;IS IT AN RH70
3095  015550  100403                         BMI     9$                      ;NO SKIP RH11 PORTION
```

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3096  015552  012777  000077  165600          MOV     #77,@RHBAE              ;SET UP BAE REGISTER
3097  015560  012777  177777  165544  9$:     MOV     #-1,@RHWC               ;SET WORD COUNT TO ONE WORD
3098  015566  012777  000007  165544          MOV     #7,@RHCS2               ;SET UNIT NUMBER
3099  015574  012777  001471  165526          MOV     #A16!A17!READ0,@RHCS1   ;TELL IT TO READ
3100  015602  005037  003446                  CLR     BITCNT                  ;CLEAR BIT COUNTER
3101  015606  032777  000200  165514  18$:    BIT     #RDY,@RHCS1            ;IS RDY SET
3102  015614  001015                          BNE     DELTA                   ;BIT IS SET
3103  015616  005237  003446                  INC     BITCNT                  ;COUNT UP
3104  015622  001371                          BNE     18$                     ;NOT FINISHED COUNTING
3105  015624  005037  003446                  CLR     BITCNT                  ;GET READY TO DO IT AGAIN
3106  015630  032777  000200  165472  19$:    BIT     #RDY,@RHCS1            ;IS IT SET YET?
3107  015636  001004                          BNE     DELTA                   ;YES
3108  015640  005237  003446                  INC     BITCNT                  ;COUNT UP
3109  015644  001401                          BEQ     DELTA                   ;BIT IS NOT GOING TO SET
3110  015646  000770                          BR      19$
3111  015650                          DELTA:
3112  015650  017737  165464  003422          MOV     @RHCS2,CS2              ;SAVE CONTENTS OF RHCS2
3113  015656  017737  165446  001162          MOV     @RHCS1,$REG0            ;SET UP NEEDED BITS ONLY
3114  015664  042737  027777  001162          BIC     #GO!IE!RDY.A16!A17!PSEL!DVA!MCPE!READ6,$REG0
3115                                                                          ;CLEAR BITS NOT NEEDED
3116  015672  017737  165432  003420          MOV     @RHCS1,CS1              ;SAVE RHCS1
3117  015700  017737  165426  003444          MOV     @RHWC,WC                ;SAVE WORD COUNT
3118  015706  017737  165422  003414          MOV     @RHBA,BA                ;SAVE BUS ADDRESS
3119  015714  005701                          TST     R1                      ;IS IT AN RH11
3120  015716  001406                          BEQ     87$                     ;NO IT'S A 70
3121  015720  005037  003416                  CLR     BAE                     ;CLEAR BAE
3122  015724  005037  003424                  CLR     CS3                     ;CLEAR CS3
3123  015730  000137  015750                  JMP     86$                     ;CONTINUE
3124  015734  017737  165420  003416  87$:    MOV     @RHBAE,BAE              ;SAVE BUS ADDRESS EXTENSION
3125  015742  017737  165414  003424          MOV     @RHCS3,CS3              ;SAVE RHCS3
3126  015750  017737  165364  003422  86$:    MOV     @RHCS2,CS2              ;SAVE CS2
3127  015756  017737  165360  003432          MOV     @RHST,DS1               ;SAVE TESTER STATUS
3128  015764  017737  165354  003436          MOV     @RHER,ER1               ;SAVE ERROR REGISTER
3129  015772  017737  165352  003442          MOV     @RHTDB,TDR              ;SAVE TESTER DATA REG.
3130  016000  017737  165332  003440          MOV     @RHMR2,TC               ;SAVE MR2 TESTER REG.
3131  016006  032777  000200  165314          BIT     #RDY,@RHCS1            ;IS READY SET
3132  016014  001003                          BNE     99$                     ;YES CONTINUE TEST
3133  016016  104102                          ERROR   102                     ;READY NOT SET
3134  016020  004737  007260                  JSR     R7,WHYFO                ;ANY ERRORS SET
3135  016024  032777  004000  165306  99$:    BIT     #NFM,@RHCS2             ;IS NEM SET
3136  016032  001016                          BNE     1$                      ;YES CHECK TRE AND SC
3137  016034  022737  140000  001162          CMP     #SC!TRE,$REG0           ;IS THE SC AND TRE BITS SET
3138  016042  001460                          BEQ     2$                      ;YES NEM IS IN ERROR
3139  016044  032737  040000  001162          BIT     #TRE,$REG0              ;IS JUST THE TRE BIT SET
3140  016052  001060                          BNE     3$                      ;TRE BIT MUST BE IN ERROR
3141  016054  032737  100000  001162          BIT     #SC,$REG0               ;IS JUST THE SC BIT SET
3142  016062  001060                          BNE     4$                      ;SC BIT SET ERRONIOUSLY
3143  016064  104005                          ERROR   5                       ;NEM NOT SET IN RHCS2
3144  016066  000467                          BR      8$                      ;SET UP TO TEST AGAIN
3145  016070  022737  140000  001162  1$:     CMP     #SC!TRE,$REG0           ;IS SC AND TRE SET
3146  016076  001030                          BNE     22$                     ;FIND THE ERROR
3147  016100  012737  020000  004124          MOV     #MCPE,$CS1                      ;TEST FOR SHORTS
3148  016106  012737  173400  004126          MOV     #MPE!MXF!PGE!NED!UPE!WCE!DLT,$CS2
3149  016114  012737  174000  004130          MOV     #WCELO!WCEHI!DPELO!DPEHI!APE,$CS3
3150  016122  012737  000000  004132          MOV     #0,$ST
3151  016130  012737  030175  004134          MOV     #ILF!RMR!CPE!DPE!RMBEX!RFAIL!DTE!OPI,$ER
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3152  016136  012737  177777  004122          MOV     #-1,BEFORE              ;TELL WHYFO ITS FOR SHORTS
3153  016144  004737  007260                  JSR     R7,WHYFO                ;TEST FOR SHORTS
3154  016150  005037  004122                  CLR     BEFORE                  ;WE HAVE CHECKED FOR SHORTS
3155  016154  000137  016246                  JMP     8$                      ;LEAVE THE TEST
3156  016160  032737  040000  001162  22$:    BIT     #TRE,$REG0              ;THEN IS THE TRE BIT SET
3157  016166  001022                          BNE     6$                      ;SC BIT DID NOT SEE TRE BIT
3158  016170  032737  100000  001162          BIT     #SC,$REG0               ;IS THE SC BIT SET
3159  016176  001022                          BNE     7$                      ;TRE HAS AN OPEN GOING TO BUS
3160  016200  104006                          ERROR   6                       ;TRE SET LOGIC NOT WORKING
3161  016202  000421                          BR      8$                      ;SET UP TO TEST AGAIN
3162  016204  104007                  2$:     ERROR   7                       ;NEM HAS OPEN IN LINE GOING TO BUS
3163  016206  004737  007260                  JSR     R7,WHYFO                ;SEE IF ANY OTHER ERROR BIT IS
3164                                                                          ;SET OTHER THAN NEM
3165  016212  000415                          BR      8$                      ;SET UP TO TEST AGAIN
3166  016214  104010                  3$:     ERROR   10                      ;SOMTHING WRONG WITH TRE BIT
3167  016216  004737  007260                  JSR     R7,WHYFO                ;SEE IF AN ERROR BIT IS SET
3168                                                                          ;OR BOTH NEM IN RHCS2 AND SC IN
3169                                                                          ;RHCS1 HAS AN OPEN BETWEEN IT AND THE BUS
3170  016222  000411                          BR      8$                      ;SET UP TO TEST AGAIN
3171  016224  104011                  4$:     ERROR   11                      ;SC BIT WAS SET BY EITHER ATTN OR
3172  016226  004737  007260                  JSR     R7,WHYFO                ;FIND WHAT ERROR BIT IS SET
3173                                                                          ;MCPE ERROR OR SC IS SHORTED TO +5 VOLTS
3174  016232  000405                          BR      8$                      ;SETUP TO TEST AGAIN
3175  016234  104012                  6$:     ERROR   12                      ;TRE WAS SET BY OTHER THAN NEM
3176  016236  004737  007260                  JSR     R7,WHYFO                ;FIND ERROR BIT THAT SET TRE
3177  016242  000401                          BR      8$                      ;SETUP TO TEST AGAIN
3178  016244  104013                  7$:     ERROR   13                      ;TRE HAS AN OPEN GOING TO THE BUS
3179  016246  032737  041400  177570  8$:     BIT     #SW14!SW9!SW8,@#177570  ;ANY LOOPING BEEING DONE
3180  016254  001003                          BNE     21$                     ;YES,LOAD TRE NO MATTER WHAT
3181  016256  105737  001103                  TSTB    $ERFLG                  ;WAS THERE AN ERROR
3182  016262  001010                          BNE     9$                      ;SKIP TRE CHECK
3183  016264  112777  000100  165072  21$:    MOVB    #TREB,@RHCS1B           ;LOAD TRE
3184  016272  032777  004000  165040          BIT     #NEM,@RHCS2             ;DID ERROR CLEAR
3185  016300  001401                          BEQ     9$                      ;YES EXIT TEST
3186  016302  104050                          ERROR   50                      ;LOADING TRE DID NOT CLEAR ERROR
3187  016304  004737  006626          9$:     JSR     R7,CLEER                ;SEE IF ERRORS ARE CLEARED      --
3188  016310  004737  050244                  JSR     R7,ERRTST
3189
3190
3191                                          ;;*****************************************************************
3192                                          ;*TEST 21        WCE,TRE,SC BIT TEST
3193                                                  ;*THIS TEST WILL CHECK THAT TRE AND SC SET
3194                                                  ;*WHEN A WRITE CHECK ERROR OCCURS (WCE)
3195                                          ;;*****************************************************************
3196  016314  000004                  TST21:  SCOPE
3197  016316  012777  177777  165006          MOV     #-1,@RHWC               ;ONE WORD TRANSFER
3198  016324  012777  000007  165006          MOV     #7,@RHCS2               ;TO UNIT ONE
3199  016332  005701                          TST     R1                      ;IS IT AN RH70
3200  016334  001003                          BNE     9$                      ;NO .
3201  016336  012777  000000  165014          MOV     #ZERO,@RHBAE            ;SETUP RHBAE REGISTER
3202  016344  012777  001172  164762  9$:     MOV     #$REG4,@RHBA            ;SETUP BUS ADDRESS
3203  016352  012737  052525  001172          MOV     #AB,$REG4               ;CREATE INFORMATION
3204  016360  012777  000061  164742          MOV     #WRITE0,@RHCS1          ;TELL IT TO WRITE
3205  016366  005037  003446                  CLR     BITCNT                  ;CLEAR BIT COUNTER
3206  016372  032777  000200  164730  '8$:    BIT     #RDY,@RHCS1             ;IS RDY SET
3207  016400  001015                          BNE     WCETST                  ;BIT IS SET
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3208  016402  005237  003446                  INC     BITCNT                  ;COUNT UP
3209  016406  001371                          BNE     18$                     ;NOT FINISHED COUNTING
3210  016410  005037  003446                  CLR     BITCNT                  ;GET READY TO DO IT AGAIN
3211  016414  032777  000200  164706  19$:    BIT     #RDY,@RHCS1             ;IS IT SET YET?
3212  016422  001004                          BNE     WCETST                  ;YES
3213  016424  005237  003446                  INC     BITCNT                  ;COUNT UP
3214  016430  001401                          BEQ     WCETST                  ;BIT IS NOT GOING TO SET
3215  016432  000770                          BR      19$
3216  016434                          WCETST:
3217  016434  052777  000040  164676          BIS     #40,    @RHCS2          ;DO A CONTROLER CLEAR
3218  016442  005037  003446                  CLR     BITCNT                  ;SET UP FOR DELAY
3219  016446  005237  003446          17$:    INC     BITCNT          ;COUNT UP
3220  016452  001375                          BNE     17$
3221  016454  012777  000007  164656          MOV     #7,     @RHCS2          ;SELECT UNIT #
3222  016462  005037  003446                  CLR     BITCNT                  ;CLEAR BIT COUNTER
3223  016466  032777  000200  164634  18$:    BIT     #RDY,@RHCS1             ;IS RDY SET
3224  016474  001015                          BNE     WCTST                   ;BIT IS SET
3225  016476  005237  003446                  INC     BITCNT                  ;COUNT UP
3226  016502  001371                          BNE     18$                     ;NOT FINISHED COUNTING
3227  016504  005037  003446                  CLR     BITCNT                  ;GET READY TO DO IT AGAIN
3228  016510  032777  000200  164612  19$:    BIT     #RDY,@RHCS1             ;IS IT SET YET?
3229  016516  001004                          BNE     WCTST                   ;YES
3230  016520  005237  003446                  INC     BITCNT                  ;COUNT UP
3231  016524  001401                          BEQ     WCTST                   ;BIT IS NOT GOING TO SET
3232  016526  000770                          BR      19$
3233  016530                          WCTST:
3234  016530  032777  000200  164572          BIT     #RDY,   @RHCS1          ;IS READY SET
3235  016536  001003                          BNE     20$                     ;YES
3236  016540  104102                          ERROR   102                     ;READY NOT SET
3237  016542  004737  007260                  JSR     R7,     WHYFO           ;ANY ERRORS     SET
3238  016546  012777  177777  164556  20$:    MOV     #-1,@RHWC               ;RESET WORD COUNT
3239  016554  012777  001172  164552          MOV     #$REG4,@RHBA            ;RESET BUS ADDRESS
3240  016562  012737  125252  001172          MOV     #0AB,$REG4              ;CREATE WRITE CHECK ERROR
3241  016570  012777  000051  164532          MOV     #WRCH0,@PHCS1           ;MAKE THE ERROR
3242  016576  005037  003446                  CLR     BITCNT                  ;CLEAR BIT COUNTER
3243  016602  032777  000200  164520  18$:    BIT     #RDY,@RHCS1             ;IS RDY SET
3244  016610  001015                          BNE     WCETRE                  ;BIT IS SET
3245  016612  005237  003446                  INC     BITCNT                  ;COUNT UP
3246  016616  001371                          BNE     18$                     ;NOT FINISHED COUNTING
3247  016620  005037  003446                  CLR     BITCNT                  ;GET READY TO DO IT AGAIN
3248  016624  032777  000200  164476  19$:    BIT     #RDY,@RHCS1             ;IS IT SET YET?
3249  016632  001004                          BNE     WCETRE                  ;YES
3250  016634  005237  003446                  INC     BITCNT                  ;COUNT UP
3251  016640  001401                          BEQ     WCETRE                  ;BIT IS NOT GOING TO SET
3252  016642  000770                          BR      19$
3253  016644                          WCETRE:
3254  016644  017737  164470  003422          MOV     @RHCS2,CS2              ;SAVE CONTENTS
3255  016652  017737  164452  001162          MOV     @RHCS1,$REG0            ;SET UP NEEDED BITS ONLY
3256  016660  042737  027777  001162          BIC     #GO!IE!RDY.A16!A17!PSEL!DVA!MCPE!READ6,$REG0
3257                                                                          ;CLEAR BITS NOT NEEDED
3258  016666  017737  164436  003420          MOV     @RHCS1,CS1              ;SAVE RHCS1
3259  016674  017737  164432  003444          MOV     @RHWC,WC                ;SAVE WORD COUNT
3260  016702  017737  164426  003414          MOV     @RHBA,BA                ;SAVE BUS ADDRESS
3261  016710  005701                          TST     R1                      ;IS IT AN RH11
3262  016712  001406                          BEQ     87$                     ;NO IT'S A 70
3263  016714  005037  003416                  CLR     BAE                     ;CLEAR BAE
```

```
3264  016720  005037  003424                    CLR     CS3                     ;CLEAR CS3
3265  016724  000137  016744                    JMP     86$                     ;CONTINUE
3266  016730  017737  164424  003416  87$:      MOV     @RHBAE,BAE              ;SAVE BUS ADDRESS EXTENSION
3267  016736  017737  164420  003424            MOV     @RHCS3,CS3              ;SAVE RHCS3
3268  016744  017737  164370  003422  86$:      MOV     @RHCS2,CS2              ;SAVE CS2
3269  016752  017737  164364  003432            MOV     @RHST,DS1               ;SAVE TESTER STATUS
3270  016760  017737  164360  003436            MOV     @RHER,ER1               ;SAVE ERROR REGISTER
3271  016766  017737  164356  003442            MOV     @RHTDB,TDR              ;SAVE TESTER DATA REG.
3272  016774  017737  164336  003440            MOV     @RHMR2,TC               ;SAVE MR2 TESTER REG.
3273  017002  032777  000200  164320            BIT     #RDY,@RHCS1             ;IS READY SET
3274  017010  001003                            BNE     99$                     ;YES CONTINUE TEST
3275  017012  104102                            ERROR   102                     ;READY NOT SET
3276  017014  004737  007260                    JSR     R7,WHYFO                ;ANY ERRORS SET
3277  017020  032777  040000  164312  99$:      BIT     #WCE,@RHCS2             ;IS WCE SET
3278  017026  001016                            BNE     1$                      ;YES CHECK TRE AND SC
3279  017030  022737  140000  001162            CMP     #SC!TRE,$REG0           ;IS THE SC AND TRE BITS SET
3280  017036  001460                            BEQ     2$                      ;YES WCE IS IN ERROR
3281  017040  032737  040000  001162            BIT     #TRE,$REG0              ;IS JUST THE TRE BIT SET
3282  017046  001060                            BNE     3$                      ;TRE BIT MUST BE IN ERROR
3283  017050  032737  100000  001162            BIT     #SC,$REG0               ;IS JUST THE SC BIT SET
3284  017056  001060                            BNE     4$                      ;SC BIT SET ERRONIOUSLY
3285  017060  104014                            ERROR   14                      ;WCE NOT SET IN RHCS2
3286  017062  000467                            BR      8$                      ;SET UP TO TEST AGAIN
3287  017064  022737  140000  001162  1$:       CMP     #SC!TRE,$REG0           ;IS SC AND TRE SET
3288  017072  001030                            BNE     22$                     ;FIND THE ERROR
3289  017074  012737  020000  004124            MOV     #MCPE,$CS1                      ;TEST FOR SHORTS
3290  017102  012737  137400  004126            MOV     #MPE!MXF!PGE!NEM!NED!UPE!DLT,$CS2
3291  017110  012737  160000  004130            MOV     #DPELO!DPEHI!APE,$CS3
3292  017116  013737  004132  004132            MOV     $ST,$ST
3293  017124  013737  004134  004134            MOV     $ER,$ER
3294  017132  012737  177777  004122            MOV     #-1,BEFORE              ;TELL WHYFO ITS FOR SHORTS
3295  017140  004737  007260                    JSR     R7,WHYFO                ;TEST FOR SHORTS
3296  017144  005037  004122                    CLR     BEFORE                  ;WE HAVE CHECKED FOR SHORTS
3297  017150  000137  017242                    JMP     8$                      ;LEAVE THE TEST
3298  017154  032737  040000  001162  22$:      BIT     #TRE,$REG0              ;THEN IS THE TRE BIT SET
3299  017162  001022                            BNE     6$                      ;SC BIT DID NOT SEE TRE BIT
3300  017164  032737  100000  001162            BIT     #SC,$REG0               ;IS THE SC BIT SET
3301  017172  001022                            BNE     7$                      ;TRE HAS AN OPEN GOING TO BUS
3302  017174  104006                            ERROR   6                       ;TRE SET LOGIC NOT WORKING
3303  017176  000421                            BR      8$                      ;SET UP TO TEST AGAIN
3304  017200  104015                    2$:     ERROR   15                      ;WCE HAS OPEN IN LINE GOING TO BUS
3305  017202  004737  007260                    JSR     R7,WHYFO                ;SEE IF ANY OTHER ERROR BIT IS
3306                                                                            ;SET OTHER THAN WCE
3307  017206  000415                            BR      8$                      ;SET UP TO TEST AGAIN
3308  017210  104016                    3$:     ERROR   16                      ;SOMTHING WRONG WITH TRE BIT
3309  017212  004737  007260                    JSR     R7,WHYFO                ;SEE IF AN ERROR BIT IS SET
3310                                                                            ;OR BOTH WCE IN RHCS2 AND SC IN
3311                                                                            ;RHCS1 HAS AN OPEN BETWEEN IT AND THE BUS
3312  017216  000411                            BR      8$                      ;SET UP TO TEST AGAIN
3313  017220  104011                    4$:     ERROR   11                      ;SC BIT WAS SET BY EITHER ATTN OR
3314  017222  004737  007260                    JSR     R7,WHYFO                ;FIND WHAT ERROR BIT IS SET
3315                                                                            ;MCPE ERROR OR SC IS SHORTED TO +5 VOLTS
3316  017226  000405                            BR      8$                      ;SETUP TO TEST AGAIN
3317  017230  104017                    6$:     ERROR   17                      ;TRE WAS SET BY OTHER THAN WCE
3318  017232  004737  007260                    JSR     R7,WHYFO                ;FIND ERROR BIT THAT SET TRE
3319  017236  000401                            BR      8$                      ;SETUP TO TEST AGAIN
```

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3320  017240  104013                    7$:     ERROR   13                      ;TRE HAS AN OPEN GOING TO THE BUS
3321  017242  032737  041400  177570    8$:     BIT     #SW14!SW9!SW8,@#177570  ;ANY LOOPING BEEING DONE
3322  017250  001003                            BNE     21$                     ;YES,LOAD TRE NO MATTER WHAT
3323  017252  105737  001103                    TSTB    $ERFLG                  ;WAS THERE AN ERROR
3324  017256  001010                            BNE     9$                      ;SKIP TRE CHECK
3325  017260  112777  000100  164076    21$:    MOVB    #TREB,@RHCS1B           ;LOAD TRE
3326  017266  032777  040000  164044            BIT     #WCE,@RHCS2             ;DID ERROR CLEAR
3327  017274  001401                            BEQ     9$                      ;YES EXIT TEST
3328  017276  104050                            ERROR   50                      ;LOADING TRE DID NOT CLEAR ERROR
3329  017300  004737  006626            9$:     JSR     R7,CLEER                ;SEE IF ERRORS ARE CLEARED
3330  017304  004737  050244                    JSR     R7,ERRTST
3331
3332                                    ;;*****************************************************************
3333                                    ;*TEST 22        MDPE ,TRE AND SC BIT TEST
3334                                            ;*THIS TEST CHECKS THAT MDPE CAN BE SET IN
3335                                            ;*RHCS2,AND THAT MDPE SETS TRE AND SC
3336                                            ;*IN THE RHCS1 REGISTER.............
3337                                    ;;*****************************************************************
3338  017310  000004                    TST22:  SCOPE
3339  017312  012777  000007  164020            MOV     #7,@RHCS2               ;SET UNIT #
3340  017320  012777  177774  164004            MOV     #-4,@RHWC               ;SET UP WORD COUNT
3341  017326  005701                            TST     R1                      ;IS IT AN RH70
3342  017330  001003                            BNE     9$                      ;NO ITS AN RH11
3343  017332  012777  000000  164020            MOV     #ZERO,@RHBAE            ;SET UP BAE REGISTER
3344  017340  012777  004100  163766    9$:     MOV     #RBUF,@RHBA             ;SET UP BUS ADDRESS
3345  017346  012777  000071  163754            MOV     #READ0,@RHCS1           ;TELL IT TO READ
3346  017354  012777  000027  163756            MOV     #PAT!7,@RHCS2           ;INVERT PARITY
3347  017362  017737  163752  003422            MOV     @RHCS2,CS2              ;SAVE CONTENTS
3348  017370  005037  003446                    CLR     BITCNT                  ;CLEAR BIT COUNTER
3349  017374  032777  000200  163726    18$:    BIT     #RDY,@RHCS1             ;IS RDY SET
3350  017402  001015                            BNE     UPETRE                  ;BIT IS SET
3351  017404  005237  003446                    INC     BITCNT                  ;COUNT UP
3352  017410  001371                            BNE     18$                     ;NOT FINISHED COUNTING
3353  017412  005037  003446                    CLR     BITCNT                  ;GET READY TO DO IT AGAIN
3354  017416  032777  000200  163704    19$:    BIT     #RDY,@RHCS1             ;IS IT SET YET?
3355  017424  001004                            BNE     UPETRE                  ;YES
3356  017426  005237  003446                    INC     BITCNT                  ;COUNT UP
3357  017432  001401                            BEQ     UPETRE                  ;BIT IS NOT GOING TO SET
3358  017434  000770                            BR      19$
3359  017436                            UPETRE:
3360  017436  017737  163666  001162            MOV     @RHCS1,$REG0            ;SET UP NEEDED BITS ONLY
3361  017444  042737  027777  001162            BIC     #GO!IE!RDY'A16!A17!PSEL!DVA!MCPE!READ6,$REG0
3362                                                                            ;CLEAR BITS NOT NEEDED
3363  017452  017737  163652  003420            MOV     @RHCS1,CS1              ;SAVE RHCS1
3364  017460  017737  163646  003444            MOV     @RHWC,WC                ;SAVE WORD COUNT
3365  017466  017737  163642  00341?            MOV     @RHBA,BA                ;SAVE BUS ADDRESS
3366  017474  005701                            TST     R1                      ;IS IT AN RH11
3367  017476  001406                            BEQ     87$                     ;NO IT'S A 70
3368  017500  005037  003416                    CLR     BAE                     ;CLEAR BAE
3369  017504  005037  003424                    CLR     CS3                     ;CLEAR CS3
3370  017510  000137  017530                    JMP     86$                     ;CONTINUE
3371  017514  017737  163640  003416    87$:    MOV     @RHBAE,BAE              ;SAVE BUS ADDRESS EXTENSION
3372  017522  017737  163634  003424            MOV     @RHCS3,CS3              ;SAVE RHCS3
3373  017530  017737  163604  003422    86$:    MOV     @RHCS2,CS2              ;SAVE CS2
3374  017536  017737  163600  003432            MOV     @RHST,DS1               ;SAVE TESTER STATUS
3375  017544  017737  163574  003436            MOV     @RHER,ER1               ;SAVE ERROR REGISTER
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3376  017552  017737  163572  003442          MOV     @RHTDB,TDR              ;SAVE TESTER DATA REG.
3377  017560  017737  163552  003440          MOV     @RHMR2,TC               ;SAVE MR2 TESTER REG.
3378  017566  032777  000200  163534          BIT     #RDY,@RHCS1             ;IS READY SET
3379  017574  001003                          BNE     99$                     ;YES CONTINUE TEST
3380  017576  104102                          ERROR   102                     ;READY NOT SET
3381  017600  004737  007260                  JSR     R7,WHYFO                ;ANY ERRORS SET
3382  017604  032777  000400  163526  99$:    BIT     #MPE,@RHCS2             ;IS MPE SET
3383  017612  001016                          BNE     1$                      ;YES CHECK TRE AND SC
3384  017614  022737  140000  001162          CMP     #SC!TRE,$REG0           ;IS THE SC AND TRE BITS SET
3385  017622  001460                          BEQ     2$                      ;YES MPE IS IN ERROR
3386  017624  032737  040000  001162          BIT     #TRE,$REG0              ;IS JUST THE TRE BIT SET
3387  017632  001060                          BNE     3$                      ;TRE BIT MUST BE IN ERROR
3388  017634  032737  100000  001162          BIT     #SC,$REG0               ;IS JUST THE SC BIT SET
3389  017642  001060                          BNE     4$                      ;SC BIT SET ERRONIOUSLY
3390  017644  104116                          ERROR   116                     ;MPE NOT SET IN RHCS2
3391  017646  000467                          BR      8$                      ;SET UP TO TEST AGAIN
3392  017650  022737  140000  001162  1$:     CMP     #SC!TRE,$REG0           ;IS SC AND TRE SET
3393  017656  001030                          BNE     22$                     ;FIND THE ERROR
3394  017660  013737  004124  004124          MOV     $CS1,$CS1                       ;TEST FOR SHORTS
3395  017666  012737  177000  004126          MOV     #MXF!PGE!NEM!NED!UPE!WCE!DLT,$CS2
3396  017674  012737  174000  004130          MOV     #WCELO!WCEHI!DPELO!DPEHI!APE,$CS3
3397  017702  013737  004132  004132          MOV     $ST,$ST
3398  017710  013737  004134  004134          MOV     $ER,$ER
3399  017716  012737  177777  004122          MOV     #-1,BEFORE              ;TELL WHYFO ITS FOR SHORTS
3400  017724  004737  007260                  JSR     R7,WHYFO                ;TEST FOR SHORTS
3401  017730  005037  004122                  CLR     BEFORE                  ;WE HAVE CHECKED FOR SHORTS
3402  017734  000137  020026                  JMP     8$                      ;LEAVE THE TEST
3403  017740  032737  040000  001162  22$:    BIT     #TRE,$REG0              ;THEN IS THE TRE BIT SET
3404  017746  001022                          BNE     6$                      ;SC BIT DID NOT SEE TRE BIT
3405  017750  032737  100000  001162          BIT     #SC,$REG0               ;IS THE SC BIT SET
3406  017756  001022                          BNE     7$                      ;TRE HAS AN OPEN GOING TO BUS
3407  017760  104006                          ERROR   6                       ;TRE SET LOGIC NOT WORKING
3408  017762  000421                          BR      8$                      ;SET UP TO TEST AGAIN
3409  017764  104120                  2$:     ERROR   120                     ;MPE HAS OPEN IN LINE GOING TO BUS
3410  017766  004737  007260                  JSR     R7,WHYFO                ;SEE IF ANY OTHER ERROR BIT IS
3411                                                                          ;SET OTHER THAN MPE
3412  017772  000415                          BR      8$                      ;SET UP TO TEST AGAIN
3413  017774  104121                  3$:     ERROR   121                     ;SOMTHING WRONG WITH TRE BIT
3414  017776  004737  007260                  JSR     R7,WHYFO                ;SEE IF AN ERROR BIT IS SET
3415                                                                          ;OR BOTH MPE IN RHCS2 AND SC IN
3416                                                                          ;RHCS1 HAS AN OPEN BETWEEN IT AND THE BUS
3417  020002  000411                          BR      8$                      ;SET UP TO TEST AGAIN
3418  020004  104011                  4$:     ERROR   11                      ;SC BIT WAS SET BY EITHER ATTN OR
3419  020006  004737  007260                  JSR     R7,WHYFO                ;FIND WHAT ERROR BIT IS SET
3420                                                                          ;MCPE ERROR OR SC IS SHORTED TO +5 VOLTS
3421  020012  000405                          BR      8$                      ;SETUP TO TEST AGAIN
3422  020014  104122                  6$:     ERROR   122                     ;TRE WAS SET BY OTHER THAN MPE
3423  020016  004737  007260                  JSR     R7,WHYFO                ;FIND ERROR BIT THAT SET TRE
3424  020022  000401                          BR      8$                      ;SETUP TO TEST AGAIN
3425  020024  104013                  7$:     ERROR   13                      ;TRE HAS AN OPEN GOING TO THE BUS
3426  020026  032737  041400  177570  8$:     BIT     #SW14!SW9!SW8,@#177570  ;ANY LOOPING BEEING DONE
3427  020034  001003                          BNE     21$                     ;YES,LOAD TRE NO MATTER WHAT
3428  020036  105737  001103                  TSTB    $ERFLG                  ;WAS THERE AN ERROR
3429  020042  001010                          BNE     9$                      ;SKIP TRE CHECK
3430  020044  112777  000100  163312  21$:    MOVB    #TREB,@RHCS1B           ;LOAD TRE
3431  020052  032777  000400  163260          BIT     #MPE,@RHCS2             ;DID ERROR CLEAR
```

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                                BEQ     9$                      ;YES EXIT TEST
                                ERROR   50                      ;LOADING TRE DID NOT CLEAR ERROR
                        9$:     JSR     R7,CLEER                ;SEE IF ERRORS ARE CLEARED
                                JSR     R7,ERRTST

                        ;;**********************************************************************
                        ;*TEST 23        UPE,TRE,SC ERROR TEST (RH11)
                                ;*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.....
                        ;;**********************************************************************
                        TST23:  SCOPE

                                MOV     #7,@RHCS2               ;SET UP UNIT 7
                                TST     R1                      ;IS IT AN RH11
                                BMI     FITIT                   ;IT'S AN RH11,DO THE TEST
                                JMP     FIT                     ;IT'S AN RH70, EXIT TEST
                        FITIT:  MOV     #UPE!7,@RHCS2           ;SET PARITY ERROR IN RH11'S CS2 REG
                                MOV     @RHCS1,$REG0            ;SET UP NEEDED BITS ONLY
                                BIC     #GO!IE!RDY!A16!A17!PSEL!DVA!MCPE!READ6,$REG0
                                                                ;CLEAR BITS NOT NEEDED
                                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     99$                     ;YES CONTINUE TEST
                                ERROR   102                     ;READY NOT SET
                                JSR     R7,WHYFO                ;ANY ERRORS SET
                        99$:    BIT     #UPE,@RHCS2             ;IS UPE SET
                                BNE     1$                      ;YES CHECK TRE AND SC
                                CMP     #SC!TRE,$REG0           ;IS THE SC AND TRE BITS SET
                                BEQ     2$                      ;YES UPE IS IN ERROR
                                BIT     #TRE,$REG0              ;IS JUST THE TRE BIT SET
                                BNE     3$                      ;TRE BIT MUST BE IN ERROR
                                BIT     #SC,$REG0               ;IS JUST THE SC BIT SET
                                BNE     4$                      ;SC BIT SET ERRONIOUSLY
                                ERROR   20                      ;UPE NOT SET IN RHCS2
                                BR      8$                      ;SET UP TO TEST AGAIN
                        1$:     CMP     #SC!TRE,$REG0           ;IS SC AND TRE SET
                                BNE     22$                     ;FIND THE ERROR
                                MOV     $CS1,$CS1                       ;TEST FOR SHORTS
                                MOV     #MPE!MXF!PGE!NEM!NED!WCE!DLT,$CS2
                                MOV     $CS3,$CS3
                                MOV     $ST,$ST
```

```
3488  020374  013737  004134  004134          MOV     $ER,$ER
3489  020402  012737  177777  004122          MOV     #-1,BEFORE              ;TELL WHYFO ITS FOR SHORTS
3490  020410  004737  007260                  JSR     R7,WHYFO                ;TEST FOR SHORTS
3491  020414  005037  004122                  CLR     BEFORE                  ;WE HAVE CHECKED FOR SHORTS
3492  020420  000137  020512                  JMP     8$                      ;LEAVE THE TEST
3493  020424  032737  040000  001162  22$:    BIT     #TRE,$REG0              ;THEN IS THE TRE BIT SET
3494  020432  001022                          BNE     6$                      ;SC BIT DID NOT SEE TRE BIT
3495  020434  032737  100000  001162          BIT     #SC,$REG0               ;IS THE SC BIT SET
3496  020442  001022                          BNE     7$                      ;TRE HAS AN OPEN GOING TO BUS
3497  020444  104006                          ERROR   6                       ;TRE SET LOGIC NOT WORKING
3498  020446  000421                          BR      8$                      ;SET UP TO TEST AGAIN
3499  020450  104021                  2$:     ERRCR   21                      ;UPE HAS OPEN IN LINE GOING TO BUS
3500  020452  004737  007260                  JSR     R7,WHYFO                ;SEE IF ANY OTHER ERROR BIT IS
3501                                                                          ;SET OTHER THAN UPE
3502  020456  000415                          BR      8$                      ;SET UP TO TEST AGAIN
3503  020460  104023                  3$:     ERROR   23                      ;SOMTHING WRONG WITH TRE BIT
3504  020462  004737  007260                  JSR     R7,WHYFO                ;SEE IF AN ERROR BIT IS SET
3505                                                                          ;OR BOTH UPE IN RHCS2 AND SC IN
3506                                                                          ;RHCS1 HAS AN OPEN BETWEEN IT AND THE BUS
3507  020466  000411                          BR      8$                      ;SET UP TO TEST AGAIN
3508  020470  104011                  4$:     ERROR   11                      ;SC BIT WAS SET BY EITHER ATTN OR
3509  020472  004737  007260                  JSR     R7,WHYFO                ;FIND WHAT ERROR BIT IS SET
3510                                                                          ;MCPE ERROR OR SC IS SHORTED TO +5 VOLTS
3511  020476  000405                          BR      8$                      ;SETUP TO TEST AGAIN
3512  020500  104022                  6$:     ERROR   22                      ;TRE WAS SET BY OTHER THAN UPE
3513  020502  004737  007260                  JSR     R7,WHYFO                ;FIND ERROR BIT THAT SET TRE
3514  020506  000401                          BR      8$                      ;SETUP TO TEST AGAIN
3515  020510  104013                  7$:     ERROR   13                      ;TRE HAS AN OPEN GOING TO THE BUS
3516  020512  032737  041400  177570  8$:     BIT     #SW14!SW9!SW8,@#177570  ;ANY LOOPING BEEING DONE
3517  020520  001003                          BNE     21$                     ;YES,LOAD TRE NO MATTER WHAT
3518  020522  105737  001103                  TSTB    $ERFLG                  ;WAS THERE AN ERROR
3519  020526  001010                          BNE     9$                      ;SKIP TRE CHECK
3520  020530  112777  000100  162626  21$:    MOVB    #TREB,@RHCS1B           ;LOAD TRE
3521  020536  032777  020000  162574          BIT     #UPE,@RHCS2             ;DID ERROR CLEAR
3522  020544  001401                          BEQ     9$                      ;YES EXIT TEST
3523  020546  104050                          ERROR   50                      ;LOADING TRE DID NOT CLEAR ERROR
3524  020550  004737  006626          9$:     JSR     R7,CLEER                ;SEE IF ERRORS ARE CLEARED
3525  020554  004737  050244                  JSR     R7,ERRTST
3526
3527  020560                          FIT:
3528                                  ;;**********************************************************************
3529                                  ;*TEST 24        UPE,TRE,SC ERROR TEST (RH70)
3530                                          ;*THIS TEST CHECKS THE UPE BIT IN RHCS2
3531                                          ;*TO SEE IF IT SETS AND WHEN IT SETS IS
3532                                          ;*TRE AND SC BITS SET IN RHCS1.....
3533                                  ;;**********************************************************************
3534  020560  000004                  TST24:  SCOPE
3535
3536  020562  012777  000007  162550          MOV     #7,@RHCS2               ;SETUP UNIT 7
3537  020570  005701                          TST     R1                      ;IS IT AN RH11
3538  020572  001402                          BEQ     PLACE                   ;IT'S AN RH70
3539  020574  000137  021342                  JMP     FANGIE                  ;IT'S AN RH11, EXIT TEST
3540  020600  012777  000004  162554  PLACE:  MOV     #IPCK2,@RHCS3           ;SETUP FOR PARITY ERROR
3541  020606  012777  177776  162516          MOV     #-2,@RHWC               ;SETUP WORD COUNT TO TWO WORDS
3542  020614  012777  000000  162536          MOV     #ZERO,@RHBAE            ;SETUP BAE
3543  020622  012777  001162  162504          MOV     #$REG0,@RHBA            ;SETUP ADDRESS
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3544  020630  012777  000061  162472          MOV     #WRITE0,@RHCS1  ;TELL IT TO WRITE
3545  020636  005037  003446                  CLR     BITCNT                  ;CLEAR BIT COUNTER
3546  020642  032777  000200  162460  18$:    BIT     #RDY,@RHCS1             ;IS RDY SET
3547  020650  001015                          BNE     DYNO                    ;BIT IS SET
3548  020652  005237  003446                  INC     BITCNT                  ;COUNT UP
3549  020656  001371                          BNE     18$                     ;NOT FINISHED COUNTING
3550  020660  005037  003446                  CLR     BITCNT                  ;GET READY TO DO IT AGAIN
3551  020664  032777  000200  162436  19$:    BIT     #RDY,@RHCS1             ;IS IT SET YET?
3552  020672  001004                          BNE     DYNO                    ;YES
3553  020674  005237  003446                  INC     BITCNT                  ;COUNT UP
3554  020700  001401                          BEQ     DYNO                    ;BIT IS NOT GOING TO SET
3555  020702  000770                          BR      19$
3556  020704                          DYNO:
3557  020704  017737  162420  001162          MOV     @RHCS1,$REG0            ;SET UP NEEDED BITS ONLY
3558  020712  042737  027777  001162          BIC     #GO!IE!RDY!A16!A17!PSEL!DVA!MCPE!READ6,$REG0
3559                                                                          ;CLEAR BITS NOT NEEDED
3560  020720  017737  162404  003420          MOV     @RHCS1,CS1              ;SAVE RHCS1
3561  020726  017737  162400  003444          MOV     @RHWC,WC                ;SAVE WORD COUNT
3562  020734  017737  162374  003414          MOV     @RHBA,BA                ;SAVE BUS ADDRESS
3563  020742  005701                          TST     R1                      ;IS IT AN RH11
3564  020744  001406                          BEQ     87$                     ;NO IT'S A 70
3565  020746  005037  003416                  CLR     BAE                     ;CLEAR BAE
3566  020752  005037  003424                  CLR     CS3                     ;CLEAR CS3
3567  020756  000137  020776                  JMP     86$                     ;CONTINUE
3568  020762  017737  162372  003416  87$:    MOV     @RHBAE,BAE              ;SAVE BUS ADDRESS EXTENSION
3569  020770  017737  162366  003424          MOV     @RHCS3,CS3              ;SAVE RHCS3
3570  020776  017737  162336  003422  86$:    MOV     @RHCS2,CS2              ;SAVE CS2
3571  021004  017737  162332  003432          MOV     @RHST,DS1               ;SAVE TESTER STATUS
3572  021012  017737  162326  003436          MOV     @RHER,ER1               ;SAVE ERROR REGISTER
3573  021020  017737  162324  003442          MOV     @RHTDB,TDR              ;SAVE TESTER DATA REG.
3574  021026  017737  162304  003440          MOV     @RHMR2,TC               ;SAVE MR2 TESTER REG.
3575  021034  032777  000200  162266          BIT     #RDY,@RHCS1             ;IS READY SET
3576  021042  001003                          BNE     99$                     ;YES CONTINUE TEST
3577  021044  104102                          ERROR   102                     ;READY NOT SET
3578  021046  004737  007260                  JSR     R7,WHYFO                ;ANY ERRORS SET
3579  021052  032777  020000  162260  99$:    BIT     #UPE,@RHCS2             ;IS UPE SET
3580  021060  001016                          BNE     1$                      ;YES CHECK TRE AND SC
3581  021062  022737  140000  001162          CMP     #SC!TRE,$REG0           ;IS THE SC AND TRE BITS SET
3582  021070  001460                          BEQ     2$                      ;YES UPE IS IN ERROR
3583  021072  032737  040000  001162          BIT     #TRE,$REG0              ;IS JUST THE TRE BIT SET
3584  021100  001060                          BNE     3$                      ;TRE BIT MUST BE IN ERROR
3585  021102  032737  100000  001162          BIT     #SC,$REG0               ;IS JUST THE SC BIT SET
3586  021110  001060                          BNE     4$                      ;SC BIT SET ERRONIOUSLY
3587  021112  104020                          ERROR   20                      ;UPE NOT SET IN RHCS2
3588  021114  000467                          BR      8$                      ;SET UP TO TEST AGAIN
3589  021116  022737  140000  001162  1$:     CMP     #SC!TRE,$REG0           ;IS SC AND TRE SET
3590  021124  001030                          BNE     22$                     ;FIND THE ERROR
3591  021126  013737  004124  004124          MOV     $CS1,$CS1                       ;TEST FOR SHORTS
3592  021134  012737  157400  004126          MOV     #MPE!MXF!PGE!NEM!NED!WCE!DLT,$CS2
3593  021142  012737  134100  004130          MOV     #APE!DPELO!WCEHI!WCELO!IE3,$CS3
3594  021150  013737  004132  004132          MOV     $ST,$ST
3595  021156  013737  004134  004134          MOV     $ER,$ER
3596  021164  012737  177777  004122          MOV     #-1,BEFORE              ;TELL WHYFO ITS FOR SHORTS
3597  021172  004737  007260                  JSR     R7,WHYFO                ;TEST FOR SHORTS
3598  021176  005037  004122                  CLR     BEFORE                  ;WE HAVE CHECKED FOR SHORTS
3599  021202  000137  021274                  JMP     8$                      ;LEAVE THE TEST
```

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3600  021206  032737  040000  001162  22$:    BIT     #TRE,$REG0              ;THEN IS THE TRE BIT SET
3601  021214  001022                          BNE     6$                      ;SC BIT DID NOT SEE TRE BIT
3602  021216  032737  100000  001162          BIT     #SC,$REG0               ;IS THE SC BIT SET
3603  021224  001022                          BNE     7$                      ;TRE HAS AN OPEN GOING TO BUS
3604  021226  104006                          ERROR   6                       ;TRE SET LOGIC NOT WORKING
3605  021230  000421                          BR      8$                      ;SET UP TO TEST AGAIN
3606  021232  104021                  2$:     ERROR   21                      ;UPE HAS OPEN IN LINE GOING TO BUS
3607  021234  004737  007260                  JSR     R7,WHYFO                ;SEE IF ANY OTHER ERROR BIT IS
3608                                                                          ;SET OTHER THAN UPE
3609  021240  000415                          BR      8$                      ;SET UP TO TEST AGAIN
3610  021242  104023                  3$:     ERROR   23                      ;SOMTHING WRONG WITH TRE BIT
3611  021244  004737  007260                  JSR     R7,WHYFO                ;SEE IF AN ERROR BIT IS SET
3612                                                                          ;OR BOTH UPE IN RHCS2 AND SC IN
3613                                                                          ;RHCS1 HAS AN OPEN BETWEEN IT AND THE BUS
3614  021250  000411                          BR      8$                      ;SET UP TO TEST AGAIN
3615  021252  104011                  4$:     ERROR   11                      ;SC BIT WAS SET BY EITHER ATTN OR
3616  021254  004737  007260                  JSR     R7,WHYFO                ;FIND WHAT ERROR BIT IS SET
3617                                                                          ;MCPE ERROR OR SC IS SHORTED TO +5 VOLTS
3618  021260  000405                          BR      8$                      ;SETUP TO TEST AGAIN
3619  021262  104022                  6$:     ERROR   22                      ;TRE WAS SET BY OTHER THAN UPE
3620  021264  004737  007260                  JSR     R7,WHYFO                ;FIND ERROR BIT THAT SET TRE
3621  021270  000401                          BR      8$                      ;SETUP TO TEST AGAIN
3622  021272  104013                  7$:     ERROR   13                      ;TRE HAS AN OPEN GOING TO THE BUS
3623  021274  032737  041400  177570  8$:     BIT     #SW14!SW9!SW8,@#177570  ;ANY LOOPING BEEING DONE
3624  021302  001003                          BNE     21$                     ;YES,LOAD TRE NO MATTER WHAT
3625  021304  105737  001103                  TSTB    $ERFLG                  ;WAS THERE AN ERROR
3626  021310  001010                          BNE     9$                      ;SKIP TRE CHECK
3627  021312  112777  000100  162044  21$:    MOVB    #TREB,@RHCS1B           ;LOAD TRE
3628  021320  032777  020000  162012          BIT     #UPE,@RHCS2             ;DID ERROR CLEAR
3629  021326  001401                          BEQ     9$                      ;YES EXIT TEST
3630  021330  104050                          ERROR   50                      ;LOADING TRE DID NOT CLEAR ERROR
3631  021332  004737  006626          9$:     JSR     R7,CLEER                ;SEE IF ERRORS ARE CLEARED
3632  021336  004737  050244                  JSR     R7,ERRTST
3633
3634  021342                          FANGIE:
3635
3636                                  ;;**********************************************************************
3637                                  ;*TEST 25        NED BIT TEST
3638                                          ;*THIS TEST WILL CHECK THAT NED (NON-EXISTANT DRIVE)
3639                                          ;*SETS TRE AND SC BITS IN RHCS1.....................
3640                                  ;;**********************************************************************
3641  021342  000004                  TST25:  SCOPE
3642
3643  021344  012777  000000  161766          MOV     #ZERO,@RHCS2            ;SETUP NED
3644  021352  005701                          TST     R1                      ;RH11 OR RH70
3645  021354  100403                          BMI     NEDERR                  ;IT'S AN RH11
3646  021356  012777  000000  161774          MOV     #ZERO,@RHBAE            ;SETUP BA EXTENSION
3647  021364  012777  177777  161740  NEDERR: MOV     #-1,@RHWC               ;FOR A 1 WORD TRANSFER
3648  021372  012777  001172  161734          MOV     #$REG4,@RHBA            ;SETUP BA
3649  021400  012777  000061  161722          MOV     #WRITE0,@RHCS1          ;TELL IT TO WRITE
3650  021406  005037  003446                  CLR     BITCNT                  ;CLEAR BIT COUNTER
3651  021412  032777  000200  161710  18$:    BIT     #RDY,@RHCS1             ;IS RDY SET
3652  021420  001015                          BNE     BAKER                   ;BIT IS SET
3653  021422  005237  003446                  INC     BITCNT                  ;COUNT UP
3654  021426  001371                          BNE     18$                     ;NOT FINISHED COUNTING
3655  021430  005037  003446                  CLR     BITCNT                  ;GET READY TO DO IT AGAIN
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3656  021434  032777  000200  161666  19$:    BIT     #RDY,@RHCS1             ;IS IT SET YET?
3657  021442  001004                          BNE     BAKER                   ;YES
3658  021444  005237  003446                  INC     BITCNT                  ;COUNT UP
3659  021450  001401                          BEQ     BAKER                   ;BIT IS NOT GOING TO SET
3660  021452  000770                          BR      19$
3661  021454                          BAKER:
3662  021454  017737  161650  001162          MOV     @RHCS1,$REG0            ;SET UP NEEDED BITS ONLY
3663  021462  042737  027777  001162          BIC     #GO!IE!RDY!A16.A17.PSEL!DVA!MCPE!READ6,$REG0
3664                                                                          ;CLEAR BITS NOT NEEDED
3665  021470  017737  161634  003420          MOV     @RHCS1,CS1              ;SAVE RHCS1
3666  021476  017737  161630  003444          MOV     @RHWC,WC                ;SAVE WORD COUNT
3667  021504  017737  161624  003414          MOV     @RHBA,BA                ;SAVE BUS ADDRESS
3668  021512  005701                          TST     R1                      ;IS IT AN RH11
3669  021514  001406                          BEQ     87$                     ;NO IT'S A 70
3670  021516  005037  003416                  CLR     BAE                     ;CLEAR BAE
3671  021522  005037  003424                  CLR     CS3                     ;CLEAR CS3
3672  021526  000137  021546                  JMP     86$                     ;CONTINUE
3673  021532  017737  161622  003416  87$:    MOV     @RHBAE,BAE              ;SAVE BUS ADDRESS EXTENSION
3674  021540  017737  161616  003424          MOV     @RHCS3,CS3              ;SAVE RHCS3
3675  021546  017737  161566  003422  86$:    MOV     @RHCS2,CS2              ;SAVE CS2
3676  021554  017737  161562  003432          MOV     @RHST,DS1               ;SAVE TESTER STATUS
3677  021562  017737  161556  003436          MOV     @RHER,ER1               ;SAVE ERROR REGISTER
3678  021570  017737  161554  003442          MOV     @RHTDB,TDR              ;SAVE TESTER DATA REG.
3679  021576  017737  161534  003440          MOV     @RHMR2,TC               ;SAVE MR2 TESTER REG.
3680  021604  032777  000200  161516          BIT     #RDY,@RHCS1             ;IS READY SET
3681  021612  001003                          BNE     99$                     ;YES CONTINUE TEST
3682  021614  104102                          ERROR   102                     ;READY NOT SET
3683  021616  004737  007260                  JSR     R7,WHYFO                ;ANY ERRORS SET
3684  021622  032777  010000  161510  99$:    BIT     #NED,@RHCS2             ;IS NED SET
3685  021630  001016                          BNE     1$                      ;YES CHECK TRE AND SC
3686  021632  022737  140000  001162          CMP     #SC!TRE,$REG0           ;IS THE SC AND TRE BITS SET
3687  021640  001460                          BEQ     2$                      ;YES NED IS IN ERROR
3688  021642  032737  040000  001162          BIT     #TRE,$REG0              ;IS JUST THE TRE BIT SET
3689  021650  001060                          BNE     3$                      ;TRE BIT MUST BE IN ERROR
3690  021652  032737  100000  001162          BIT     #SC,$REG0               ;IS JUST THE SC BIT SET
3691  021660  001060                          BNE     4$                      ;SC BIT SET ERRONIOUSLY
3692  021662  104024                          ERROR   24                      ;NED NOT SET IN RHCS2
3693  021664  000467                          BR      8$                      ;SET UP TO TEST AGAIN
3694  021666  022737  140000  001162  1$:     CMP     #SC!TRE,$REG0           ;IS SC AND TRE SET
3695  021674  001030                          BNE     22$                     ;FIND THE ERROR
3696  021676  012737  000000  004124          MOV     #ZERO,$CS1                      ;TEST FOR SHORTS
3697  021704  012737  167400  004126          MOV     #MPE!MXF!PGE!NEM!UPE!WCE!DLT,$CS2
3698  021712  012737  174100  004130          MOV     #APE!DPEHI!DPELO!WCEHI!WCELO!IE3,$CS3
3699  021720  013737  004132  004132          MOV     $ST,$ST
3700  021726  013737  004134  004134          MOV     $ER,$ER
3701  021734  012737  177777  004122          MOV     #-1,BEFORE              ;TELL WHYFO ITS FOR SHORTS
3702  021742  004737  007260                  JSR     R7,WHYFO                ;TEST FOR SHORTS
3703  021746  005037  004122                  CLR     BEFORE                  ;WE HAVE CHECKED FOR SHORTS
3704  021752  000137  022044                  JMP     8$                      ;LEAVE THE TEST
3705  021756  032737  040000  001162  22$:    BIT     #TRE,$REG0              ;THEN IS THE TRE BIT SET
3706  021764  001022                          BNE     6$                      ;SC BIT DID NOT SEE TRE BIT
3707  021766  032737  100000  001162          BIT     #SC,$REG0               ;IS THE SC BIT SET
3708  021774  001022                          BNE     7$                      ;TRE HAS AN OPEN GOING TO BUS
3709  021776  104006                          ERROR   6                       ;TRE SET LOGIC NOT WORKING
3710  022000  000421                          BR      8$                      ;SET UP TO TEST AGAIN
3711  022002  104025                  2$:     ERROR   25                      ;NED HAS OPEN IN LINE GOING TO BUS
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3712  022004  004737  007260                  JSR     R7,WHYFO                ;SEE IF ANY OTHER ERROR BIT IS
3713                                                                            ;SET OTHER THAN NED
3714  022010  000415                          BR      8$                      ;SET UP TO TEST AGAIN
3715  022012  104026                  3$:     ERROR   26                      ;SOMTHING WRONG WITH TRE BIT
3716  022014  004737  007260                  JSR     R7,WHYFO                ;SEE IF AN ERROR BIT IS SET
3717                                                                            ;OR BOTH NED IN RHCS2 AND SC IN
3718                                                                            ;RHCS1 HAS AN OPEN BETWEEN IT AND THE BUS
3719  022020  000411                          BR      8$                      ;SET UP TO TEST AGAIN
3720  022022  104011                  4$:     ERROR   11                      ;SC BIT WAS SET BY EITHER ATTN OR
3721  022024  004737  007260                  JSR     R7,WHYFO                ;FIND WHAT ERROR BIT IS SET
3722                                                                            ;MCPE ERROR OR SC IS SHORTED TO +5 VOLTS
3723  022030  000405                          BR      8$                      ;SETUP TO TEST AGAIN
3724  022032  104027                  6$:     ERROR   27                      ;TRE WAS SET BY OTHER THAN NED
3725  022034  004737  007260                  JSR     R7,WHYFO                ;FIND ERROR BIT THAT SET TRE
3726  022040  000401                          BR      8$                      ;SETUP TO TEST AGAIN
3727  022042  104013                  7$:     ERROR   13                      ;TRE HAS AN OPEN GOING TO THE BUS
3728  022044  032737  041400  177570  8$:     BIT     #SW14!SW9!SW8,@#177570  ;ANY LOOPING BEEING DONE
3729  022052  001003                          BNE     21$                     ;YES,LOAD TRE NO MATTER WHAT
3730  022054  105737  001103                  TSTB    $ERFLG                  ;WAS THERE AN ERROR
3731  022060  001010                          BNE     9$                      ;SKIP TRE CHECK
3732  022062  112777  000100  161274  21$:    MOVB    #TREB,@RHCS1B           ;LOAD TRE
3733  022070  032777  010000  161242          BIT     #NED,@RHCS2             ;DID ERROR CLEAR
3734  022076  001401                          BEQ     9$                      ;YES EXIT TEST
3735  022100  104050                          ERROR   50                      ;LOADING TRE DID NOT CLEAR ERROR
3736  022102  004737  006626          9$:     JSR     R7,CLEER                ;SEE IF ERRORS ARE CLEARED
3737  022106  004737  050244                  JSR     R7,ERRTST
3738
3739
3740                                  ;;*****************************************************************
3741                                  ;*TEST 26       MXF ,TRE AND SC BIT TEST
3742                                          ;*THIS TEST WILL CHECK THAT MXF
3743                                          ;*(MISSED TRANSFER ERROR) WILL
3744                                          ;*SET TRE AND SC BITS.....
3745                                  ;;*****************************************************************
3746  022112  000004                  TST26:  SCOPE
3747
3748  022114  012777  000027  161216          MOV     #PAT!7,@RHCS2           ;SET MXF BIT
3749  022122  012777  177777  161202          MOV     #-1,@RHWC               ;SET UP WORD COUNT
3750  022130  012777  004100  161176          MOV     #RBUF,@RHBA             ;SETUP BA
3751  022136  012777  000000  161204          MOV     #ZERO,@RHTDB            ;SET MXF ERROR
3752  022144  012777  000061  161156          MOV     #WRITE0,@RHCS1          ;TELL IT TO WRITE
3753  022152  005037  003446                  CLR     BITCNT                  ;CLEAR BIT COUNTER
3754  022156  032777  000200  161144  18$:    BIT     #RDY,@RHCS1             ;IS RDY SET
3755  022164  001015                          BNE     CHARLE                  ;BIT IS SET
3756  022166  005237  003446                  INC     BITCNT                  ;COUNT UP
3757  022172  001371                          BNE     18$                     ;NOT FINISHED COUNTING
3758  022174  005037  003446                  CLR     BITCNT                  ;GET READY TO DO IT AGAIN
3759  022200  032777  000200  161122  19$:    BIT     #RDY,@RHCS1             ;IS IT SET YET?
3760  022206  001004                          BNE     CHARLE                  ;YES
3761  022210  005237  003446                  INC     BITCNT                  ;COUNT UP
3762  022214  001401                          BEQ     CHARLE                  ;BIT IS NOT GOING TO SET
3763  022216  000770                          BR      19$
3764  022220                          CHARLE:
3765  022220  017737  161104  001162          MOV     @RHCS1,$REG0            ;SET UP NEEDED BITS ONLY
3766  022226  042737  027777  001162          BIC     #GO!IE!RDY!A16!A17!PSEL!DVA!MCPE!READ6,$REG0
3767                                                                          ;CLEAR BITS NOT NEEDED
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 3768  022234  017737  161070  003420          MOV     @RHCS1,CS1              ;SAVE RHCS1
 3769  022242  017737  161064  003444          MOV     @RHWC,WC                ;SAVE WORD COUNT
 3770  022250  017737  161060  003414          MOV     @RHBA,BA                ;SAVE BUS ADDRESS
 3771  022256  005701                          TST     R1                      ;IS IT AN RH11
 3772  022260  001406                          BEQ     87$                     ;NO IT'S A 70
 3773  022262  005037  003416                  CLR     BAE                     ;CLEAR BAE
 3774  022266  005037  003424                  CLR     CS3                     ;CLEAR CS3
 3775  022272  000137  022312                  JMP     86$                     ;CONTINUE
 3776  022276  017737  161056  003416  87$:    MOV     @RHBAE,BAE              ;SAVE BUS ADDRESS EXTENSION
 3777  022304  017737  161052  003424          MOV     @RHCS3,CS3              ;SAVE RHCS3
 3778  022312  017737  161022  003422  86$:    MOV     @RHCS2,CS2              ;SAVE CS2
 3779  022320  017737  161016  003432          MOV     @RHST,DS1               ;SAVE TESTER STATUS
 3780  022326  017737  161012  003436          MOV     @RHER,ER1               ;SAVE ERROR REGISTER
 3781  022334  017737  161010  003442          MOV     @RHTDB,TDR              ;SAVE TESTER DATA REG.
 3782  022342  017737  160770  003440          MOV     @RHMR2,TC               ;SAVE MR2 TESTER REG.
 3783  022350  032777  000200  160752          BIT     #RDY,@RHCS1             ;IS READY SET
 3784  022356  001003                          BNE     99$                     ;YES CONTINUE TEST
 3785  022360  104102                          ERROR   102                     ;READY NOT SET
 3786  022362  004737  007260                  JSR     R7,WHYFO                ;ANY ERRORS SET
 3787  022366  032777  001000  160744  99$:    BIT     #MXF,@RHCS2             ;IS MXF SET
 3788  022374  001016                          BNE     1$                      ;YES CHECK TRE AND SC
 3789  022376  022737  140000  001162          CMP     #SC!TRE,$REG0           ;IS THE SC AND TRE BITS SET
 3790  022404  001460                          BEQ     2$                      ;YES MXF IS IN ERROR
 3791  022406  032737  040000  001162          BIT     #TRE,$REG0              ;IS JUST THE TRE BIT SET
 3792  022414  001060                          BNE     3$                      ;TRE BIT MUST BE IN ERROR
 3793  022416  032737  100000  001162          BIT     #SC,$REG0               ;IS JUST THE SC BIT SET
 3794  022424  001060                          BNE     4$                      ;SC BIT SET ERRONIOUSLY
 3795  022426  104030                          ERROR   30                      ;MXF NOT SET IN RHCS2
 3796  022430  000467                          BR      8$                      ;SET UP TO TEST AGAIN
 3797  022432  022737  140000  001162  1$:     CMP     #SC!TRE,$REG0           ;IS SC AND TRE SET
 3798  022440  001030                          BNE     22$                     ;FIND THE ERROR
 3799  022442  012737  020000  004124          MOV     #MCPE,$CS1                      ;TEST FOR SHORTS
 3800  022450  012737  176400  004126          MOV     #MPE!PGE!NEM!NED!UPE!WCE!DLT,$CS2
 3801  022456  013737  004130  004130          MOV     $CS3,$CS3
 3802  022464  013737  004132  004132          MOV     $ST,$ST
 3803  022472  012737  030165  004134          MOV     #ILF!RMR!DPE!RMBEX!RFAIL!DTE!OPI,$ER
 3804  022500  012737  177777  004122          MOV     #-1,BEFORE              ;TELL WHYFO ITS FOR SHORTS
 3805  022506  004737  007260                  JSR     R7,WHYFO                ;TEST FOR SHORTS
 3806  022512  005037  004122                  CLR     BEFORE                  ;WE HAVE CHECKED FOR SHORTS
 3807  022516  000137  022610                  JMP     8$                      ;LEAVE THE TEST
 3808  022522  032737  040000  001162  22$:    BIT     #TRE,$REG0              ;THEN IS THE TRE BIT SET
 3809  022530  001022                          BNE     6$                      ;SC BIT DID NOT SEE TRE BIT
 3810  022532  032737  100000  001162          BIT     #SC,$REG0               ;IS THE SC BIT SET
 3811  022540  001022                          BNE     7$                      ;TRE HAS AN OPEN GOING TO BUS
 3812  022542  104006                          ERROR   6                       ;TRE SET LOGIC NOT WORKING
 3813  022544  000421                          BR      8$                      ;SET UP TO TEST AGAIN
 3814  022546  104031                  2$:     ERROR   31                      ;MXF HAS OPEN IN LINE GOING TO BUS
 3815  022550  004737  007260                  JSR     R7,WHYFO                ;SEE IF ANY OTHER ERROR BIT IS
 3816                                                                          ;SET OTHER THAN MXF
 3817  022554  000415                          BR      8$                      ;SET UP TO TEST AGAIN
 3818  022556  104032                  3$:     ERROR   32                      ;SOMTHING WRONG WITH TRE BIT
 3819  022560  004737  007260                  JSR     R7,WHYFO                ;SEE IF AN ERROR BIT IS SET
 3820                                                                          ;OR BOTH MXF IN RHCS2 AND SC IN
 3821                                                                          ;RHCS1 HAS AN OPEN BETWEEN IT AND THE BUS
 3822  022564  000411                          BR      8$                      ;SET UP TO TEST AGAIN
 3823  022566  104011                  4$:     ERROR   11                      ;SC BIT WAS SET BY EITHER ATTN OR
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3824  022570  004737  007260                  JSR     R7,WHYFO                ;FIND WHAT ERROR BIT IS SET
3825                                                                            ;MCPE ERROR OR SC IS SHORTED TO +5 VOLTS
3826  022574  000405                          BR      8$                      ;SETUP TO TEST AGAIN
3827  022576  104033                  6$:     ERROR   33                      ;TRE WAS SET BY OTHER THAN MXF
3828  022600  004737  007260                  JSR     R7,WHYFO                ;FIND ERROR BIT THAT SET TRE
3829  022604  000401                          BR      8$                      ;SETUP TO TEST AGAIN
3830  022606  104013                  7$:     ERROR   13                      ;TRE HAS AN OPEN GOING TO THE BUS
3831  022610  032737  041400  177570  8$:     BIT     #SW14!SW9.SW8,@#177570  ;ANY LOOPING BEEING DONE
3832  022616  001003                          BNE     21$                     ;YES,LOAD TRE NO MATTER WHAT
3833  022620  105737  001103                  TSTB    $ERFLG                  ;WAS THERE AN ERROR
3834  022624  001010                          BNE     9$                      ;SKIP TRE CHECK
3835  022626  112777  000100  160530  21$:    MOVB    #TREB,@RHCS1B           ;LOAD TRE
3836  022634  032777  001000  160476          BIT     #MXF,@RHCS2             ;DID ERROR CLEAR
3837  022642  001401                          BEQ     9$                      ;YES EXIT TEST
3838  022644  104050                          ERROR   50                      ;LOADING TRE DID NOT CLEAR ERROR
3839  022646  004737  006626          9$:     JSR     R7,CLEER                ;SEE IF ERRORS ARE CLEARED
3840  022652  004737  050244                  JSR     R7,ERRTST
3841                                  ;;**************************************************************
3842                                  ;*TEST 27        PGE ERROR BIT TEST
3843                                          ;*THIS TEST FORCES PGE TO SET IN RHCS2
3844                                          ;*AND VERIFYS TRE AND SC IS SET IN RHCS1
3845                                  ;;**************************************************************
3846  022656  000004                  TST27:  SCOPE
3847  022660  012777  000007  160452          MOV     #7,@RHCS2               ;SET UNIT NUMBER
3848  022666  012777  004000  160440          MOV     #EVENAD,@RHBA           ;SETUP BUS ADDRESS
3849  022674  005701                          TST     R1                      ;IS IT AN 11 OR A 70
3850  022676  100403                          BMI     JUMP                    ;ITS AN RH11
3851  022700  012777  000000  160452          MOV     #ZERO,@RHBAE            ;SETUP BAE
3852  022706  012777  000061  160414  JUMP:   MOV     #WRITE0,@RHCS1          ;TELL IT TO WRITE
3853  022714  012777  000061  160406          MOV     #WRITE0,@RHCS1          ;CREATE THE ERROR
3854  022722  005037  003446                  CLR     BITCNT                  ;CLEAR BIT COUNTER
3855  022726  032777  000200  160374  18$:    BIT     #RDY,@RHCS1             ;IS RDY SET
3856  022734  001015                          BNE     PGETST                  ;BIT IS SET
3857  022736  005237  003446                  INC     BITCNT                  ;COUNT UP
3858  022742  001371                          BNE     18$                     ;NOT FINISHED COUNTING
3859  022744  005037  003446                  CLR     BITCNT                  ;GET READY TO DO IT AGAIN
3860  022750  032777  000200  160352  19$:    BIT     #RDY,@RHCS1             ;IS IT SET YET?
3861  022756  001004                          BNE     PGETST                  ;YES
3862  022760  005237  003446                  INC     BITCNT                  ;COUNT UP
3863  022764  001401                          BEQ     PGETST                  ;BIT IS NOT GOING TO SET
3864  022766  000770                          BR      19$
3865  022770                          PGETST:
3866  022770  017737  160334  001162          MOV     @RHCS1,$REG0            ;SET UP NEEDED BITS ONLY
3867  022776  042737  027777  001162          BIC     #GO!IE!RDY!A16!A17!PSEL!DVA!MCPE!READ6,$REG0
3868                                                                          ;CLEAR BITS NOT NEEDED
3869  023004  017737  160320  003420          MOV     @RHCS1,CS1              ;SAVE RHCS1
3870  023012  017737  160314  003444          MOV     @RHWC,WC                ;SAVE WORD COUNT
3871  023020  017737  160310  003414          MOV     @RHBA,BA                ;SAVE BUS ADDRESS
3872  023026  005701                          TST     R1                      ;IS IT AN RH11
3873  023030  001406                          BEQ     87$                     ;NO IT'S A 70
3874  023032  005037  003416                  CLR     BAE                     ;CLEAR BAE
3875  023036  005037  003424                  CLR     CS3                     ;CLEAR CS3
3876  023042  000137  023062                  JMP     86$                     ;CONTINUE
3877  023046  017737  160306  003416  87$:    MOV     @RHBAE,BAE              ;SAVE BUS ADDRESS EXTENSION
3878  023054  017737  160302  003424          MOV     @RHCS3,CS3              ;SAVE RHCS3
3879  023062  017737  160252  003422  86$:    MOV     @RHCS2,CS2              ;SAVE CS2
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3880  023070  017737  160246  003432          MOV     @RHST,DS1               ;SAVE TESTER STATUS
3881  023076  017737  160242  003436          MOV     @RHER,ER1               ;SAVE ERROR REGISTER
3882  023104  017737  160240  003442          MOV     @RHTDB,TDR              ;SAVE TESTER DATA REG.
3883  023112  017737  160220  003440          MOV     @RHMR2,TC               ;SAVE MR2 TESTER REG.
3884  023120  032777  000200  160202          BIT     #RDY,@RHCS1             ;IS READY SET
3885  023126  001003                          BNE     99$                     ;YES CONTINUE TEST
3886  023130  104102                          ERROR   102                     ;READY NOT SET
3887  023132  004737  007260                  JSR     R7,WHYFO                ;ANY ERRORS SET
3888  023136  032777  002000  160174  99$:    BIT     #PGE,@RHCS2             ;IS PGE SET
3889  023144  001016                          BNE     1$                      ;YES CHECK TRE AND SC
3890  023146  022737  140000  001162          CMP     #SC!TRE,$REG0           ;IS THE SC AND TRE BITS SET
3891  023154  001460                          BEQ     2$                      ;YES PGE IS IN ERROR
3892  023156  032737  040000  001162          BIT     #TRE,$REG0              ;IS JUST THE TRE BIT SET
3893  023164  001060                          BNE     3$                      ;TRE BIT MUST BE IN ERROR
3894  023166  032737  100000  001162          BIT     #SC,$REG0               ;IS JUST THE SC BIT SET
3895  023174  001060                          BNE     4$                      ;SC BIT SET ERRONIOUSLY
3896  023176  104051                          ERROR   51                      ;PGE NOT SET IN RHCS2
3897  023200  000467                          BR      8$                      ;SET UP TO TEST AGAIN
3898  023202  022737  140000  001162  1$:     CMP     #SC!TRE,$REG0           ;IS SC AND TRE SET
3899  023210  001030                          BNE     22$                     ;FIND THE ERROR
3900  023212  013737  004124  004124          MOV     $CS1,$CS1                       ;TEST FOR SHORTS
3901  023220  012737  175400  004126          MOV     #MPE!MXF!NEM!NED!UPE!WCE!DLT,$CS2
3902  023226  013737  004130  004130          MOV     $CS3,$CS3
3903  023234  013737  004132  004132          MOV     $ST,$ST
3904  023242  012737  030175  004134          MOV     #ILF!CPE!RMR!DPE!RMBEX!RFAIL!DTE!OPI,$ER
3905  023250  012737  177777  004122          MOV     #-1,BEFORE              ;TELL WHYFO ITS FOR SHORTS
3906  023256  004737  007260                  JSR     R7,WHYFO                ;TEST FOR SHORTS
3907  023262  005037  004122                  CLR     BEFORE                  ;WE HAVE CHECKED FOR SHORTS
3908  023266  000137  023360                  JMP     8$                      ;LEAVE THE TEST
3909  023272  032737  040000  001162  22$:    BIT     #TRE,$REG0              ;THEN IS THE TRE BIT SET
3910  023300  001022                          BNE     6$                      ;SC BIT DID NOT SEE TRE BIT
3911  023302  032737  100000  001162          BIT     #SC,$REG0               ;IS THE SC BIT SET
3912  023310  001022                          BNE     7$                      ;TRE HAS AN OPEN GOING TO BUS
3913  023312  104006                          ERROR   6                       ;TRE SET LOGIC NOT WORKING
3914  023314  000421                          BR      8$                      ;SET UP TO TEST AGAIN
3915  023316  104123                  2$:     ERROR   123                     ;PGE HAS OPEN IN LINE GOING TO BUS
3916  023320  004737  007260                  JSR     R7,WHYFO                ;SEE IF ANY OTHER ERROR BIT IS
3917                                                                          ;SET OTHER THAN PGE
3918  023324  000415                          BR      8$                      ;SET UP TO TEST AGAIN
3919  023326  104171                  3$:     ERROR   171                     ;SOMTHING WRONG WITH TRE BIT
3920  023330  004737  007260                  JSR     R7,WHYFO                ;SEE IF AN ERROR BIT IS SET
3921                                                                          ;OR BOTH PGE IN RHCS2 AND SC IN
3922                                                                          ;RHCS1 HAS AN OPEN BETWEEN IT AND THE BUS
3923  023334  000411                          BR      8$                      ;SET UP TO TEST AGAIN
3924  023336  104011                  4$:     ERROR   11                      ;SC BIT WAS SET BY EITHER ATTN OR
3925  023340  004737  007260                  JSR     R7,WHYFO                ;FIND WHAT ERROR BIT IS SET
3926                                                                          ;MCPE ERROR OR SC IS SHORTED TO +5 VOLTS
3927  023344  000405                          BR      8$                      ;SETUP TO TEST AGAIN
3928  023346  104172                  6$:     ERROR   172                     ;TRE WAS SET BY OTHER THAN PGE
3929  023350  004737  007260                  JSR     R7,WHYFO                ;FIND ERROR BIT THAT SET TRE
3930  023354  000401                          BR      8$                      ;SETUP TO TEST AGAIN
3931  023356  104013                  7$:     ERROR   13                      ;TRE HAS AN OPEN GOING TO THE BUS
3932  023360  032737  041400  177570  8$:     BIT     #SW14!SW9!SW8,@#177570  ;ANY LOOPING BEEING DONE
3933  023366  001003                          BNE     21$                     ;YES,LOAD TRE NO MATTER WHAT
3934  023370  105737  001103                  TSTB    $ERFLG                  ;WAS THERE AN ERROR
3935  023374  001010                          BNE     9$                      ;SKIP TRE CHECK
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3936  023376  112777  000100  157760  21$:    MOVB    #TREB,@RHCS1B           ;LOAD TRE
3937  023404  032777  002000  157726          BIT     #PGE,@RHCS2             ;DID ERROR CLEAR
3938  023412  001401                          BEQ     9$                      ;YES EXIT TEST
3939  023414  104050                          ERROR   50                      ;LOADING TRE DID NOT CLEAR ERROR
3940  023416  004737  006626          9$:     JSR     R7,CLEER                ;SEE IF ERRORS ARE CLEARED
3941  023422  004737  050244                  JSR     R7,ERRTST
3942                                  ;;*****************************************************************
3943                                  ;*TEST 30        MXF,TRE AND SC BIT TEST (RH11 ONLY)
3944                                  ;*THIS TEST SEES IF MXF CAN BE SET BY A MOVE
3945                                  ;*INSTRUCTION AND THAT TRE AND SC ARE SET IN
3946                                  ;*RHCS1.MXF CAN BE SET THIS WAY IN AN RH11 BUT CN
3947                                  ;*NOT BE SET THIS WAY IN AN RH70.................
3948                                  ;;*****************************************************************
3949  023426  000004          TST30:  SCOPE
3950  023430  005701                  TST     R1                      ;IS IT A 70 OR 1'
3951  023432  100402                  BMI     LEAP                    ;IT'S AN RH11 DO THE TEST
3952  023434  000137  024160          JMP     FROG                    ;RH70,EXIT TEST
3953  023440  012777  000007  157672  LEAP:   MOV     #7,@RHCS2               ;SETUP UNIT 7
3954  023446  052777  001000  157664          BIS     #MXF,@RHCS2             ;SET MXF
3955  023454  005037  003446                  CLR     BITCNT                  ;CLEAR BIT COUNTER
3956  023460  032777  001000  157652  18$:    BIT     #MXF,@RHCS2             ;IS MXF SET
3957  023466  001015                          BNE     MIXIT                   ;BIT IS SET
3958  023470  005237  003446                  INC     BITCNT                  ;COUNT UP
3959  023474  001371                          BNE     18$                     ;NOT FINISHED COUNTING
3960  023476  005037  003446                  CLR     BITCNT                  ;GET READY TO DO IT AGAIN
3961  023502  032777  001000  157630  19$:    BIT     #MXF,@RHCS2             ;IS IT SET YET?
3962  023510  001004                          BNE     MIXIT                   ;YES
3963  023512  005237  003446                  INC     BITCNT                  ;COUNT UP
3964  023516  001401                          BEQ     MIXIT                   ;BIT IS NOT GOING TO SET
3965  023520  000770                          BR      19$
3966  023522                          MIXIT:
3967  023522  017737  157602  001162          MOV     @RHCS1,$REG0            ;SET UP NEEDED BITS ONLY
3968  023530  042737  027777  001162          BIC     #GO!IE!RDY!A16!A17!PSEL!DVA!MCPE!READ6,$REG0
3969                                                                          ;CLEAR BITS NOT NEEDED
3970  023536  017737  157566  003420          MOV     @RHCS1,CS1              ;SAVE RHCS1
3971  023544  017737  157562  003444          MOV     @RHWC,WC                ;SAVE WORD COUNT
3972  023552  017737  157556  003414          MOV     @RHBA,BA                ;SAVE BUS ADDRESS
3973  023560  005701                          TST     R1                      ;IS IT AN RH11
3974  023562  001406                          BEQ     87$                     ;NO IT'S A 70
3975  023564  005037  003416                  CLR     BAE                     ;CLEAR BAE
3976  023570  005037  003424                  CLR     CS3                     ;CLEAR CS3
3977  023574  000137  023614                  JMP     86$                     ;CONTINUE
3978  023600  017737  157554  003416  87$:    MOV     @RHBAE,BAE              ;SAVE BUS ADDRESS EXTENSION
3979  023606  017737  157550  003424          MOV     @RHCS3,CS3              ;SAVE RHCS3
3980  023614  017737  157520  003422  86$:    MOV     @RHCS2,CS2              ;SAVE CS2
3981  023622  017737  157514  003432          MOV     @RHST,DS1               ;SAVE TESTER STATUS
3982  023630  017737  157510  003436          MOV     @RHER,ER1               ;SAVE ERROR REGISTER
3983  023636  017737  157506  003442          MOV     @RHTDB,TDR              ;SAVE TESTER DATA REG.
3984  023644  017737  157466  003440          MOV     @RHMR2,TC               ;SAVE MR2 TESTER REG.
3985  023652  032777  000200  157450          BIT     #RDY,@RHCS1             ;IS READY SET
3986  023660  001003                          BNE     99$                     ;YES CONTINUE TEST
3987  023662  104102                          ERROP   102                     ;READY NOT SET
3988  023664  004737  007260                  JSR     R7,WHYFO                ;ANY ERRORS SET
3989  023670  032777  001000  157442  99$:    BIT     #MXF,@RHCS2             ;IS MXF SET
3990  023676  001016                          BNE     1$                      ;YES CHECK TRE AND SC
3991  023700  022737  140000  001162          CMP     #SC!TRE,$REG0           ;IS THE SC AND TRE BITS SE'
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 3992  023706  001460                          BEQ     2$                      ;YES MXF IS IN ERROR
 3993  023710  032737  040000  001162          BIT     #TRE,$REGO              ;IS JUST THE TRE BIT SET
 3994  023716  001060                          BNE     3$                      ;TRE BIT MUST BE IN ERROR
 3995  023720  032737  100000  001162          BIT     #SC,$REGO               ;IS JUST THE SC BIT SET
 3996  023726  001060                          BNE     4$                      ;SC BIT SET ERRONIOUSLY
 3997  023730  104030                          ERROR   30                      ;MXF NOT SET IN RHCS2
 3998  023732  000467                          BR      8$                      ;SET UP TO TEST AGAIN
 3999  023734  022737  140000  001162  1$:     CMP     #SC!TRE,$REGO           ;IS SC AND TRE SET
 4000  023742  001030                          BNE     22$                     ;FIND THE ERROR
 4001  023744  013737  004124  004124          MOV     $CS1,$CS1                       ;TEST FOR SHORTS
 4002  023752  012737  176400  004126          MOV     #MPE!PGE!NEM!NED!UPE!WCE!DLT,$CS2
 4003  023760  013737  004130  004130          MOV     $CS3,$CS3
 4004  023766  013737  004132  004132          MOV     $ST,$ST
 4005  023774  013737  004134  004134          MOV     $ER,$ER
 4006  024002  012737  177777  004122          MOV     #-1,BEFORE              ;TELL WHYFO ITS FOR SHORTS
 4007  024010  004737  007260                  JSR     R7,WHYFO                ;TEST FOR SHORTS
 4008  024014  005037  004122                  CLR     BEFORE                  ;WE HAVE CHECKED FOR SHORTS
 4009  024020  000137  024112                  JMP     8$                      ;LEAVE THE TEST
 4010  024024  032737  040000  001162  22$:    BIT     #TRE,$REGO              ;THEN IS THE TRE BIT SET
 4011  024032  001022                          BNE     6$                      ;SC BIT DID NOT SEE TRE BIT
 4012  024034  032737  100000  001162          BIT     #SC,$REGO               ;IS THE SC BIT SET
 4013  024042  001022                          BNE     7$                      ;TRE HAS AN OPEN GOING TO BUS
 4014  024044  104006                          ERROR   6                       ;TRE SET LOGIC NOT WORKING
 4015  024046  000421                          BR      8$                      ;SET UP TO TEST AGAIN
 4016  024050  104031                  2$:     ERROR   31                      ;MXF HAS OPEN IN LINE GOING TO BUS
 4017  024052  004737  007260                  JSR     R7,WHYFO                ;SEE IF ANY OTHER ERROR BIT IS
 4018                                                                          ;SET OTHER THAN MXF
 4019  024056  000415                          BR      8$                      ;SET UP TO TEST AGAIN
 4020  024060  104032                  3$:     ERROR   32                      ;SOMTHING WRONG WITH TRE BIT
 4021  024062  004737  007260                  JSR     R7,WHYFO                ;SEE IF AN ERROR BIT IS SET
 4022                                                                          ;OR BOTH MXF IN RHCS2 AND SC IN
 4023                                                                          ;RHCS1 HAS AN OPEN BETWEEN IT AND THE BUS
 4024  024066  000411                          BR      8$                      ;SET UP TO TEST AGAIN
 4025  024070  104011                  4$:     ERROR   11                      ;SC BIT WAS SET BY EITHER ATTN OR
 4026  024072  004737  007260                  JSR     R7,WHYFO                ;FIND WHAT ERROR BIT IS SET
 4027                                                                          ;MCPE ERROR OR SC IS SHORTED TO +5 VOLTS
 4028  024076  000405                          BR      8$                      ;SETUP TO TEST AGAIN
 4029  024100  104033                  6$:     ERROR   33                      ;TRE WAS SET BY OTHER THAN MXF
 4030  024102  004737  007260                  JSR     R7,WHYFO                ;FIND ERROR BIT THAT SET TRE
 4031  024106  000401                          BR      8$                      ;SETUP TO TEST AGAIN
 4032  024110  104013                  7$:     ERROR   13                      ;TRE HAS AN OPEN GOING TO THE BUS
 4033  024112  032737  041400  177570  8$:     BIT     #SW14!SW9!SW8,@#177570  ;ANY LOOPING BEEING DONE
 4034  024120  001003                          BNE     21$                     ;YES,LOAD TRE NO MATTER WHAT
 4035  024122  105737  001103                  TSTB    $ERFLG                  ;WAS THERE AN ERROR
 4036  024126  001010                          BNE     9$                      ;SKIP TRE CHECK
 4037  024130  112777  000100  157226  21$:    MOVB    #TREB,@RHCS1B           ;LOAD TRE
 4038  024136  032777  001000  157174          BIT     #MXF,@RHCS2             ;DID ERROR CLEAR
 4039  024144  001401                          BEQ     9$                      ;YES EXIT TEST
 4040  024146  104050                          ERROR   50                      ;LOADING TRE DID NOT CLEAR ERROR
 4041  024150  004737  006626          9$:     JSR     R7,CLEER                ;SEE IF ERRORS ARE CLEARED
 4042  024154  004737  050244                  JSR     R7,ERRTST
 4043  024160                          FROG:
 4044                                  ;;*****************************************************************
 4045                                  ;*TEST 31        MCPE AND SC ERROR TET
 4046                                          ;*THIS TEST CHECKS THAT MCPE CAN BE SET IN RHCS1
 4047                                          ;*AND THAT MCPE SETS SC IN RHCS1.................
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4048
4049  024160  000004                          ;;*****************************************************************
4050  024162  012777  000007  157150  TST31:  SCOPE
4051  024170  012777  000010  157156          MOV     #7,@RHCS2               ;SETUP UNIT NO.
4052  024176  013777  001162  157144          MOV     #ICPA,@RHMR1            ;INVERT CONTROL PARITY
4053  024204  013777  001162  157136          MOV     $REG0,@RHTDB            ;TRANSFER INFO TO TESTER
4054  024212  005037  003446                  MOV     $REG0,@RHTDB            ;DO IT FOR SECOND TIME
4055  024216  032777  000200  157104  18$:     CLR     BITCNT                  ;CLEAR BIT COUNTER
4056  024224  001015                          BIT     #RDY,@RHCS1             ;IS RDY SET
4057  024226  005237  003446                  BNE     MCPET                   ;BIT IS SET
4058  024232  001371                          INC     BITCNT                  ;COUNT UP
4059  024234  005037  003446                  BNE     18$                     ;NOT FINISHED COUNTING
4060  024240  032777  000200  157062  19$:     CLR     BITCNT                  ;GET READY TO DO IT AGAIN
4061  024246  001004                          BIT     #RDY,@RHCS1             ;IS IT SET YET?
4062  024250  005237  003446                  BNE     MCPET                   ;YES
4063  024254  001401                          INC     BITCNT                  ;COUNT UP
4064  024256  000770                          BEQ     MCPET                   ;BIT IS NOT GOING TO SET
4065  024260                          MCPET:  BR      19$
4066  024260  017737  157044  003420          MOV     @RHCS1,CS1              ;SAVE RHCS1
4067  024266  017737  157040  003444          MOV     @RHWC,WC                ;SAVE WORD COUNT
4068  024274  017737  157034  003414          MOV     @RHBA,BA                ;SAVE BUS ADDRESS
4069  024302  005701                          TST     R1                      ;IS IT AN RH11
4070  024304  001406                          BEQ     87$                     ;NO IT'S A 70
4071  024306  005037  003416                  CLR     BAE                     ;CLEAR BAE
4072  024312  005037  003424                  CLR     CS3                     ;CLEAR CS3
4073  024316  000137  024336                  JMP     86$                     ;CONTINUE
4074  024322  017737  157032  003416  87$:     MOV     @RHBAE,BAE              ;SAVE BUS ADDRESS EXTENSION
4075  024330  017737  157026  003424          MOV     @RHCS3,CS3              ;SAVE RHCS3
4076  024336  017737  156776  003422  86$:     MOV     @RHCS2,CS2              ;SAVE CS2
4077  024344  017737  156772  003432          MOV     @RHST,DS1               ;SAVE TESTER STATUS
4078  024352  017737  156766  003436          MOV     @RHER,ER1               ;SAVE ERROR REGISTER
4079  024360  017737  156764  003442          MOV     @RHTDB,TDR              ;SAVE TESTER DATA REG.
4080  024366  017737  156744  003440          MOV     @RHMR2,TC               ;SAVE MR2 TESTER REG.
4081  024374  032777  000200  156726          BIT     #RDY,@RHCS1             ;IS READY SET
4082  024402  001003                          BNE     MPETST                  ;YES,TEST MCPE
4083  024404  104102                          ERROR   102                     ;READY IS NOT SET
4084  024406  004737  007260                  JSR     R7,WHYFO                ;ANY ERRORS SET
4085  024412  032777  020000  156710  MPETST: BIT     #MCPE,@RHCS1            ;IS MCPE SET
4086  024420  001425                          BEQ     1$
4087  024422  032777  100000  156700          BIT     #SC,@RHCS1              ;IS SC SET
4088  024430  001416                          BEQ     22$                     ;SC NOT SET
4089  024432  012737  040000  004124          MOV     #TRE,$CS1               ;GET READY TO TEST FOR SHORTS
4090  024440  012737  177400  004126          MOV     #MPE!MXF!PGE!NEM!NED!UPE!WCE!DLT,$CS2
4091  024446  012737  177777  004122          MOV     #-1,BEFORE
4092  024454  004737  007260                  JSR     R7,WHYFO                ;SEE IF ANY SHORTS
4093  024460  005037  004122                  CLR     BEFORE
4094  024464  000406                          BR      ERR30                   ;GET OUT OF TEST
4095  024466  104130                  22$:    ERROR   130                     ;MCPE ERROR OK BUT SC DID
4096                                                                          ;NOT SET SC HAS OPEN TO
4097                                                                          ;BUS OR MCPE GOING TO OR
4098                                                                          ;GATE FOR SC WAS NOT SEEN
4099  024470  000137  024502                  JMP     ERR30
4100  024474  104131                  1$:     ERROR   131                     ;MCPE DID NOT SET
4101  024476  004737  007260                  JSR     R7,WHYFO                ;WAS THERE ANOTHER ERROR
4102  024502  004737  006626          ERR30:  JSR     R7,CLEER                ;CLEAR ERRORS
4103  024506  004737  050244                  JSR     R7,ERRTST               ;WAS THERE AN ERROR
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                                ;;*****************************************************************
                                ;*TEST 32       DOUBLE TRANSFER TEST,1 WORD FROM AN ADDRESS BASE 4
                                        ;*THIS TEST CHECKS THAT A ONE WORD TRANSFER
                                        ;*FROM AN ADDRESS DIVISIBLE BY 4 WILL NOT SET
                                        ;*DBL IN RHCS3.....RH70 ONLY.................
                                ;;*****************************************************************
024512  000004                TST32:  SCOPE
024514  005701                        TST     R1                      ;IS IN AN RH11
024516  100532                        BMI     TST33           ;;GET OUT OF TEST
024520  012777  177777  156604        MOV     #-1,@RHWC               ;SET UP WC FOR ONE WORD
024526  012777  004000  156600        MOV     #EVENAD,@RHBA           ;SETUP BUS ADDRESS
024534  012777  000000  156616        MOV     #ZERO,@RHBAE            ;SETUP BUS ADDRESS EXTENSION
024542  012777  000007  156570        MOV     #7,@RHCS2               ;DEVICE 7
024550  012777  000061  156552        MOV     #WRITE0,@RHCS1          ;TELL IT TO WRITE0
024556  005037  003446                CLR     BITCNT                  ;CLEAR BIT COUNTER
024562  032777  000200  156540  18$:  BIT     #RDY,@RHCS1             ;IS RDY SET
024570  001015                        BNE     3$                      ;BIT IS SET
024572  005237  003446                INC     BITCNT                  ;COUNT UP
024576  001371                        BNE     18$                     ;NOT FINISHED COUNTING
024600  005037  003446                CLR     BITCNT                  ;GET READY TO DO IT AGAIN
024604  032777  000200  156516  19$:  BIT     #RDY,@RHCS1             ;IS IT SET YET?
024612  001004                        BNE     3$                      ;YES
024614  005237  003446                INC     BITCNT                  ;COUNT UP
024620  001401                        BEQ     3$                      ;BIT IS NOT GOING TO SET
024622  000770                        BR      19$
024624                          3$:     :
024624  017737  156500  003420        MOV     @RHCS1,CS1              ;SAVE RHCS1
024632  017737  156474  003444        MOV     @RHWC,WC                ;SAVE WORD COUNT
024640  017737  156470  003414        MOV     @RHBA,BA                ;SAVE BUS ADDRESS
024646  005701                        TST     R1                      ;IS IT AN RH11
024650  001406                        BEQ     87$                     ;NO IT'S A 70
024652  005037  003416                CLR     BAE                     ;CLEAR BAE
024656  005037  003424                CLR     CS3                     ;CLEAR CS3
024662  000137  024702                JMP     86$                     ;CONTINUE
024666  017737  156466  003416  87$:  MOV     @RHBAE,BAE              ;SAVE BUS ADDRESS EXTENSION
024674  017737  156462  003424        MOV     @RHCS3,CS3              ;SAVE RHCS3
024702  017737  156432  003422  86$:  MOV     @RHCS2,CS2              ;SAVE CS2
024710  017737  156426  003432        MOV     @RHST,DS1               ;SAVE TESTER STATUS
024716  017737  156422  003436        MOV     @RHER,ER1               ;SAVE ERROR REGISTER
024724  017737  156420  003442        MOV     @RHTDB,TDR              ;SAVE TESTER DATA REG.
024732  017737  156400  003440        MOV     @RHMR2,TC               ;SAVE MR2 TESTER REG.
024740  032777  000200  156362        BIT     #RDY,@RHCS1             ;IS READY SET
024746  001003                        BNE     1$                      ;RDY SET CONT. TEST
024750  104102                        ERROR   102                     ;READY DID NOT SET
024752  004737  007260                JSR     R7,WHYFO                ;ANY ERRORS SET
024756  032777  002000  156376  1$:   BIT     #DBL,@RHCS3             ;IS DOUBLE SET
024764  001403                        BEQ     2$                      ;DBL SET
024766  104125                        ERROR   125                     ;DBL DID SET ON A 1 WORD TRANSFER
024770  004737  007260                JSR     R7,WHYFO                ;TELL WHY NOT
024774  004737  006626          2$:   JSR     R7,CLEER                ;CLEAR ERRORS
025000  004737  050244                JSR     R7,ERRTST
                                ;;*****************************************************************
                                ;*TEST 33       DOUBLES TEST FOR TWO WORD BASE 4 ADDRESS
                                        ;*THIS TEST CHECKS THAT DOUBLE WILL SET FOR A
                                        ;*TWO WORD TRANSFER STARTING FROM AN ADDRESS
```

```
                                        ;*DIVISABLE BY 4.....RH70 ONLY.....
                                ;;**************************************************************
000004                          TST33:  SCOPE
005701                                  TST     R1                      ;IS IT AN 11 OR A 70
100524                                  BMI     TST34           ;;GET OUT OF TEST
012777  177776  156312                  MOV     #-2,@RHWC               ;SETUP WORD COUNT FOR DOUBLE TRANSFER
012777  004000  156306                  MOV     #EVENAD,@RHBA           ;CORRECT BA
012777  000061  156274                  MOV     #WRITE0,@RHCS1          ;TELL IT TO WRITE
005037  003446                          CLR     BITCNT                  ;CLEAR BIT COUNTER
032777  000200  156262          18$:    BIT     #RDY,@RHCS1             ;IS RDY SET
001015                                  BNE     DBLWDS                  ;BIT IS SET
005237  003446                          INC     BITCNT                  ;COUNT UP
001371                                  BNE     18$                     ;NOT FINISHED COUNTING
005037  003446                          CLR     BITCNT                  ;GET READY TO DO IT AGAIN
032777  000200  156240          19$:    BIT     #RDY,@RHCS1             ;IS IT SET YET?
001004                                  BNE     DBLWDS                  ;YES
005237  003446                          INC     BITCNT                  ;COUNT UP
001401                                  BEQ     DBLWDS                  ;BIT IS NOT GOING TO SET
000770                                  BR      19$
                                DBLWDS:
017737  156222  003420                  MOV     @RHCS1,CS1              ;SAVE RHCS1
017737  156216  003444                  MOV     @RHWC,WC                ;SAVE WORD COUNT
017737  156212  003414                  MOV     @RHBA,BA                ;SAVE BUS ADDRESS
005701                                  TST     R1                      ;IS IT AN RH11
001406                                  BEQ     87$                     ;NO IT'S A 70
005037  003416                          CLR     BAE                     ;CLEAR BAE
005037  003424                          CLR     CS3                     ;CLEAR CS3
000137  025160                          JMP     86$                     ;CONTINUE
017737  156210  003416          87$:    MOV     @RHBAE,BAE              ;SAVE BUS ADDRESS EXTENSION
017737  156204  003424                  MOV     @RHCS3,CS3              ;SAVE RHCS3
017737  156154  003422          86$:    MOV     @RHCS2,CS2              ;SAVE CS2
017737  156150  003432                  MOV     @RHST,DS1               ;SAVE TESTER STATUS
017737  156144  003436                  MOV     @RHER,ER1               ;SAVE ERROR REGISTER
017737  156142  003442                  MOV     @RHTDB,TDR              ;SAVE TESTER DATA REG.
017737  156122  003440                  MOV     @RHMR2,TC               ;SAVE MR2 TESTER REG.
032777  000200  156104                  BIT     #RDY,@RHCS1             ;IS READY SET
001003                                  BNE     FOOEY                   ;RDY IS SET
104102                                  ERROR   102                     ;RDY DID NOT SET
004737  007260                          JSR     R7,WHYFO                ;ANY ERRORS SET
032777  002000  156120          FOOEY:  BIT     #DBL,@RHCS3             ;IS DOUBLE SET
001003                                  BNE     ER1R                    ;DBL IS SET
104127                                  ERROR   127                     ;DBL DID NOT SET IN RHCS3
004737  007260                          JSR     R7,WHYFO                ;ANY OTHER ERROR SET
004737  006626                  ER1R:   JSR     R7,CLEER                ;CLEAR ERRORS
004737  050244                          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.....................
                                ;;**************************************************************
000004                          TST34:  SCOPE
005701                                  TST     R1                      ;IS IT AN 11 OR A 70
100524                                  BMI     TST35           ;;GET OUT OF TEST
012777  177775  156034                  MOV     #-3,@RHWC               ;SET UP FOR A 3 WORD TRANSFER
```

```
4216  025276  012777  004000  156030          MOV     #EVENAD,@RHBA           ;CORRECT BA
4217  025304  012777  000061  156016          MOV     #WRITE0,@RHCS1          ;TELL IT TO WRITE
4218  025312  005037  003446                  CLR     BITCNT                  ;CLEAR BIT COUNTER
4219  025316  032777  000200  156004  18$:    BIT     #RDY,@RHCS1            ;IS RDY SET
4220  025324  001015                          BNE     THREE                   ;BIT IS SET
4221  025326  005237  003446                  INC     BITCNT                  ;COUNT UP
4222  025332  001371                          BNE     18$                     ;NOT FINISHED COUNTING
4223  025334  005037  003446                  CLR     BITCNT                  ;GET READY TO DO IT AGAIN
4224  025340  032777  000200  155762  19$:    BIT     #RDY,@RHCS1            ;IS IT SET YET?
4225  025346  001004                          BNE     THREE                   ;YES
4226  025350  005237  003446                  INC     BITCNT                  ;COUNT UP
4227  025354  001401                          BEQ     THREE                   ;BIT IS NOT GOING TO SET
4228  025356  000770                          BR      19$
4229  025360                          THREE:
4230  025360  017737  155744  003420          MOV     @RHCS1,CS1              ;SAVE RHCS1
4231  025366  017737  155740  003444          MOV     @RHWC,WC                ;SAVE WORD COUNT
4232  025374  017737  155734  003414          MOV     @RHBA,BA                ;SAVE BUS ADDRESS
4233  025402  005701                          TST     R1                      ;IS IT AN RH11
4234  025404  001406                          BEQ     87$                     ;NO IT'S A 70
4235  025406  005037  003416                  CLR     BAE                     ;CLEAR BAE
4236  025412  005037  003424                  CLR     CS3                     ;CLEAR CS3
4237  025416  000137  025436                  JMP     86$                     ;CONTINUE
4238  025422  017737  155732  003416  87$:    MOV     @RHBAE,BAE              ;SAVE BUS ADDRESS EXTENSION
4239  025430  017737  155726  003424          MOV     @RHCS3,CS3              ;SAVE RHCS3
4240  025436  017737  155676  003422  86$:    MOV     @RHCS2,CS2              ;SAVE CS2
4241  025444  017737  155672  003432          MOV     @RHST,DS1               ;SAVE TESTER STATUS
4242  025452  017737  155666  003436          MOV     @RHER,ER1               ;SAVE ERROR REGISTER
4243  025460  017737  155664  003442          MOV     @RHTDB,TDR              ;SAVE TESTER DATA REG.
4244  025466  017737  155644  003440          MOV     @RHMR2,TC               ;SAVE MR2 TESTER REG.
4245  025474  032777  000200  155626          BIT     #RDY,@RHCS1            ;IS READY SET
4246  025502  001003                          BNE     ERRIP                   ;RDY IS SET
4247  025504  104102                          ERROR   102                     ;RDY DID NOT SET
4248  025506  004737  007260                  JSR     R7,WHYFO                ;ANY ERRORS SET
4249  025512  032777  002000  155642  ERRIP:  BIT     #DBL,@RHCS3            ;IS DOUBLE SET
4250  025520  001403                          BEQ     ERPIP                   ;DBL IS SET
4251  025522  104126                          ERROR   126                     ;DOUBLE SET ON A 3 WORD TRANSFER
4252  025524  004737  007260                  JSR     R7,WHYFO                ;SEE IF ANY ERROR BITS ARE SET
4253  025530  004737  006626          ERPIP:  JSR     R7,CLEER                ;CLEAR ERRORS
4254  025534  004737  050244                  JSR     R7,ERRTST
4255                                  ;;**********************************************************************
4256                                  ;*TEST 35        DOUBLE TEST ,4 WORDS FROM A BASE 4 ADDRESS
4257                                          ;*THIS TEST CHECKS THAT DBL WILL SET IN RHCS3
4258                                          ;*AFTER A 4 WORD TRANSFER STARTING WITH AN
4259                                          ;*ADDRESS DIVISABLE BY 4**********.*****
4260                                          ;*.....RH70 ONLY.....................
4261                                  ;;**********************************************************************
4262  025540  000004                  TST35:  SCOPE
4263  025542  005701                          TST     R1                      ;IS IT AN 11 OR A 70
4264  025544  100524                          BMI     TST36           ;;GET OUT OF TEST
4265  025546  012777  177774  155556          MOV     #-4,@RHWC               ;SET UP FOR 4 WORD TRANSFER
4266  025554  012777  004000  155552          MOV     #EVENAD,@RHBA           ;CORRECT BA
4267  025562  012777  000061  155540          MOV     #WRITE0,@RHCS1          ;TELL IT TO WRITE
4268  025570  005037  003446                  CLR     BITCNT                  ;CLEAR BIT COUNTER
4269  025574  032777  000200  155526  18$:    BIT     #RDY,@RHCS1            ;IS RDY SET
4270  025602  001015                          BNE     DBLED                   ;BIT IS SET
4271  025604  005237  003446                  INC     BITCNT                  ;COUNT UP
```

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4272  025610  001371                          BNE     18$                     ;NOT FINISHED COUNTING
4273  025612  005037  003446                  CLR     BITCNT                  ;GET READY TO DO IT AGAIN
4274  025616  032777  000200  155504  19$:    BIT     #RDY,@RHCS1             ;IS IT SET YET?
4275  025624  001004                          BNE     DBLED                   ;YES
4276  025626  005237  003446                  INC     BITCNT                  ;COUNT UP
4277  025632  001401                          BEQ     DBLED                   ;BIT IS NOT GOING TO SET
4278  025634  000770                          BR      19$
4279  025636                          DBLED:
4280  025636  017737  155466  003420          MOV     @RHCS1,CS1              ;SAVE RHCS1
4281  025644  017737  155462  003444          MOV     @RHWC,WC                ;SAVE WORD COUNT
4282  025652  017737  155456  003414          MOV     @RHBA,BA                ;SAVE BUS ADDRESS
4283  025660  005701                          TST     R1                      ;IS IT AN RH11
4284  025662  001406                          BEQ     87$                     ;NO IT'S A 70
4285  025664  005037  003416                  CLR     BAE                     ;CLEAR BAE
4286  025670  005037  003424                  CLR     CS3                     ;CLEAR CS3
4287  025674  000137  025714                  JMP     86$                     ;CONTINUE
4288  025700  017737  155454  003416  87$:    MOV     @RHBAE,BAE              ;SAVE BUS ADDRESS EXTENSION
4289  025706  017737  155450  003424          MOV     @RHCS3,CS3              ;SAVE RHCS3
4290  025714  017737  155420  003422  86$:    MOV     @RHCS2,CS2              ;SAVE CS2
4291  025722  017737  155414  003432          MOV     @RHST,DS1               ;SAVE TESTER STATUS
4292  025730  017737  155410  003436          MOV     @RHER,ER1               ;SAVE ERROR REGISTER
4293  025736  017737  155406  003442          MOV     @RHTDB,TDR              ;SAVE TESTER DATA REG.
4294  025744  017737  155366  003440          MOV     @RHMR2,TC               ;SAVE MR2 TESTER REG.
4295  025752  032777  000200  155350          BIT     #RDY,@RHCS1             ;IS RFADY SET
4296  025760  001003                          BNE     DAYAMS                  ;RDY IS SET
4297  025762  104102                          ERROR   102                     ;RDY DID NOT SET
4298  025764  004737  007260                  JSR     R7,WHYFO                ;WHAT ERRORS ARE SET
4299  025770  032777  002000  155364  DAYAMS: BIT     #DBL,@RHCS3             ;IS DOUBLE SET
4300  025776  001003                          BNE     ERR29                   ;TEST IS OK
4301  026000  104124                          ERROR   124                     ;DOUBLE DID NOT SET AFTER A 4 WORD
4302  026002  004737  007260                  JSR     R7,WHYFO                ;SEE IF ANY ERROR ARE SET
4303  026006  004737  006626          ERR29:  JSR     R7,CLEER                ;CLEAR ERRORS
4304  026012  004737  050244                  JSR     R7,ERRTST
4305
4306
4307                                  ;;**********************************************************************
4308                                  ;*TEST 36        DOUBLE TEST 1WORD TRANSFER READ
4309                                          ;*THESE TEST CHECK DBL IN RHCS3 WITHREAD FWD AND REV
4310                                          ;*WRITE FWD AND REV AND WITH BAI SET IN RHCS2
4311                                          ;*OPERATION BEING PREFORMED WILL BE PRINTED OUT
4312                                          ;*IN ERROR MESSAGE.
4313                                          ;*.................RH70 ONLY.....................
4314                                  ;;**********************************************************************
4315  026016  000004                  TST36:  SCOPE
4316  026020  005701                          TST     R1                      ;IS IN AN RH11
4317  026022  100532                          BMI     TST37           ;;GET OUT OF TEST
4318  026024  012777  177777  155300          MOV     #-1,@RHWC               ;SET UP WC FOR ONE WORD
4319  026032  012777  004000  155274          MOV     #EVENAD,@RHBA           ;SETUP BUS ADDRESS
4320  026040  012777  000000  155312          MOV     #ZERO,@RHBAE            ;SETUP BUS ADDRESS EXTENSION
4321  026046  012777  000007  155264          MOV     #7,@RHCS2               ;DEVICE 7
4322  026054  012777  000071  155246          MOV     #READ0,@RHCS1           ;TELL IT TO READ0
4323  026062  005037  003446                  CLR     BITCNT                  ;CLEAR BIT COUNTER
4324  026066  032777  000200  155234  18$:    BIT     #RDY,@RHCS1             ;IS RDY SET
4325  026074  001015                          BNE     3$                      ;BIT IS SET
4326  026076  005237  003446                  INC     BITCNT                  ;COUNT UP
4327  026102  001371                          BNE     18$                     ;NOT FINISHED COUNTING
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4328  026104  005037  003446                  CLR     BITCNT                  ;GET READY TO DO IT AGAIN
4329  026110  032777  000200  155212  19$:    BIT     #RDY,@RHCS1             ;IS IT SET YET?
4330  026116  001004                          BNE     3$                      ;YES
4331  026120  005237  003446                  INC     BITCNT                  ;COUNT UP
4332  026124  001401                          BEQ     3$                      ;BIT IS NOT GOING TO SET
4333  026126  000770                          BR      19$
4334  026130                          3$:
4335  026130  017737  155174  003420          MOV     @RHCS1,CS1              ;SAVE RHCS1
4336  026136  017737  155170  003444          MOV     @RHWC,WC                ;SAVE WORD COUNT
4337  026144  017737  155164  003414          MOV     @RHBA,BA                ;SAVE BUS ADDRESS
4338  026152  005701                          TST     R1                      ;IS IT AN RH11
4339  026154  001406                          BEQ     87$                     ;NO IT'S A 70
4340  026156  005037  003416                  CLR     BAE                     ;CLEAR BAE
4341  026162  005037  003424                  CLR     CS3                     ;CLEAR CS3
4342  026166  000137  026206                  JMP     86$                     ;CONTINUE
4343  026172  017737  155162  003416  87$:    MOV     @RHBAE,BAE              ;SAVE BUS ADDRESS EXTENSION
4344  026200  017737  155156  003424          MOV     @RHCS3,CS3              ;SAVE RHCS3
4345  026206  017737  155126  003422  86$:    MOV     @RHCS2,CS2              ;SAVE CS2
4346  026214  017737  155122  003432          MOV     @RHST,DS1               ;SAVE TESTER STATUS
4347  026222  017737  155116  003436          MOV     @RHER,ER1               ;SAVE ERROR REGISTER
4348  026230  017737  155114  003442          MOV     @RHTDB,TDR              ;SAVE TESTER DATA REG.
4349  026236  017737  155074  003440          MOV     @RHMR2,TC               ;SAVE MR2 TESTER REG.
4350  026244  032777  000200  155056          BIT     #RDY,@RHCS1             ;IS READY SET
4351  026252  001003                          BNE     1$                      ;RDY SET CONT. TEST
4352  026254  104102                          ERROR   102                     ;READY DID NOT SET
4353  026256  004737  007260                  JSR     R7,WHYFO                ;ANY ERRORS SET
4354  026262  032777  002000  155072  1$:     BIT     #DBL,@RHCS3             ;IS DOUBLE SET
4355  026270  001403                          BEQ     2$                      ;DBL SET
4356  026272  104154                          ERROR   154                     ;DBL DID SET ON A 1 WORD TRANSFER
4357  026274  004737  007260                  JSR     R7,WHYFO                ;TELL WHY NOT
4358  026300  004737  006626          2$:     JSR     R7,CLEER                ;CLEAR ERRORS
4359  026304  004737  050244                  JSR     R7,ERRTST
4360                                  ;;**********************************************************************
4361                                  ;*TEST 37        DOUBLE TEST WITH 2 WORD TRANSFER AND BAI SE
4362                                          ;*THESE TEST CHECK DBL IN RHCS3 WITHREAD FWD AND REV
4363                                          ;*WRITE FWD AND REV AND WITH BAI SET IN RHCS2
4364                                          ;*OPERATION BEING PREFORMED WILL BE PRINTED OUT
4365                                          ;*IN ERROR MESSAGE.
4366                                          ;*.................RH70 ONLY.....................
4367                                  ;;**********************************************************************
4368  026310  000004                  TST37:  SCOPE
4369  026312  005701                          TST     R1                      ;IS IN AN RH11
4370  026314  100532                          BMI     TST40           ;;GET OUT OF TEST
4371  026316  012777  177776  155006          MOV     #-2,@RHWC               ;SET UP WC FOR TWO WORD
4372  026324  012777  004000  155002          MOV     #EVENAD,@RHBA           ;SETUP BUS ADDRESS
4373  026332  012777  000000  155020          MOV     #ZERO,@RHBAE            ;SETUP BUS ADDRESS EXTENSION
4374  026340  012777  000017  154772          MOV     #7!BAI,@RHCS2           ;DEVICE 7
4375  026346  012777  000061  154754          MOV     #WRITE0,@RHCS1          ;TELL IT TO WRITE0
4376  026354  005037  003446                  CLR     BITCNT                  ;CLEAR BIT COUNTER
4377  026360  032777  000200  154742  18$:    BIT     #RDY,@RHCS1             ;IS RDY SET
4378  026366  001015                          BNE     3$                      ;BIT IS SET
4379  026370  005237  003446                  INC     BITCNT                  ;COUNT UP
4380  026374  001371                          BNE     18$                     ;NOT FINISHED COUNTING
4381  026376  005037  003446                  CLR     BITCNT                  ;GET READY TO DO IT AGAIN
4382  026402  032777  000200  154720  19$:    BIT     #RDY,@RHCS1             ;IS IT SET YET?
4383  026410  001004                          BNE     3$                      ;YES
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4384  026412  005237  003446                    INC     BITCNT                  ;COUNT UP
4385  026416  00140                             BEQ     3$                      ;BIT IS NOT GOING TO SET
4386  026420  000770                            BR      19$
4387  026422                            3$:
4388  026422  017737  154702  003420            MOV     @RHCS1,CS1              ;SAVE RHCS1
4389  026430  017737  154676  003444            MOV     @RHWC,WC                ;SAVE WORD COUNT
4390  026436  017737  154672  003414            MOV     @RHBA,BA                ;SAVE BUS ADDRESS
4391  026444  005701                            TST     R1                      ;IS IT AN RH11
4392  026446  001406                            BEQ     87$                     ;NO IT'S A 70
4393  026450  005037  003416                    CLR     BAE                     ;CLEAR BAE
4394  026454  005037  003424                    CLR     CS3                     ;CLEAR CS3
4395  026460  000137  026500                    JMP     86$                     ;CONTINUE
4396  026464  017737  154670  003416    87$:    MOV     @RHBAE,BAE              ;SAVE BUS ADDRESS EXTENSION
4397  026472  017737  154664  003424            MOV     @RHCS3,CS3              ;SAVE RHCS3
4398  026500  017737  154634  003422    86$:    MOV     @RHCS2,CS2              ;SAVE CS2
4399  026506  017737  154630  003432            MOV     @RHST,DS1               ;SAVE TESTER STATUS
4400  026514  017737  154624  003436            MOV     @RHER,ER1               ;SAVE ERROR REGISTER
4401  026522  017737  154622  003442            MOV     @RHTDB,TDR              ;SAVE TESTER DATA REG.
4402  026530  017737  154602  003440            MOV     @RHMR2,TC               ;SAVE MR2 TESTER REG.
4403  026536  032777  000200  154564            BIT     #RDY,@RHCS1             ;IS READY SET
4404  026544  001003                            BNE     1$                      ;RDY SET CONT. TEST
4405  026546  104102                            ERROR   102                     ;READY DID NOT SET
4406  026550  004737  007260                    JSR     R7,WHYFO                ;ANY ERRORS SET
4407  026554  032777  002000  154600    1$:     BIT     #DBL,@RHCS3             ;IS DOUBLE SET
4408  026562  001403                            BEQ     2$                      ;DBL SET
4409  026564  104153                            ERROR   153                     ;DBL DID SET ON A 2 WORD TRANSFER
4410  026566  004737  007260                    JSR     R7,WHYFO                ;TELL WHY NOT
4411  026572  004737  006626            2$:     JSR     R7,CLEER                ;CLEAR ERRORS
4412  026576  004737  050244                    JSR     R7,ERRTST
4413                                    ;;**********************************************************************
4414                                    ;*TEST 40        DBL TEST 2 WORD TRANSFER WITH BAI AND WRITE REV
4415                                            ;*THESE TEST CHECK DBL IN RHCS3 WITHREAD FWD AND REV
4416                                            ;*WRITE FWD AND REV AND WITH BAI SET IN RHCS2
4417                                            ;*OPERATION BEING PREFORMED WILL BE PRINTED OUT
4418                                            ;*IN ERROR MESSAGE.
4419                                            ;*.................RH70 ONLY.........................
4420                                    ;;**********************************************************************
4421  026602  000004                    TST40:  SCOPE
4422  026604  005701                            TST     R1                      ;IS IN AN RH11
4423  026606  100532                            BMI     TST41           ;;GET OUT OF TEST
4424  026610  012777  177776  154514            MOV     #-2,@RHWC               ;SET UP WC FOR TWO WORD
4425  026616  012777  004000  154510            MOV     #EVENAD,@RHBA           ;SETUP BUS ADDRESS
4426  026624  012777  000000  154526            MOV     #ZERO,@RHBAE            ;SETUP BUS ADDRESS EXTENSION
4427  026632  012777  000017  154500            MOV     #7!BAI,@RHCS2           ;DEVICE 7
4428  026640  012777  000067  154462            MOV     #WRITE6,@RHCS1          ;TELL IT TO WRITE6
4429  026646  005037  003446                    CLR     BITCNT                  ;CLEAR BIT COUNTER
4430  026652  032777  000200  154450    18$:    BIT     #RDY,@RHCS1             ;IS RDY SET
4431  026660  001015                            BNE     3$                      ;BIT IS SET
4432  026662  005237  003446                    INC     BITCNT                  ;COUNT UP
4433  026666  001371                            BNE     18$                     ;NOT FINISHED COUNTING
4434  026670  005037  003446                    CLR     BITCNT                  ;GET READY TO DO IT AGAIN
4435  026674  032777  000200  154426    19$:    BIT     #RDY,@RHCS1             ;IS IT SET YET?
4436  026702  001004                            BNE     3$                      ;YES
4437  026704  005237  003446                    INC     BITCNT                  ;COUNT UP
4438  026710  001401                            BEQ     3$                      ;BIT IS NOT GOING TO SET
4439  026712  000770                            BR      19$
```

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4440  026714                                  3$:
4441  026714  017737  154410  003420                  MOV     @RHCS1,CS1              ;SAVE RHCS1
4442  026722  017737  154404  003444                  MOV     @RHWC,WC                ;SAVE WORD COUNT
4443  026730  017737  154400  003414                  MOV     @RHBA,BA                ;SAVE BUS ADDRESS
4444  026736  005701                                  TST     R1                      ;IS IT AN RH11
4445  026740  001406                                  BEQ     87$                     ;NO IT'S A 70
4446  026742  005037  003416                          CLR     BAE                     ;CLEAR BAE
4447  026746  005037  003424                          CLR     CS3                     ;CLEAR CS3
4448  026752  000137  026772                          JMP     86$                     ;CONTINUE
4449  026756  017737  154376  003416  87$:    MOV     @RHBAE,BAE              ;SAVE BUS ADDRESS EXTENSION
4450  026764  017737  154372  003424                  MOV     @RHCS3,CS3              ;SAVE RHCS3
4451  026772  017737  154342  003422  86$:    MOV     @RHCS2,CS2              ;SAVE CS2
4452  027000  017737  154336  003432                  MOV     @RHST,DS1               ;SAVE TESTER STATUS
4453  027006  017737  154332  003436                  MOV     @RHER,ER1               ;SAVE ERROR REGISTER
4454  027014  017737  154330  003442                  MOV     @RHTDB,TDR              ;SAVE TESTER DATA REG.
4455  027022  017737  154310  003440                  MOV     @RHMR2,TC               ;SAVE MR2 TESTER REG.
4456  027030  032777  000200  154272                  BIT     #RDY,@RHCS1             ;IS READY SET
4457  027036  001003                                  BNE     1$                      ;RDY SET CONT. TEST
4458  027040  104102                                  ERROR   102                     ;READY DID NOT SET
4459  027042  004737  007260                          JSR     R7,WHYFO                ;ANY ERRORS SET
4460  027046  032777  002000  154306  1$:     BIT     #DBL,@RHCS3             ;IS DOUBLE SET
4461  027054  001403                                  BEQ     2$                      ;DBL SET
4462  027056  104155                                  ERROR   155                     ;DBL DID SET ON A 2 WORD TRANSFER
4463  027060  004737  007260                          JSR     R7,WHYFO                ;TELL WHY NOT
4464  027064  004737  006626          2$:     JSR     R7,CLEER                ;CLEAR ERRORS
4465  027070  004737  050244                          JSR     R7,ERRTST
4466                                          ;;**********************************************************************
4467                                          ;*TEST 41        DBL TEST 2 WORD TRANSFER ODD ADD.
4468                                                  ;*THESE TEST CHECK DBL IN RHCS3 WITHREAD FWD AND REV
4469                                                  ;*WRITE FWD AND REV AND WITH BAI SET IN RHCS2
4470                                                  ;*OPERATION BEING PREFORMED WILL BE PRINTED OUT
4471                                                  ;*IN ERROR MESSAGE.
4472                                                  ;*.................RH70 ONLY.......................
4473                                          ;;**********************************************************************
4474  027074  000004                          TST41:  SCOPE
4475  027076  005701                                  TST     R1                      ;IS IN AN RH11
4476  027100  100532                                  BMI     TST42           ;;GET OUT OF TEST
4477  027102  012777  177776  154222                  MOV     #-2,@RHWC               ;SET UP WC FOR TWO WORD
4478  027110  012777  004002  154216                  MOV     #ODDAD,@RHBA            ;SETUP BUS ADDRESS
4479  027116  012777  000000  154234                  MOV     #ZERO,@RHBAE            ;SETUP BUS ADDRESS EXTENSION
4480  027124  012777  000007  154206                  MOV     #7,@RHCS2               ;DEVICE 7
4481  027132  012777  000061  154170                  MOV     #WRITE0,@RHCS1          ;TELL IT TO WRITE0
4482  027140  005037  003446                          CLR     BITCNT                  ;CLEAR BIT COUNTER
4483  027144  032777  000200  154156  18$:    BIT     #RDY,@RHCS1             ;IS RDY SET
4484  027152  001015                                  BNE     3$                      ;BIT IS SET
4485  027154  005237  003446                          INC     BITCNT                  ;COUNT UP
4486  027160  001371                                  BNE     18$                     ;NOT FINISHED COUNTING
4487  027162  005037  003446                          CLR     BITCNT                  ;GET READY TO DO IT AGAIN
4488  027166  032777  000200  154134  19$:    BIT     #RDY,@RHCS1             ;IS IT SET YET?
4489  027174  001004                                  BNE     3$                      ;YES
4490  027176  005237  003446                          INC     BITCNT                  ;COUNT UP
4491  027202  001401                                  BEQ     3$                      ;BIT IS NOT GOING TO SET
4492  027204  000770                                  BR      19$
4493  027206                                  3$:
4494  027206  017737  154116  003420                  MOV     @RHCS1,CS1              ;SAVE RHCS1
4495  027214  017737  154112  003444                  MOV     @RHWC,WC                ;SAVE WORD COUNT
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 4496  027222  017737  154106  003414          MOV     @RHBA,BA                ;SAVE BUS ADDRESS
 4497  027230  005701                          TST     R1                      ;IS IT AN RH11
 4498  027232  001406                          BEQ     87$                     ;NO IT'S A 70
 4499  027234  005037  003416                  CLR     BAE                     ;CLEAR BAE
 4500  027240  005037  003424                  CLR     CS3                     ;CLEAR CS3
 4501  027244  000137  027264                  JMP     86$                     ;CONTINUE
 4502  027250  017737  154104  003416  87$:    MOV     @RHBAE,BAE              ;SAVE BUS ADDRESS EXTENSION
 4503  027256  017737  154100  003424          MOV     @RHCS3,CS3              ;SAVE RHCS3
 4504  027264  017737  154050  003422  86$:    MOV     @RHCS2,CS2              ;SAVE CS2
 4505  027272  017737  154044  003432          MOV     @RHST,DS1               ;SAVE TESTER STATUS
 4506  027300  017737  154040  003436          MOV     @RHER,ER1               ;SAVE ERROR REGISTER
 4507  027306  017737  154036  003442          MOV     @RHTDB,TDR              ;SAVE TESTER DATA REG.
 4508  027314  017737  154016  003440          MOV     @RHMR2,TC               ;SAVE MR2 TESTER REG.
 4509  027322  032777  000200  154000          BIT     #RDY,@RHCS1             ;IS READY SET
 4510  027330  001003                          BNE     1$                      ;RDY SET CONT. TEST
 4511  027332  104102                          ERROR   102                     ;READY DID NOT SET
 4512  027334  004737  007260                  JSR     R7,WHYFO                ;ANY ERRORS SET
 4513  027340  032777  002000  154014  1$:     BIT     #DBL,@RHCS3             ;IS DOUBLE SET
 4514  027346  001403                          BEQ     2$                      ;DBL SET
 4515  027350  104156                          ERROR   156                     ;DBL DID SET ON A 2 WORD TRANSFER
 4516  027352  004737  007260                  JSR     R7,WHYFO                ;TELL WHY NOT
 4517  027356  004737  006626          2$:     JSR     R7,CLEER                ;CLEAR ERRORS
 4518  027362  004737  050244                  JSR     R7,ERRTST
 4519                                  ;;**************************************************************
 4520                                  ;*TEST 42        DBL TEST EVEN ADD. WRITE FWD
 4521                                          ;*THESE TEST CHECK DBL IN RHCS3 WITHREAD FWD AND REV
 4522                                          ;*WRITE FWD AND REV AND WITH BAI SET IN RHCS2
 4523                                          ;*OPERATION BEING PREFORMED WILL BE PRINTED OUT
 4524                                          ;*IN ERROR MESSAGE.
 4525                                          ;*.................RH70 ONLY.....................
 4526                                  ;;**************************************************************
 4527  027366  000004                  TST42:  SCOPE
 4528  027370  005701                          TST     R1                      ;IS IN AN RH11
 4529  027372  100532                          BMI     TST43           ;;GET OUT OF TEST
 4530  027374  012777  177776  153730          MOV     #-2,@RHWC               ;SET UP WC FOR TWO WORD
 4531  027402  012777  004000  153724          MOV     #EVENAD,@RHBA           ;SETUP BUS ADDRESS
 4532  027410  012777  000000  153742          MOV     #ZERO,@RHBAE            ;SETUP BUS ADDRESS EXTENSION
 4533  027416  012777  000007  153714          MOV     #7,@RHCS2               ;DEVICE 7
 4534  027424  012777  000067  153676          MOV     #WRITE6,@RHCS1          ;TELL IT TO WRITE6
 4535  027432  005037  003446                  CLR     BITCNT                  ;CLEAR BIT COUNTER
 4536  027436  032777  000200  153664  18$:    BIT     #RDY,@RHCS1             ;IS RDY SET
 4537  027444  001015                          BNE     3$                      ;BIT IS SET
 4538  027446  005237  003446                  INC     BITCNT                  ;COUNT UP
 4539  027452  001371                          BNE     18$                     ;NOT FINISHED COUNTING
 4540  027454  005037  003446                  CLR     BITCNT                  ;GET READY TO DO IT AGAIN
 4541  027460  032777  000200  153642  19$:    BIT     #RDY,@RHCS1             ;IS IT SET YET?
 4542  027466  001004                          BNE     3$                      ;YES
 4543  027470  005237  003446                  INC     BITCNT                  ;COUNT UP
 4544  027474  001401                          BEQ     3$                      ;BIT IS NOT GOING TO SET
 4545  027476  000770                          BR      19$
 4546  027500                          3$:
 4547  027500  017737  153624  003420          MOV     @RHCS1,CS1              ;SAVE RHCS1
 4548  027506  017737  153620  003444          MOV     @RHWC,WC                ;SAVE WORD COUNT
 4549  027514  017737  153614  003414          MOV     @RHBA,BA                ;SAVE BUS ADDRESS
 4550  027522  005701                          TST     R1                      ;IS IT AN RH11
 4551  027524  001406                          BEQ     87$                     ;NO IT'S A 70
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4552  027526  005037  003416                  CLR     BAE                     ;CLEAR BAE
4553  027532  005037  003424                  CLR     CS3                     ;CLEAR CS3
4554  027536  000137  027556                  JMP     86$                     ;CONTINUE
4555  027542  017737  153612  003416  87$:    MOV     @RHBAE,BAE              ;SAVE BUS ADDRESS EXTENSION
4556  027550  017737  153606  003424          MOV     @RHCS3,CS3              ;SAVE RHCS3
4557  027556  017737  153556  003422  86$:    MOV     @RHCS2,CS2              ;SAVE CS2
4558  027564  017737  153552  003432          MOV     @RHST,DS1               ;SAVE TESTER STATUS
4559  027572  017737  153546  003436          MOV     @RHER,ER1               ;SAVE ERROR REGISTER
4560  027600  017737  153544  003442          MOV     @RHTDB,TDR              ;SAVE TESTER DATA REG.
4561  027606  017737  153524  003440          MOV     @RHMR2,TC               ;SAVE MR2 TESTER REG.
4562  027614  032777  000200  153506          BIT     #RDY,@RHCS1             ;IS READY SET
4563  027622  001003                          BNE     1$                      ;RDY SET CONT. TEST
4564  027624  104102                          ERROR   102                     ;READY DID NOT SET
4565  027626  004737  007260                  JSR     R7,WHYFO                ;ANY ERRORS SET
4566  027632  032777  002000  153522  1$:     BIT     #DBL,@RHCS3             ;IS DOUBLE SET
4567  027640  001403                          BEQ     2$                      ;DBL SET
4568  027642  104157                          ERROR   157                     ;DBL DID SET ON A 2 WORD TRANSFER
4569  027644  004737  007260                  JSR     R7,WHYFO                ;TELL WHY NOT
4570  027650  004737  006626          2$:     JSR     R7,CLEER                ;CLEAR ERRORS
4571  027654  004737  050244                  JSR     R7,ERRTST
4572                                  ;;*****************************************************************
4573                                  ;*TEST 43        DBL TEST 2 WORD ODD ADD. WRITE REV
4574                                          ;*THESE TEST CHECK DBL IN RHCS3 WITHREAD FWD AND REV
4575                                          ;*WRITE FWD AND REV AND WITH BAI SET IN RHCS2
4576                                          ;*OPERATION BEING PREFORMED WILL BE PRINTED OUT
4577                                          ;*IN ERROR MESSAGE.
4578                                          ;*.................RH70 ONLY.....................
4579                                  ;;*****************************************************************
4580  027660  000004                  TST43:  SCOPE
4581  027662  005701                          TST     R1                      ;IS IN AN RH11
4582  027664  100532                          BMI     TST44           ;;GET OUT OF TEST
4583  027666  012777  177776  153436          MOV     #-2,@RHWC               ;SET UP WC FOR TWO WORD
4584  027674  012777  004002  153432          MOV     #ODDAD,@RHBA            ;SETUP BUS ADDRESS
4585  027702  012777  000000  153450          MOV     #ZERO,@RHBAE            ;SETUP BUS ADDRESS EXTENSION
4586  027710  012777  000007  153422          MOV     #7,@RHCS2               ;DEVICE 7
4587  027716  012777  000067  153404          MOV     #WRITE6,@RHCS1          ;TELL IT TO WRITE6
4588  027724  005037  003446                  CLR     BITCNT                  ;CLEAR BIT COUNTER
4589  027730  032777  000200  153372  18$:     BIT     #RDY,@RHCS1             ;IS RDY SET
4590  027736  001015                          BNE     3$                      ;BIT IS SET
4591  027740  005237  003446                  INC     BITCNT                  ;COUNT UP
4592  027744  001371                          BNE     18$                     ;NOT FINISHED COUNTING
4593  027746  005037  003446                  CLR     BITCNT                  ;GET READY TO DO IT AGAIN
4594  027752  032777  000200  153350  19$:     BIT     #RDY,@RHCS1             ;IS IT SET YET?
4595  027760  001004                          BNE     3$                      ;YES
4596  027762  005237  003446                  INC     BITCNT                  ;COUNT UP
4597  027766  001401                          BEQ     3$                      ;BIT IS NOT GOING TO SET
4598  027770  000770                          BR      19$
4599  027772                          3$:
4600  027772  017737  153332  003420          MOV     @RHCS1,CS1              ;SAVE RHCS1
4601  030000  017737  153326  003444          MOV     @RHWC,WC                ;SAVE WORD COUNT
4602  030006  017737  153322  003414          MOV     @RHBA,BA                ;SAVE BUS ADDRESS
4603  030014  005701                          TST     R1                      ;IS IT AN RH11
4604  030016  001406                          BEQ     87$                     ;NO IT'S A 70
4605  030020  005037  003416                  CLR     BAE                     ;CLEAR BAE
4606  030024  005037  003424                  CLR     CS3                     ;CLEAR CS3
4607  030030  000137  030050                  JMP     86$                     ;CONTINUE
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 4608  030034  017737  153320  003416  87$:    MOV     @RHBAE,BAE              ;SAVE BUS ADDRESS EXTENSION
 4609  030042  017737  153314  003424          MOV     @RHCS3,CS3              ;SAVE RHCS3
 4610  030050  017737  153264  003422  86$:    MOV     @RHCS2,CS2              ;SAVE CS2
 4611  030056  017737  153260  003432          MOV     @RHST,DS1               ;SAVE TESTER STATUS
 4612  030064  017737  153254  003436          MOV     @RHER,ER1               ;SAVE ERROR REGISTER
 4613  030072  017737  153252  003442          MOV     @RHTDB,TDR              ;SAVE TESTER DATA REG.
 4614  030100  017737  153232  003440          MOV     @RHMR2,TC               ;SAVE MR2 TESTER REG.
 4615  030106  032777  000200  153214          BIT     #RDY,@RHCS1             ;IS READY SET
 4616  030114  001003                          BNE     1$                      ;RDY SET CONT. TEST
 4617  030116  104102                          ERROR   102                     ;READY DID NOT SET
 4618  030120  004737  007260                  JSR     R7,WHYFO                ;ANY ERRORS SET
 4619  030124  032777  002000  153230  1$:     BIT     #DBL,@RHCS3             ;IS DOUBLE SET
 4620  030132  001003                          BNE     2$                      ;DBL SET
 4621  030134  104160                          ERROR   160                     ;DBL DIDN'T SET ON A 2 WORD TRANSFER
 4622  030136  004737  007260                  JSR     R7,WHYFO                ;TELL WHY NOT
 4623  030142  004737  006626          2$:     JSR     R7,CLEER                ;CLEAR ERRORS
 4624  030146  004737  050244                  JSR     R7,ERRTST
 4625                                  ;;*****************************************************************
 4626                                  ;*TEST 44        DBL TEST 3 WORD ODD ADD. WRITE REV
 4627                                          ;*THESE TEST CHECK DBL IN RHCS3 WITHREAD FWD AND REV
 4628                                          ;*WRITE FWD AND REV AND WITH BAI SET IN RHCS2
 4629                                          ;*OPERATION BEING PREFORMED WILL BE PRINTED OUT
 4630                                          ;*IN ERROR MESSAGE.
 4631                                          ;*.................RH70 ONLY.....................
 4632                                  ;;*****************************************************************
 4633  030152  000004                  TST44:  SCOPE
 4634  030154  005701                          TST     R1                      ;IS IN AN RH11
 4635  030156  100532                          BMI     TST45           ;;GET OUT OF TEST
 4636  030160  012777  177775  153144          MOV     #-3,@RHWC               ;SET UP WC FOR THREE WORD
 4637  030166  012777  004002  153140          MOV     #ODDAD,@RHBA            ;SETUP BUS ADDRESS
 4638  030174  012777  000000  153156          MOV     #ZERO,@RHBAE            ;SETUP BUS ADDRESS EXTENSION
 4639  030202  012777  000007  153130          MOV     #7,@RHCS2               ;DEVICE 7
 4640  030210  012777  000067  153112          MOV     #WRITE6,@RHCS1          ;TELL IT TO WRITE6
 4641  030216  005037  003446                  CLR     BITCNT                  ;CLEAR BIT COUNTER
 4642  030222  032777  000200  153100  18$:    BIT     #RDY,@RHCS1             ;IS RDY SET
 4643  030230  001015                          BNE     3$                      ;BIT IS SET
 4644  030232  005237  003446                  INC     BITCNT                  ;COUNT UP
 4645  030236  001371                          BNE     18$                     ;NOT FINISHED COUNTING
 4646  030240  005037  003446                  CLR     BITCNT                  ;GET READY TO DO IT AGAIN
 4647  030244  032777  000200  153056  19$:    BIT     #RDY,@RHCS1             ;IS IT SET YET?
 4648  030252  001004                          BNE     3$                      ;YES
 4649  030254  005237  003446                  INC     BITCNT                  ;COUNT UP
 4650  030260  001401                          BEQ     3$                      ;BIT IS NOT GOING TO SET
 4651  030262  000770                          BR      19$
 4652  030264                          3$:
 4653  030264  017737  153040  003420          MOV     @RHCS1,CS1              ;SAVE RHCS1
 4654  030272  017737  153034  003444          MOV     @RHWC,WC                ;SAVE WORD COUNT
 4655  030300  017737  153030  003414          MOV     @RHBA,BA                ;SAVE BUS ADDRESS
 4656  030306  005701                          TST     R1                      ;IS IT AN RH11
 4657  030310  001406                          BEQ     87$                     ;NO IT'S A 70
 4658  030312  005037  003416                  CLR     BAE                     ;CLEAR BAE
 4659  030316  005037  003424                  CLR     CS3                     ;CLEAR CS3
 4660  030322  000137  030342                  JMP     86$                     ;CONTINUE
 4661  030326  017737  153026  003416  87$:    MOV     @RHBAE,BAE              ;SAVE BUS ADDRESS EXTENSION
 4662  030334  017737  153022  003424          MOV     @RHCS3,CS3              ;SAVE RHCS3
 4663  030342  017737  152772  003422  86$:    MOV     @RHCS2,CS2              ;SAVE CS2
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 4664  030350  017737  152766  003432          MOV     @RHST,DS1               ;SAVE TESTER STATUS
 4665  030356  017737  152762  003436          MOV     @RHER,ER1               ;SAVE ERROR REGISTER
 4666  030364  017737  152760  003442          MOV     @RHTDB,TDR              ;SAVE TESTER DATA REG.
 4667  030372  017737  152740  003440          MOV     @RHMR2,TC               ;SAVE MR2 TESTER REG.
 4668  030400  032777  000200  152722          BIT     #RDY,@RHCS1             ;IS READY SET
 4669  030406  001003                          BNE     1$                      ;RDY SET CONT. TEST
 4670  030410  104102                          ERROR   102                     ;READY DID NOT SET
 4671  030412  004737  007260                  JSR     R7,WHYFO                ;ANY ERRORS SET
 4672  030416  032777  002000  152736  1$:     BIT     #DBL,@RHCS3             ;IS DOUBLE SET
 4673  030424  001403                          BEQ     2$                      ;DBL SET
 4674  030426  104161                          ERROR   161                     ;DBL DID SET ON A 3 WORD TRANSFER
 4675  030430  004737  007260                  JSR     R7,WHYFO                ;TELL WHY NOT
 4676  030434  004737  006626          2$:     JSR     R7,CLEER                ;CLEAR ERRORS
 4677  030440  004737  050244                  JSR     R7,ERRTST
 4678                                  ;;*****************************************************************
 4679                                  ;*TEST 45        DBL TEST 2 WORD READ FWD
 4680                                          ;*THESE TEST CHECK DBL IN RHCS3 WITHREAD FWD AND REV
 4681                                          ;*WRITE FWD AND REV AND WITH BAI SET IN RHCS2
 4682                                          ;*OPERATION BEING PREFORMED WILL BE PRINTED OUT
 4683                                          ;*IN ERROR MESSAGE.
 4684                                          ;*.................RH70 ONLY.....................
 4685                                  ;;*****************************************************************
 4686  030444  000004                  TST45:  SCOPE
 4687  030446  005701                          TST     R1                      ;IS IN AN RH11
 4688  030450  100532                          BMI     TST46           ;;GET OUT OF TEST
 4689  030452  012777  177776  152652          MOV     #-2,@RHWC               ;SET UP WC FOR TWO WORD
 4690  030460  012777  004000  152646          MOV     #EVENAD,@RHBA           ;SETUP BUS ADDRESS
 4691  030466  012777  000000  152664          MOV     #ZERO,@RHBAE            ;SETUP BUS ADDRESS EXTENSION
 4692  030474  012777  000007  152636          MOV     #7,@RHCS2               ;DEVICE 7
 4693  030502  012777  000071  152620          MOV     #READ0,@RHCS1           ;TELL IT TO READ0
 4694  030510  005037  003446                  CLR     BITCNT                  ;CLEAR BIT COUNTER
 4695  030514  032777  000200  152606  18$:     BIT     #RDY,@RHCS1             ;IS RDY SET
 4696  030522  001015                          BNE     3$                      ;BIT IS SET
 4697  030524  005237  003446                  INC     BITCNT                  ;COUNT UP
 4698  030530  001371                          BNE     18$                     ;NOT FINISHED COUNTING
 4699  030532  005037  003446                  CLR     BITCNT                  ;GET READY TO DO IT AGAIN
 4700  030536  032777  000200  152564  19$:     BIT     #RDY,@RHCS1             ;IS IT SET YET?
 4701  030544  001004                          BNE     3$                      ;YES
 4702  030546  005237  003446                  INC     BITCNT                  ;COUNT UP
 4703  030552  001401                          BEQ     3$                      ;BIT IS NOT GOING TO SET
 4704  030554  000770                          BR      19$
 4705  030556                          3$:
 4706  030556  017737  152546  003420          MOV     @RHCS1,CS1              ;SAVE RHCS1
 4707  030564  017737  152542  003444          MOV     @RHWC,WC                ;SAVE WORD COUNT
 4708  030572  017737  152536  003414          MOV     @RHBA,BA                ;SAVE BUS ADDRESS
 4709  030600  005701                          TST     R1                      ;IS IT AN RH11
 4710  030602  001406                          BEQ     87$                     ;NO IT'S A 70
 4711  030604  005037  003416                  CLR     BAE                     ;CLEAR BAE
 4712  030610  005037  003424                  CLR     CS3                     ;CLEAR CS3
 4713  030614  000137  030634                  JMP     86$                     ;CONTINUE
 4714  030620  017737  152534  003416  87$:     MOV     @RHBAE,BAE              ;SAVE BUS ADDRESS EXTENSION
 4715  030626  017737  152530  003424          MOV     @RHCS3,CS3              ;SAVE RHCS3
 4716  030634  017737  152500  003422  86$:     MOV     @RHCS2,CS2              ;SAVE CS2
 4717  030642  017737  152474  003432          MOV     @RHST,DS1               ;SAVE TESTER STATUS
 4718  030650  017737  152470  003436          MOV     @RHER,ER1               ;SAVE ERROR REGISTER
 4719  030656  017737  152466  003442          MOV     @RHTDB,TDR              ;SAVE TESTER DATA REG.
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4720  030664  017737  152446  003440          MOV     @RHMR2,TC               ;SAVE MR2 TESTER REG.
4721  030672  032777  000200  152430          BIT     #RDY,@RHCS1             ;IS READY SET
4722  030700  001003                          BNE     1$                      ;RDY SET CONT. TEST
4723  030702  104102                          ERROR   102                     ;READY DID NOT SET
4724  030704  004737  007260                  JSR     R7,WHYFO                ;ANY ERRORS SET
4725  030710  032777  002000  152444  1$:     BIT     #DBL,@RHCS3             ;IS DOUBLE SET
4726  030716  001003                          BNE     2$                      ;DBL SET
4727  030720  104162                          ERROR   162                     ;DBL DIDN'T SET ON A 2 WORD TRANSFER
4728  030722  004737  007260                  JSR     R7,WHYFO                ;TELL WHY NOT
4729  030726  004737  006626          2$:     JSR     R7,CLEER                ;CLEAR ERRORS
4730  030732  004737  050244                  JSR     R7,ERRTST
4731                                  ;;*****************************************************************
4732                                  ;*TEST 46        DBL TEST 2 WORD ODD ADD. READ FWD
4733                                          ;*THESE TEST CHECK DBL IN RHCS3 WITHREAD FWD AND REV
4734                                          ;*WRITE FWD AND REV AND WITH BAI SET IN RHCS2
4735                                          ;*OPERATION BEING PREFORMED WILL BE PRINTED OUT
4736                                          ;*IN ERROR MESSAGE.
4737                                          ;*.................RH70 ONLY.....................
4738                                  ;;*****************************************************************
4739  030736  000004                  TST46:  SCOPE
4740  030740  005701                          TST     R1                      ;IS IN AN RH11
4741  030742  100532                          BMI     TST47           ;;GET OUT OF TEST
4742  030744  012777  177776  152360          MOV     #-2,@RHWC               ;SET UP WC FOR TWO WORD
4743  030752  012777  004002  152354          MOV     #ODDAD,@RHBA            ;SETUP BUS ADDRESS
4744  030760  012777  000000  152372          MOV     #ZERO,@RHBAE            ;SETUP BUS ADDRESS EXTENSION
4745  030766  012777  000007  152344          MOV     #7,@RHCS2               ;DEVICE 7
4746  030774  012777  000071  152326          MOV     #READ0,@RHCS1           ;TELL IT TO READ0
4747  031002  005037  003446                  CLR     BITCNT                  ;CLEAR BIT COUNTER
4748  031006  032777  000200  152314  18$:     BIT     #RDY,@RHCS1             ;IS RDY SET
4749  031014  001015                          BNE     3$                      ;BIT IS SET
4750  031016  005237  003446                  INC     BITCNT                  ;COUNT UP
4751  031022  001371                          BNE     18$                     ;NOT FINISHED COUNTING
4752  031024  005037  003446                  CLR     BITCNT                  ;GET READY TO DO IT AGAIN
4753  031030  032777  000200  152272  19$:     BIT     #RDY,@RHCS1             ;IS IT SET YET?
4754  031036  001004                          BNE     3$                      ;YES
4755  031040  005237  003446                  INC     BITCNT                  ;COUNT UP
4756  031044  001401                          BEQ     3$                      ;BIT IS NOT GOING TO SET
4757  031046  000770                          BR      19$
4758  031050                          3$:
4759  031050  017737  152254  003420          MOV     @RHCS1,CS1              ;SAVE RHCS1
4760  031056  017737  152250  003444          MOV     @RHWC,WC                ;SAVE WORD COUNT
4761  031064  017737  152244  003414          MOV     @RHBA,BA                ;SAVE BUS ADDRESS
4762  031072  005701                          TST     R1                      ;IS IT AN RH11
4763  031074  001406                          BEQ     87$                     ;NO IT'S A 70
4764  031076  005037  003416                  CLR     BAE                     ;CLEAR BAE
4765  031102  005037  003424                  CLR     CS3                     ;CLEAR CS3
4766  031106  000137  031126                  JMP     86$                     ;CONTINUE
4767  031112  017737  152242  003416  87$:     MOV     @RHBAE,BAE              ;SAVE BUS ADDRESS EXTENSION
4768  031120  017737  152236  003424          MOV     @RHCS3,CS3              ;SAVE RHCS3
4769  031126  017737  152206  003422  86$:     MOV     @RHCS2,CS2              ;SAVE CS2
4770  031134  017737  152202  003432          MOV     @RHST,DS1               ;SAVE TESTER STATUS
4771  031142  017737  152176  003436          MOV     @RHER,ER1               ;SAVE ERROR REGISTER
4772  031150  017737  152174  003442          MOV     @RHTDB,TDR              ;SAVE TESTER DATA REG.
4773  031156  017737  152154  003440          MOV     @RHMR2,TC               ;SAVE MR2 TESTER REG.
4774  031164  032777  000200  152136          BIT     #RDY,@RHCS1             ;IS READY SET
4775  031172  001003                          BNE     1$                      ;RDY SET CONT. TEST
```

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 4776  031174  104102                          ERROR   102                     ;READY DID NOT SET
 4777  031176  004737  007260                  JSR     R7,WHYFO                ;ANY ERRORS SET
 4778  031202  032777  002000  152152  1$:     BIT     #DBL,@RHCS3             ;IS DOUBLE SET
 4779  031210  001403                          BEQ     2$                      ;DBL SET
 4780  031212  104163                          ERROR   163                     ;DBL DID SET ON A 2 WORD TRANSFER
 4781  031214  004737  007260                  JSR     R7,WHYFO                ;TELL WHY NOT
 4782  031220  004737  006626          2$:     JSR     R7,CLEER                ;CLEAR ERRORS
 4783  031224  004737  050244                  JSR     R7,ERRTST
 4784                                  ;;*********************************************************************
 4785                                  ;*TEST 47        DBL TEST 2 WORD EVEN ADD. READ REV
 4786                                          ;*THESE TEST CHECK DBL IN RHCS3 WITHREAD FWD AND REV
 4787                                          ;*WRITE FWD AND REV AND WITH BAI SET IN RHCS2
 4788                                          ;*OPERATION BEING PREFORMED WILL BE PRINTED OUT
 4789                                          ;*IN ERROR MESSAGE.
 4790                                          ;*.................RH70 ONLY.....................
 4791                                  ;;*********************************************************************
 4792  031230  000004                  TST47:  SCOPE
 4793  031232  005701                          TST     R1                      ;IS IN AN RH11
 4794  031234  100532                          BMI     TST50           ;;GET OUT OF TEST
 4795  031236  012777  177776  152066          MOV     #-2,@RHWC               ;SET UP WC FOR TWO WORD
 4796  031244  012777  004000  152062          MOV     #EVENAD,@RHBA           ;SETUP BUS ADDRESS
 4797  031252  012777  000000  152100          MOV     #ZERO,@RHBAE            ;SETUP BUS ADDRESS EXTENSION
 4798  031260  012777  000007  152052          MOV     #7,@RHCS2               ;DEVICE 7
 4799  031266  012777  000077  152034          MOV     #READ6,@RHCS1           ;TELL IT TO READ6
 4800  031274  005037  003446                  CLR     BITCNT                  ;CLEAR BIT COUNTER
 4801  031300  032777  000200  152022  18$:     BIT     #RDY,@RHCS1             ;IS RDY SET
 4802  031306  001015                          BNE     3$                      ;BIT IS SET
 4803  031310  005237  003446                  INC     BITCNT                  ;COUNT UP
 4804  031314  001371                          BNE     18$                     ;NOT FINISHED COUNTING
 4805  031316  005037  003446                  CLR     BITCNT                  ;GET READY TO DO IT AGAIN
 4806  031322  032777  000200  152000  19$:     BIT     #RDY,@RHCS1             ;IS IT SET YET?
 4807  031330  001004                          BNE     3$                      ;YES
 4808  031332  005237  003446                  INC     BITCNT                  ;COUNT UP
 4809  031336  001401                          BEQ     3$                      ;BIT IS NOT GOING TO SET
 4810  031340  000770                          BR      19$
 4811  031342                          3$:
 4812  031342  017737  151762  003420          MOV     @RHCS1,CS1              ;SAVE RHCS1
 4813  031350  017737  151756  003444          MOV     @RHWC,WC                ;SAVE WORD COUNT
 4814  031356  017737  151752  003414          MOV     @RHBA,BA                ;SAVE BUS ADDRESS
 4815  031364  005701                          TST     R1                      ;IS IT AN RH11
 4816  031366  001406                          BEQ     87$                     ;NO IT'S A 70
 4817  031370  005037  003416                  CLR     BAE                     ;CLEAR BAE
 4818  031374  005037  003424                  CLR     CS3                     ;CLEAR CS3
 4819  031400  000137  031420                  JMP     86$                     ;CONTINUE
 4820  031404  017737  151750  003416  87$:     MOV     @RHBAE,BAE              ;SAVE BUS ADDRESS EXTENSION
 4821  031412  017737  151744  003424          MOV     @RHCS3,CS3              ;SAVE RHCS3
 4822  031420  017737  151714  003422  86$:     MOV     @RHCS2,CS2              ;SAVE CS2
 4823  031426  017737  151710  003432          MOV     @RHST,DS1               ;SAVE TESTER STATUS
 4824  031434  017737  151704  003436          MOV     @RHER,ER1               ;SAVE ERROR REGISTER
 4825  031442  017737  151702  003442          MOV     @RHTDB,TDR              ;SAVE TESTER DATA REG.
 4826  031450  017737  151662  003440          MOV     @RHMR2,TC               ;SAVE MR2 TESTER REG.
 4827  031456  032777  000200  151644          BIT     #RDY,@RHCS1             ;IS READY SET
 4828  031464  001003                          BNE     1$                      ;RDY SET CONT. TEST
 4829  031466  104102                          ERROR   102                     ;READY DID NOT SET
 4830  031470  004737  007260                  JSR     R7,WHYFO                ;ANY ERRORS SET
 4831  031474  032777  002000  151660  1$:     BIT     #DBL,@RHCS3             ;IS DOUBLE SET
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                        BEQ     2$                      ;DBL SET
                        ERROR   164                     ;DBL DID SET ON A 2 WORD TRANSFER
                        JSR     R7,WHYFO                ;TELL WHY NOT
                2$:     JSR     R7,CLEER                ;CLEAR ERRORS
                        JSR     R7,ERRTST
                ;;*****************************************************************
                ;*TEST 50        DBL TEST 2 WORD ODD ADD. READ REV
                        ;*THESE TEST CHECK DBL IN RHCS3 WITHREAD FWD AND REV
                        ;*WRITE FWD AND REV AND WITH BAI SET IN RHCS2
                        ;*OPERATION BEING PREFORMED WILL BE PRINTED OUT
                        ;*IN ERROR MESSAGE.
                        ;*.................RH70 ONLY.....................
                ;;*****************************************************************
                TST50:  SCOPE
                        TST     R1                      ;IS IN AN RH11
                        BMI     TST51           ;;GET OUT OF TEST
                        MOV     #-2,@RHWC               ;SET UP WC FOR TWO WORD
                        MOV     #ODDAD,@RHBA            ;SETUP BUS ADDRESS
                        MOV     #ZERO,@RHBAE            ;SETUP BUS ADDRESS EXTENSION
                        MOV     #7,@RHCS2               ;DEVICE 7
                        MOV     #READ6,@RHCS1           ;TELL IT TO READ6
                        CLR     BITCNT                  ;CLEAR BIT COUNTER
                18$:    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$:     BIT     #DBL,@RHCS3             ;IS DOUBLE SET
                        BNE     2$                      ;DBL SET
                        ERROR   165                     ;DBL DIDN'T SET ON A 2 WORD TRANSFER
                        JSR     R7,WHYFO                ;TELL WHY NOT
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 4888  032004  004737  006626          2$:     JSR     R7,CLEER                ;CLEAR ERRORS
 4889  032010  004737  050244                  JSR     R7,ERRTST
 4890                                  ;;*****************************************************************
 4891                                  ;*TEST 51        DBL TEST 3 WORD EVEN ADD. READ FWD
 4892                                          ;*THESE TEST CHECK DBL IN RHCS3 WITHREAD FWD AND REV
 4893                                          ;*WRITE FWD AND REV AND WITH BAI SET IN RHCS2
 4894                                          ;*OPERATION BEING PREFORMED WILL BE PRINTED OUT
 4895                                          ;*IN ERROR MESSAGE.
 4896                                          ;*.................RH70 ONLY.....................
 4897                                  ;;*****************************************************************
 4898  032014  000004                  TST51:  SCOPE
 4899  032016  005701                          TST     R1                      ;IS IN AN RH11
 4900  032020  100532                          BMI     TST52           ;;GET OUT OF TEST
 4901  032022  012777  177775  151302          MOV     #-3,@RHWC               ;SET UP WC FOR THREE WORD
 4902  032030  012777  004000  151276          MOV     #EVENAD,@RHBA           ;SETUP BUS ADDRESS
 4903  032036  012777  000000  151314          MOV     #ZERO,@RHBAE            ;SETUP BUS ADDRESS EXTENSION
 4904  032044  012777  000007  151266          MOV     #7,@RHCS2               ;DEVICE 7
 4905  032052  012777  000071  151250          MOV     #READ0,@RHCS1           ;TELL IT TO READ0
 4906  032060  005037  003446                  CLR     BITCNT                  ;CLEAR BIT COUNTER
 4907  032064  032777  000200  151236  18$:    BIT     #RDY,@RHCS1             ;IS RDY SET
 4908  032072  001015                          BNE     3$                      ;BIT IS SET
 4909  032074  005237  003446                  INC     BITCNT                  ;COUNT UP
 4910  032100  001371                          BNE     18$                     ;NOT FINISHED COUNTING
 4911  032102  005037  003446                  CLR     @ITCNT                  ;GET READY TO DO IT AGAIN
 4912  032106  032777  000200  151214  19$:    BIT     #RDY,@RHCS1             ;IS IT SET YET?
 4913  032114  001004                          BNE     3$                      ;YES
 4914  032116  005237  003446                  INC     BITCNT                  ;COUNT UP
 4915  032122  001401                          BEQ     3$                      ;BIT IS NOT GOING TO SET
 4916  032124  000770                          BR      19$
 4917  032126                          3$:
 4918  032126  017737  151176  003420          MOV     @RHCS1,CS1              ;SAVE RHCS1
 4919  032134  017737  151172  003444          MOV     @RHWC,WC                ;SAVE WORD COUNT
 4920  032142  017737  151166  003414          MOV     @RHBA,BA                ;SAVE BUS ADDRESS
 4921  032150  005701                          TST     R1                      ;IS IT AN RH11
 4922  032152  001406                          BEQ     87$                     ;NO IT'S A 70
 4923  032154  005037  003416                  CLR     BAE                     ;CLEAR BAE
 4924  032160  005037  003424                  CLR     CS3                     ;CLEAR CS3
 4925  032164  000137  032204                  JMP     86$                     ;CONTINUE
 4926  032170  017737  151164  003416  87$:    MOV     @RHBAE,BAE              ;SAVE BUS ADDRESS EXTENSION
 4927  032176  017737  151160  003424          MOV     @RHCS3,CS3              ;SAVE RHCS3
 4928  032204  017737  151130  003422  86$:    MOV     @RHCS2,CS2              ;SAVE CS2
 4929  032212  017737  151124  003432          MOV     @RHST,DS1               ;SAVE TESTER STATUS
 4930  032220  017737  151120  003436          MOV     @RHER,ER1               ;SAVE ERROR REGISTER
 4931  032226  017737  151116  003442          MOV     @RHTDB,TDR              ;SAVE TESTER DATA REG.
 4932  032234  017737  151076  003440          MOV     @RHMR2,TC               ;SAVE MR2 TESTER REG.
 4933  032242  032777  000200  151060          BIT     #RDY,@RHCS1             ;IS READY SET
 4934  032250  001003                          BNE     1$                      ;RDY SET CONT. TEST
 4935  032252  104102                          ERROR   102                     ;READY DID NOT SET
 4936  032254  004737  007260                  JSR     R7,WHYFO                ;ANY ERRORS SET
 4937  032260  032777  002000  151074  1$:     BIT     #DBL,@RHCS3             ;IS DOUBLE SET
 4938  032266  001403                          BEQ     2$                      ;DBL SET
 4939  032270  104166                          ERROR   166                     ;DBL DID SET ON A 3 WORD TRANSFER
 4940  032272  004737  007260                  JSR     R7,WHYFO                ;TELL WHY NOT
 4941  032276  004737  006626          2$:     JSR     R7,CLEER                ;CLEAR ERRORS
 4942  032302  004737  050244                  JSR     R7,ERRTST
 4943                                  ;;*****************************************************************
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                                        ;*TEST 52       DBL TEST 3 WORD EVEN ADD. READ REV
                                                ;*THESE TEST CHECK DBL IN RHCS3 WITHREAD FWD AND REV
                                                ;*WRITE FWD AND REV AND WITH BAI SET IN RHCS2
                                                ;*OPERATION BEING PREFORMED WILL BE PRINTED OUT
                                                ;*IN ERROR MESSAGE.
                                                ;*.................RH70 ONLY.......................
                                        ;;**************************************************************************
032306  000004                        TST52:  SCOPE
032310  005701                                TST     R1                      ;IS IN AN RH11
032312  100532                                BMI     TST53           ;;GET OUT OF TEST
032314  012777  177775  151010                MOV     #-3,@RHWC               ;SET UP WC FOR THREE WORD
032322  012777  004000  151004                MOV     #EVENAD,@RHBA           ;SETUP BUS ADDRESS
032330  012777  000000  151022                MOV     #ZERO,@RHBAE            ;SETUP BUS ADDRESS EXTENSION
032336  012777  000007  150774                MOV     #7,@RHCS2               ;DEVICE 7
032344  012777  000077  150756                MOV     #READ6,@RHCS1           ;TELL IT TO READ6
032352  005037  003446                        CLR     BITCNT                  ;CLEAR BIT COUNTER
032356  032777  000200  150744  18$:         BIT     #RDY,@RHCS1             ;IS RDY SET
032364  001015                                BNE     3$                      ;BIT IS SET
032366  005237  003446                        INC     BITCNT                  ;COUNT UP
032372  001371                                BNE     18$                     ;NOT FINISHED COUNTING
032374  005037  003446                        CLR     BITCNT                  ;GET READY TO DO IT AGAIN
032400  032777  000200  150722  19$:         BIT     #RDY,@RHCS1             ;IS IT SET YET?
032406  001004                                BNE     3$                      ;YES
032410  005237  003446                        INC     BITCNT                  ;COUNT UP
032414  001401                                BEQ     3$                      ;BIT IS NOT GOING TO SET
032416  000770                                BR      19$
032420                                  3$:
032420  017737  150704  003420                MOV     @RHCS1,CS1              ;SAVE RHCS1
032426  017737  150700  003444                MOV     @RHWC,WC                ;SAVE WORD COUNT
032434  017737  150674  003414                MOV     @RHBA,BA                ;SAVE BUS ADDRESS
032442  005701                                TST     R1                      ;IS IT AN RH11
032444  001406                                BEQ     87$                     ;NO IT'S A 70
032446  005037  003416                        CLR     BAE                     ;CLEAR BAE
032452  005037  003424                        CLR     CS3                     ;CLEAR CS3
032456  000137  032476                        JMP     86$                     ;CONTINUE
032462  017737  150672  003416  87$:         MOV     @RHBAE,BAE              ;SAVE BUS ADDRESS EXTENSION
032470  017737  150666  003424                MOV     @RHCS3,CS3              ;SAVE RHCS3
032476  017737  150636  003422  86$:         MOV     @RHCS2,CS2              ;SAVE CS2
032504  017737  150632  003432                MOV     @RHST,DS1               ;SAVE TESTER STATUS
032512  017737  150626  003436                MOV     @RHER,ER1               ;SAVE ERROR REGISTER
032520  017737  150624  003442                MOV     @RHTDB,TDR              ;SAVE TESTER DATA REG.
032526  017737  150604  003440                MOV     @RHMR2,TC               ;SAVE MR2 TESTER REG.
032534  032777  000200  150566                BIT     #RDY,@RHCS1             ;IS READY SET
032542  001003                                BNE     1$                      ;RDY SET CONT. TEST
032544  104102                                ERROR   102                     ;READY DID NOT SET
032546  004737  007260                        JSR     R7,WHYFO                ;ANY ERRORS SET
032552  032777  002000  150602  1$:          BIT     #DBL,@RHCS3             ;IS DOUBLE SET
032560  001003                                BNE     2$                      ;DBL SET
032562  104167                                ERROR   167                     ;DBL DIDN'T SET ON A 3 WORD TRANSFER
032564  004737  007260                        JSR     R7,WHYFO                ;TELL WHY NOT
032570  004737  006626          2$:           JSR     R7,CLEER                ;CLEAR ERRORS
032574  004737  050244                        JSR     R7,ERRTST
                                        ;;**************************************************************************
                                        ;*TEST 53       WCE EW ERROR TEST
                                                ;*THIS TEST CHECKS THAT WCELO WILL SET IN
                                                ;*RHCS3 AND THAT WCE SETS IN RHCS1
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                                        ;*IT ALSO CHECKS THAT WCEHI DOES NOT SET
                                        ;*WITH WCELO IN RHCS3.................
                                        ;*..........RH70 ONLY.................
                                ;;**********************************************************************
032600  000004                  TST53:  SCOPE
032602  012737  000001  001212          MOV     #1,$TIMES       ;;DO 1 ITERATION
032610  005701                          TST     R1                      ;IS IT AN RH11
032612  001402                          BEQ     1$              ;IT'S AN RH70
032614  000137  033372                  JMP     FANG            ;IT'S AN RH11, EXIT TEST
032620  012777  000007  150512  1$:     MOV     #7,@RHCS2               ;SET DEVICE 7
032626  012777  000000  150524          MOV     #ZERO,@RHBAE            ;SETUP BUS ADDRESS EXT.
032634  012777  004000  150472          MOV     #EVENAD,@RHBA           ;SETUP BUS ADDRESS
                                ;;**********************************************************************
032642  013737  004000  004002  CHGE1:  MOV     EVENAD,ODDAD            ;MAKE BOTH ADD EQUAL
                                ;;**********************************************************************
032650  012777  177776  150454          MOV     #-2,@RHWC               ;FOR TWO WORD TRANSFER
032656  012777  000061  150444          MOV     #WRITE0,@RHCS1          ;TELL IT TO WRITE
032664  005037  003446                  CLR     BITCNT                  ;CLEAR BIT COUNTER
032670  032777  000200  150432  18$:     BIT     #RDY,@RHCS1             ;IS RDY SET
032676  001015                          BNE     MITE                    ;BIT IS SET
032700  005237  003446                  INC     BITCNT                  ;COUNT UP
032704  001371                          BNE     18$                     ;NOT FINISHED COUNTING
032706  005037  003446                  CLR     BITCNT                  ;GET READY TO DO IT AGAIN
032712  032777  000200  150410  19$:     BIT     #RDY,@RHCS1             ;IS IT SET YET?
032720  001004                          BNE     MITE                    ;YES
032722  005237  003446                  INC     BITCNT                  ;COUNT UP
032726  001401                          BEQ     MITE                    ;BIT IS NOT GOING TO SET
032730  000770                          BR      19$
032732                          MITE:
032732  017737  150372  003420          MOV     @RHCS1,CS1              ;SAVE RHCS1
032740  017737  150366  003444          MOV     @RHWC,WC                ;SAVE WORD COUNT
032746  017737  150362  003414          MOV     @RHBA,BA                ;SAVE BUS ADDRESS
032754  005701                          TST     R1                      ;IS IT AN RH11
032756  001406                          BEQ     87$                     ;NO IT'S A 70
032760  005037  003416                  CLR     BAE                     ;CLEAR BAE
032764  005037  003424                  CLR     CS3                     ;CLEAR CS3
032770  000137  033010                  JMP     86$                     ;CONTINUE
032774  017737  150360  003416  87$:     MOV     @RHBAE,BAE              ;SAVE BUS ADDRESS EXTENSION
033002  017737  150354  003424          MOV     @RHCS3,CS3              ;SAVE RHCS3
033010  017737  150324  003422  86$:     MOV     @RHCS2,CS2              ;SAVE CS2
033016  017737  150320  003432          MOV     @RHST,DS1               ;SAVE TESTER STATUS
033024  017737  150314  003436          MOV     @RHER,ER1               ;SAVE ERROR REGISTER
033032  017737  150312  003442          MOV     @RHTDB,TDR              ;SAVE TESTER DATA REG.
033040  017737  150272  003440          MOV     @RHMR2,TC               ;SAVE MR2 TESTER REG.
033046  032777  000200  150254          BIT     #RDY,@RHCS1             ;IS READY SET
033054  001003                          BNE     VOUS                    ;RDY IS SET
033056  104102                          ERROR   102                     ;RDY DID NOT SET
033060  004737  007260                  JSR     R7,WHYFO                ;ANY ERRORS SET
033064  005137  004000          VOUS:   COM     EVENAD                  ;INVERT BITS FOR WCELO
033070  012777  004000  150236          MOV     #EVENAD,@RHBA           ;FIX BUS ADDRESS
033076  012777  177776  150226          MOV     #-2,@RHWC               ;FIX WORD COUNT
033104  012777  000051  150216          MOV     #WRCH0,@RHCS1           ;TELL IT TO WRITE CHECK
033112  005037  003446                  CLR     BITCNT                  ;CLEAR BIT COUNTER
033116  032777  000200  150204  18$:     BIT     #RDY,@RHCS1             ;IS RDY SET
033124  001015                          BNE     FAST                    ;BIT IS SET
033126  005237  003446                  INC     BITCNT                  ;COUNT UP
```

```
5056  033132  001371                          BNE     18$                     ;NOT FINISHED COUNTING
5057  033134  005037  003446                  CLR     BITCNT                  ;GET READY TO DO IT AGAIN
5058  033140  032777  000200  150162  19$:    BIT     #RDY,@RHCS1             ;IS IT SET YET?
5059  033146  001004                          BNE     FAST                    ;YES
5060  033150  005237  003446                  INC     BITCNT                  ;COUNT UP
5061  033154  001401                          BEQ     FAST                    ;BIT IS NOT GOING TO SET
5062  033156  000770                          BR      19$
5063  033160                          FAST:
5064  033160  017737  150144  003420          MOV     @RHCS1,CS1              ;SAVE RHCS1
5065  033166  017737  150140  003444          MOV     @RHWC,WC                ;SAVE WORD COUNT
5066  033174  017737  150134  003414          MOV     @RHBA,BA                ;SAVE BUS ADDRESS
5067  033202  005701                          TST     R1                      ;IS IT AN RH11
5068  033204  001406                          BEQ     87$                     ;NO IT'S A 70
5069  033206  005037  003416                  CLR     BAE                     ;CLEAR BAE
5070  033212  005037  003424                  CLR     CS3                     ;CLEAR CS3
5071  033216  000137  033236                  JMP     86$                     ;CONTINUE
5072  033222  017737  150132  003416  87$:    MOV     @RHBAE,BAE              ;SAVE BUS ADDRESS EXTENSION
5073  033230  017737  150126  003424          MOV     @RHCS3,CS3              ;SAVE RHCS3
5074  033236  017737  150076  003422  86$:    MOV     @RHCS2,CS2              ;SAVE CS2
5075  033244  017737  150072  003432          MOV     @RHST,DS1               ;SAVE TESTER STATUS
5076  033252  017737  150066  003436          MOV     @RHER,ER1               ;SAVE ERROR REGISTER
5077  033260  017737  150064  003442          MOV     @RHTDB,TDR              ;SAVE TESTER DATA REG.
5078  033266  017737  150044  003440          MOV     @RHMR2,TC               ;SAVE MR2 TESTER REG.
5079  033274  032777  000200  150026          BIT     #RDY,@RHCS1             ;IS READY SET
5080  033302  001003                          BNE     SUPER                   ;RDY IS SET
5081  033304  104102                          ERROR   102                     ;RDY DID NOT SET
5082  033306  004737  007260                  JSR     R7,WHYFO                ;ANY ERRORS SET
5083  033312  032777  004000  150042  SUPER:  BIT     #WCELO,@RHCS3           ;IS WCELO SET
5084  033320  001006                          BNE     RITEON                  ;WCELO IS SET
5085  033322  104132                          ERROR   132                     ;WCELO DID NOT SET IN RHCS3
5086  033324  004737  007260                  JSR     R7,WHYFO                ;ANY ERRORS SET
5087  033330  105737  001103                  TSTB    $ERFLG                  ;WAS THERE AN ERROR
5088  033334  001005                          BNE     TWANG                   ;YES
5089  033336  032777  010000  150016  RITEON: BIT     #WCEHI,@RHCS3           ;IS WCEHI SET
5090  033344  001406                          BEQ     TWANGY                  ;WCEHI DID NOT SET
5091  033346  104133                          ERROR   133                     ;WCEHI SET WITH WCELO
5092  033350  032777  040000  147762  TWANG:  BIT     #WCE,@RHCS2             ;DID WCE SET IN CS2
5093  033356  001001                          BNE     TWANGY                  ;YES,IT SHOULD BE
5094  033360  104134                          ERROR   134                     ;WCE DID NOT SET IN RHCS2
5095  033362  004737  006626          TWANGY: JSR     R7,CLEER                ;CLEAR ERRORS
5096  033366  004737  050244                  JSR     R7,ERRTST
5097  033372                          FANG:
5098                                  ;;*************************************************************************
5099                                  ;*TEST 54        WCE OW ERROR TEST (WCEHI)
5100                                  ;*THIS TEST CHECKS THAT WCEHI SETS IN RHCS3
5101                                  ;*AND THAT WCE SETS IN RHCS1 ,IT ALSO TESTS
5102                                  ;*THAT WCELO DOES NOT SET WITH WCEHI.......
5103                                  ;*.............RH70 ONLY.....................
5104                                  ;;*************************************************************************
5105  033372  000004                  TST54:  SCOPE
5106  033374  005701                          TST     R1                      ;IS IT AN 11 OR A 70
5107  033376  001402                          BEQ     1$              ;IT'S AN RH70
5108  033400  000137  034176                  JMP     FANGY           ;IT'S AN RH11, EXIT TEST
5109  033404  012777  000007  147726  1$:     MOV     #7,@RHCS2               ;SET DEVICE 7
5110  033412  012777  177776  147712          MOV     #-2,@RHWC               ;TWO WORD TRANSFER
5111  033420  012777  004000  147706          MOV     #EVENAD,@RHBA           ;SETUP BUS ADDRESS
```

```
5112  033426  013737  004002  004000          MOV     ODDAD,EVENAD                    ;DUP ODDAD
5113  033434  012777  000061  147666          MOV     #WRITE0,@RHCS1          ;TELL IT TO WRITE
5114  033442  005037  003446                  CLR     BITCNT                  ;CLEAR BIT COUNTER
5115  033446  032777  000200  147654  18$:    BIT     #RDY,@RHCS1             ;IS RDY SET
5116  033454  001015                          BNE     WCEOWT                  ;BIT IS SET
5117  033456  005237  003446                  INC     BITCNT                  ;COUNT UP
5118  033462  001371                          BNE     18$                     ;NOT FINISHED COUNTING
5119  033464  005037  003446                  CLR     BITCNT                  ;GET READY TO DO IT AGAIN
5120  033470  032777  000200  147632  19$:    BIT     #RDY,@RHCS1             ;IS IT SET YET?
5121  033476  001004                          BNE     WCEOWT                  ;YES
5122  033500  005237  003446                  INC     BITCNT                  ;COUNT UP
5123  033504  001401                          BEQ     WCEOWT                  ;BIT IS NOT GOING TO SET
5124  033506  000770                          BR      19$
5125  033510                          WCEOWT:
5126  033510  017737  147614  003420          MOV     @RHCS1,CS1              ;SAVE RHCS1
5127  033516  017737  147610  003444          MOV     @RHWC,WC                ;SAVE WORD COUNT
5128  033524  017737  147604  003414          MOV     @RHBA,BA                ;SAVE BUS ADDRESS
5129  033532  005701                          TST     R1                      ;IS IT AN RH11
5130  033534  001406                          BEQ     87$                     ;NO IT'S A 70
5131  033536  005037  003416                  CLR     BAE                     ;CLEAR BAE
5132  033542  005037  003424                  CLR     CS3                     ;CLEAR CS3
5133  033546  000137  033566                  JMP     86$                     ;CONTINUE
5134  033552  017737  147602  003416  87$:    MOV     @RHBAE,BAE              ;SAVE BUS ADDRESS EXTENSION
5135  033560  017737  147576  003424          MOV     @RHCS3,CS3              ;SAVE RHCS3
5136  033566  017737  147546  003422  86$:    MOV     @RHCS2,CS2              ;SAVE CS2
5137  033574  017737  147542  003432          MOV     @RHST,DS1               ;SAVE TESTER STATUS
5138  033602  017737  147536  003436          MOV     @RHER,ER1               ;SAVE ERROR REGISTER
5139  033610  017737  147534  003442          MOV     @RHTDB,TDR              ;SAVE TESTER DATA REG.
5140  033616  017737  147514  003440          MOV     @RHMR2,1C               ;SAVE MR2 TESTER REG.
5141  033624  032777  000200  147476          BIT     #RDY,@RHCS1             ;IS READY SET
5142  033632  001003                          BNE     BEAU                    ;RDY IS SET
5143  033634  104102                          ERROR   102                     ;RDY DID NOT SET
5144  033636  004737  007260                  JSR     R7,WHYFO                ;ANY    ERRORS SET
5145  033642  052777  000040  147470  BEAU:   BIS     #40,    @RHCS2          ;DO A CONTROLLER CLEAR
5146  033650  005037  003446                  CLR     BITCNT                  ;SET UP FOR DELAY
5147  033654  005237  003446          17$:    INC     BITCNT                  ;COUNT UP
5148  033660  001375                          BNE     17$
5149  033662  012777  000007  147450          MOV     #7,     @RHCS2          ;SELECT UNIT #7
5150  033670  005137  004002                  COM     ODDAD                   ;REVERSE BITS IN ODDAD
5151  033674  012777  004000  147432          MOV     #EVENAD,@RHBA           ;CORRECT BUS ADDRESS
5152  033702  012777  177776  147422          MOV     #-2,@RHWC               ;CORRECT WC
5153  033710  012777  000051  147412          MOV     #WRCH0,@RHCS1           ;TELL IT TO WRITE CHECK
5154  033716  005037  003446                  CLR     BITCNT                  ;CLEAR BIT COUNTER
5155  033722  032777  000200  147400  18$:    BIT     #RDY,@RHCS1             ;IS RDY SET
5156  033730  001015                          BNE     WCEERR                  ;BIT IS SET
5157  033732  005237  003446                  INC     BITCNT                  ;COUNT UP
5158  033736  001371                          BNE     18$                     ;NOT FINISHED COUNTING
5159  033740  005037  003446                  CLR     BITCNT                  ;GET READY TO DO IT AGAIN
5160  033744  032777  000200  147356  19$:    BIT     #RDY,@RHCS1             ;IS IT SET YET?
5161  033752  001004                          BNE     WCEERR                  ;YES
5162  033754  005237  003446                  INC     BITCNT                  ;COUNT UP
5163  033760  001401                          BEQ     WCEERR                  ;BIT IS NOT GOING TO SET
5164  033762  000770                          BR      19$
5165  033764                          WCEERR:
5166  033764  017737  147340  003420          MOV     @RHCS1,CS1              ;SAVE RHCS1
5167  033772  017737  147334  003444          MOV     @RHWC,WC                ;SAVE WORD COUNT
```

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5168  034000  017737  147330  003414          MOV     @RHBA,BA                ;SAVE BUS ADDRESS
5169  034006  005701                          TST     R1                      ;IS IT AN RH11
5170  034010  001406                          BEQ     87$                     ;NO IT'S A 70
5171  034012  005037  003416                  CLR     BAE                     ;CLEAR BAE
5172  034016  005037  003424                  CLR     CS3                     ;CLEAR CS3
5173  034022  000137  034042                  JMP     86$                     ;CONTINUE
5174  034026  017737  147326  003416  87$:    MOV     @RHBAE,BAE              ;SAVE BUS ADDRESS EXTENSION
5175  034034  017737  147322  003424          MOV     @RHCS3,CS3              ;SAVE RHCS3
5176  034042  017737  147272  003422  86$:    MOV     @RHCS2,CS2              ;SAVE CS2
5177  034050  017737  147266  003432          MOV     @RHST,DS1               ;SAVE TESTER STATUS
5178  034056  017737  147262  003436          MOV     @RHER,ER1               ;SAVE ERROR REGISTER
5179  034064  017737  147260  003442          MOV     @RHTDB,TDR              ;SAVE TESTER DATA REG.
5180  034072  017737  147240  003440          MOV     @RHMR2,TC               ;SAVE MR2 TESTER REG.
5181  034100  032777  000200  147222          BIT     #RDY,@RHCS1             ;IS READY SET
5182  034106  001003                          BNE     ERTIP                   ;RDY IS SET
5183  034110  104102                          ERROR   102                     ;RDY DID NOT SET
5184  034112  004737  007260                  JSR     R7,WHYFO                ;ANY ERRORS SET
5185  034116  032777  010000  147236  ERTIP:  BIT     #WCEHI,@RHCS3           ;IS WCEHI SET
5186  034124  001006                          BNE     BUSH                    ;WCEHI IS SET
5187  034126  104135                          ERROR   135                     ;WCEHI DID NOT SET IN RHCS3
5188  034130  004737  007260                  JSR     R7,WHYFO                ;ANY OTHER ERRORS SET
5189  034134  105737  001103                  TSTB    $ERFLG                  ;WAS THERE AN ERROR
5190  034140  001012                          BNE     LEAGUE                  ;YES
5191  034142  032777  004000  147212  BUSH:   BIT     #WCELO,@RHCS3           ;IS WCELO SET
5192  034150  001406                          BEQ     LEAGUE                  ;NO,WCELO IS OK
5193  034152  104137                          ERROR   137                     ;WCELO SET WITH WCEHI
5194  034154  032777  040000  147156  LEFOUT: BIT     #WCE,@RHCS2             ;DID WCE SET
5195  034162  001001                          BNE     LEAGUE                  ;WCE IS SET IN RHCS2
5196  034164  104136                          ERROR   136                     ;WCE DID NOT SET IN RHCS2
5197  034166  004737  006626          LEAGUE: JSR     R7,CLEER                ;CLEAR ERRORS
5198  034172  004737  050244                  JSR     R7,ERRTST
5199  034176                          FANGY:
5200                                  ;;**************************************************************************
5201                                  ;*TEST 55        INTERUPT ENABLE TEST
5202                                          ;*THIS TEST VERIFYS THAT IE WILL SET IN RHCS1
5203                                          ;*AND IT WILL CAUSE AN INTERUPT WHEN RDY IS SET
5204                                  ;;**************************************************************************
5205  034176  000004                  TST55:  SCOPE
5206  034200  012777  000007  147132          MOV     #7,@RHCS2               ;SETUP UNIT NUMBER
5207  034206  012777  004000  147120          MOV     #EVENAD,@RHBA           ;SETUP BUS ADDRESS
5208  034214  005701                          TST     R1                      ;RH11 OR RH70 ?
5209  034216  100403                          BMI     READY                   ;ITS AN RH11
5210  034220  012777  000000  147132          MOV     #ZERO,@RHBAE            ;ZERO THE BAE
5211  034226  012777  034510  147152  READY:  MOV     #IETST,@VECADD          ;SET UP VECTOR ADDRESS
5212  034234  012737  000340  177776          MOV     #340,PS                 ;SET PRIORTY 7
5213  034242  012777  177777  147062          MOV     #-1,@RHWC               ;SET FOR ONE WORD
5214  034250  012777  000161  147052          MOV     #WRITE0!IE,@RHCS1               ;TELL IT TO WRITE
5215  034256  032777  000100  147044          BIT     #IE,@RHCS1              ;IS IE SET
5216  034264  001001                          BNE     2$                      ;YES CONTINUE TEST
5217  034266  104174                          ERROR   174                     ;IE WILL NOT SET
5218  034270  005037  177776          2$:     CLR     @#177776
5219  034274  005037  003446                  CLR     BITCNT                  ;CLEAR BIT COUNTER
5220  034300  032777  000200  147022  18$:    BIT     #RDY,@RHCS1             ;IS RDY SET
5221  034306  001015                          BNE     TSTIE                   ;BIT IS SET
5222  034310  005237  003446                  INC     BITCNT                  ;COUNT UP
5223  034314  001371                          BNE     18$                     ;NOT FINISHED COUNTING
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```
5224  034316  005037  003446                  CLR     BITCNT          ;GET READY TO DO IT AGAIN
5225  034322  032777  000200  147000  19$:    BIT     #RDY,@RHCS1     ;IS IT SET YET?
5226  034330  001004                          BNE     TSTIE           ;YES
5227  034332  005237  003446                  INC     BITCNT          ;COUNT UP
5228  034336  001401                          BEQ     TSTIE           ;BIT IS NOT GOING TO SET
5229  034340  000770                          BR      19$
5230  034342                          TSTIE:
5231  034342  017737  146762  003420          MOV     @RHCS1,CS1      ;SAVE RHCS1
5232  034350  017737  146756  003444          MOV     @RHWC,WC        ;SAVE WORD COUNT
5233  034356  017737  146752  003414          MOV     @RHBA,BA        ;SAVE BUS ADDRESS
5234  034364  005701                          TST     R1              ;IS IT AN RH11
5235  034366  001406                          BEQ     87$             ;NO IT'S A 70
5236  034370  005037  003416                  CLR     BAE             ;CLEAR BAE
5237  034374  005037  003424                  CLR     CS3             ;CLEAR CS3
5238  034400  000137  034420                  JMP     86$             ;CONTINUE
5239  034404  017737  146750  003416  87$:    MOV     @RHBAE,BAE      ;SAVE BUS ADDRESS EXTENSION
5240  034412  017737  146744  003424          MOV     @RHCS3,CS3      ;SAVE RHCS3
5241  034420  017737  146714  003422  86$:    MOV     @RHCS2,CS2      ;SAVE CS2
5242  034426  017737  146710  003432          MOV     @RHST,DS1       ;SAVE TESTER STATUS
5243  034434  017737  146704  003436          MOV     @RHER,ER1       ;SAVE ERROR REGISTER
5244  034442  017737  146702  003442          MOV     @RHTDB,TDR      ;SAVE TESTER DATA REG.
5245  034450  017737  146662  003440          MOV     @RHMR2,TC       ;SAVE MR2 TESTER REG.
5246  034456  032777  000200  146644          BIT     #RDY,@RHCS1     ;IS READY SET ?
5247  034464  001003                          BNE     1$              ;YES
5248  034466  104102                          ERROR   102             ;READY DID NOT SET
5249  034470  000137  034522                  JMP     SPLIT           ;EXIT TEST
5250  034474  105737  001103          1$:     TSTB    $ERFLG          ;WAS IE SET
5251  034500  001010                          BNE     SPLIT           ;NO,EXIT TEST
5252  034502  104173                          ERROR   173             ;RDY DID NOT CAUSE AN INTERUPT
5253  034504  000137  034522                  JMP     SPLIT           ;EXIT TEST
5254  034510  022626                  IETST:  CMP     (SP)+,(SP)+     ;CORRECT STACK
```

```
5255  034512  105737  001103          TSTB    $ERFLG                  ;DID IE SET
5256  034516  001401                  BEQ     SPLIT                   ;YES,EXIT TEST
5257  034520  104175                  ERROR   175                     ;IE HAS OPEN GOING TO BUS
5258  034522  004737  006626  SPLIT:  JSR     R7,CLEER                ;CLEAR ERRORS
5259  034526  004737  050244          JSR     R7,ERRTST
```

```
5260                                    ;;*****************************************************************
5261                                    ;*TEST 56       READ OPERATIONAL TEST (NORMAL) #1
5262                                            ;*THESE TESTS VERIFY ALL READ AND WRITE CODES
5263                                            ;*WHETHER IT BE A READ REV. OR FWD OR A WRITE REV. OR FWD
5264                                            ;*DURING THESE TESTS THE TESTER TIMING IS MARGINED AND
5265                                            ;*NO ERRORS SHOULD OCCUR
5266
5267                                    ;;*****************************************************************
5268  034532  000004                    TST56:  SCOPE
5269  034534  012777  000007  146576            MOV     #7,@RHCS2               ;SETUP UNIT SEVEN
5270  034542  012777  177777  146562            MOV     #-1,@RHWC               ;FOR ONE WORD
5271  034550  012777  004100  146556            MOV     #RBUF,@RHBA             ;SRTUP BA
5272  034556  012737  000000  004100            MOV     #ZERO,RBUF              ;SETUP DATA
5273  034564  012777  125252  146556            MOV     #0AB,@RHTDB             ;SETUP TESTER DB
5274  034572  005701                            TST     R1                      ;IS IT AN 11 OR A 70
5275  034574  100403                            BMI     1$                      ;IT'S AN RH11
5276  034576  012777  000000  146554            MOV     #ZERO,@RHBAE            ;ZERO BAE
5277  034604  012777  000071  146516  1$:       MOV     #READ0,@RHCS1           ;TELL IT TO READ0
5278  034612  005037  003446                    CLR     BITCNT                  ;CLEAR BIT COUNTER
5279  034616  032777  000200  146504  18$:      BIT     #RDY,@RHCS1             ;IS RDY SET
5280  034624  001015                            BNE     2$                      ;BIT IS SET
5281  034626  005237  003446                    INC     BITCNT                  ;COUNT UP
5282  034632  001371                            BNE     18$                     ;NOT FINISHED COUNTING
5283  034634  005037  003446                    CLR     BITCNT                  ;GET READY TO DO IT AGAIN
5284  034640  032777  000200  146462  19$:      BIT     #RDY,@RHCS1             ;IS IT SET YET?
5285  034646  001004                            BNE     2$                      ;YES
5286  034650  005237  003446                    INC     BITCNT                  ;COUNT UP
5287  034654  001401                            BEQ     2$                      ;BIT IS NOT GOING TO SET
5288  034656  000770                            BR      19$
5289  034660                            2$:
5290  034660  017737  146444  003420            MOV     @RHCS1,CS1              ;SAVE RHCS1
5291  034666  017737  146440  003444            MOV     @RHWC,WC                ;SAVE WORD COUNT
5292  034674  017737  146434  003414            MOV     @RHBA,BA                ;SAVE BUS ADDRESS
5293  034702  005701                            TST     R1                      ;IS IT AN RH11
5294  034704  001406                            BEQ     87$                     ;NO IT'S A 70
5295  034706  005037  003416                    CLR     BAE                     ;CLEAR BAE
5296  034712  005037  003424                    CLR     CS3                     ;CLEAR CS3
5297  034716  000137  034736                    JMP     86$                     ;CONTINUE
5298  034722  017737  146432  003416  87$:      MOV     @RHBAE,BAE              ;SAVE BUS ADDRESS EXTENSION
5299  034730  017737  146426  003424            MOV     @RHCS3,CS3              ;SAVE RHCS3
5300  034736  017737  146376  003422  86$:      MOV     @RHCS2,CS2              ;SAVE CS2
5301  034744  017737  146372  003432            MOV     @RHST,DS1               ;SAVE TESTER STATUS
5302  034752  017737  146366  003436            MOV     @RHER,ER1               ;SAVE ERROR REGISTER
5303  034760  017737  146364  003442            MOV     @RHTDB,TDR              ;SAVE TESTER DATA REG.
5304  034766  017737  146344  003440            MOV     @RHMR2,TC               ;SAVE MR2 TESTER REG.
5305  034774  017737  146350  001162            MOV     @RHTDB,$REG0                    ;GET DATA
5306  035002  032777  000200  146320            BIT     #RDY,@RHCS1             ;IS OR SET
5307  035010  001003                            BNE     3$                      ;YES RDY IS SET
5308  035012  104102                            ERROR   102                     ;READY DID NOT SET
5309  035014  004737  007260                    JSR     R7,WHYFO                ;ARE ANY ERRORS SET
5310  035020  023777  004100  146322  3$:       CMP     RBUF,@RHTDB             ;DID INFO GET WRITTEN OR READ
5311  035026  001407                            BEQ     4$                      ;INFO GOT LOADED
5312  035030  005737  004100                    TST     RBUF                    ;DOES RBUF = 0
5313  035034  001403                            BEQ     5$                      ;YES INFO DID NOT LOAD
5314  035036  104147                            ERROR   147                     ;ALL BITS DID NOT LOAD DURING
5315                                                                            ;AN READ0 OPERATION
```

```
5316  035040  000137  035046                  JMP     4$                      ;EXIT TEST
5317  035044  104150                  5$:     ERROR   150                     ;READ0 OPERATION DID NOT WORK
5318                                                                          ;NO BITS WHERE LOADED TO RBUF
5319  035046  004737  007260          4$:     JSR     R7,WHYFO                ;ANY ERRORS SET
5320  035052  105737  001103                  TSTB    $ERFLG                  ;ANY ERRORS ?
5321  035056  001402                          BEQ     6$                      ;NO,EXIT TEST
5322  035060  104146                          ERROR   146                     ;PRINT REGISTERS
5323  035062  104170                          ERROR   170
5324  035064  004737  006626          6$:     JSR     R7,CLEER                ;CLEAR ERRORS
5325  035070  004737  050244                  JSR     R7,ERRTST
5326                                          ;;**************************************************************************
5327                                          ;*TEST 57        RH OPERATIONAL WRITE TEST #1
5328                                          ;*THESE TESTS VERIFY ALL READ AND WRITE CODES
5329                                          ;*WHETHER IT BE A READ REV. OR FWD OR A WRITE REV. OR FWD
5330                                          ;*DURING THESE TESTS THE TESTER TIMING IS MARGINED AND
5331                                          ;*NO ERRORS SHOULD OCCUR
5332
5333                                          ;;**************************************************************************
5334  035074  000004                  TST57:  SCOPE
5335  035076  012777  000007  146234          MOV     #7,@RHCS2               ;SETUP UNIT SEVEN
5336  035104  012737  125252  004000          MOV     #0AB,EVENAD             ;SETUP INFORMATION
5337  035112  012777  000003  146234          MOV     #DMD!MCLK,@RHMR1                ;SETUP DIAG. MODE
5338  035120  012777  177777  146204          MOV     #-1,@RHWC               ;FOR ONE WORD
5339  035126  005701                          TST     R1                      ;IS IT A 11 OR 70
5340  035130  100403                          BMI     1$                      ;IT'S AN 11
5341  035132  012777  000000  146220          MOV     #ZERO,@RHBAE            ;ZERO BAE
5342  035140  012777  004000  146166  1$:     MOV     #EVENAD,@RHBA           ;SETUP BA
5343  035146  012777  000061  146154          MOV     #WRITE0,@RHCS1          ;TELL IT TO WRITETO
5344  035154  012777  000001  146172          MOV     #DMD,@RHMR1             ;MANIPULATE CLOCK
5345  035162  005037  003446                  CLR     BITCNT                  ;CLEAR LOOP COUNTER
5346  035166  005237  003446          2$:     INC     BITCNT                  ;INCREMENT LOOP COUNTER
5347  035172  022737  000015  003446          CMP     #15,BITCNT              ;IS IT THIRD LOOP FOR 5USEC WAIT
5348  035200  001372                          BNE     2$                      ;NO LOOP AGAIN
5349  035202  012777  000003  146144          MOV     #DMD!MCLK,@RHMR1                ;START CHANGING CLOCK
5350  035210  012777  000001  146136          MOV     #DMD,@RHMR1             ;CHANGE CLOCK AGAIN
5351  035216  012777  000003  146130          MOV     #DMD!MCLK,@RHMR1                ;CHANGE CLOCK AGAIN
5352  035224  012777  000001  146122          MOV     #DMD,@RHMR1             ;CHANGE CLOCK AGAIN
5353  035232  012777  000000  146114          MOV     #ZERO,@RHMR1            ;GET OUT OF DIAG MODE
5354  035240  005037  003446                  CLR     BITCNT                  ;CLEAR BIT COUNTER
5355  035244  032777  000200  146056  18$:    BIT     #RDY,@RHCS1             ;IS RDY SET
5356  035252  001015                          BNE     7$                      ;BIT IS SET
5357  035254  005237  003446                  INC     BITCNT                  ;COUNT UP
5358  035260  001371                          BNE     18$                     ;NOT FINISHED COUNTING
5359  035262  005037  003446                  CLR     BITCNT                  ;GET READY TO DO IT AGAIN
5360  035266  032777  000200  146034  19$:    BIT     #RDY,@RHCS1             ;IS IT SET YET?
5361  035274  001004                          BNE     7$                      ;YES
5362  035276  005237  003446                  INC     BITCNT                  ;COUNT UP
5363  035302  001401                          BEQ     7$                      ;BIT IS NOT GOING TO SET
5364  035304  000770                          BR      19$
5365  035306                          7$:
5366  035306  017737  146016  003420          MOV     @RHCS1,CS1              ;SAVE RHCS1
5367  035314  017737  146012  003444          MOV     @RHWC,WC                ;SAVE WORD COUNT
5368  035322  017737  146006  003414          MOV     @RHBA,BA                ;SAVE BUS ADDRESS
5369  035330  005701                          TST     R1                      ;IS IT AN RH11
5370  035332  001406                          BEQ     87$                     ;NO IT'S A 70
5371  035334  005037  003416                  CLR     BAE                     ;CLEAR BAE
```

```
5372  035340  005037  003424                    CLR     CS3                     ;CLEAR CS3
5373  035344  000137  035364                    JMP     86$                     ;CONTINUE
5374  035350  017737  146004  003416  87$:      MOV     @RHBAE,BAE              ;SAVE BUS ADDRESS EXTENSION
5375  035356  017737  146000  003424            MOV     @RHCS3,CS3              ;SAVE RHCS3
5376  035364  017737  145750  003422  86$:      MOV     @RHCS2,CS2              ;SAVE CS2
5377  035372  017737  145744  003432            MOV     @RHST,DS1               ;SAVE TESTER STATUS
5378  035400  017737  145740  003436            MOV     @RHER,ER1               ;SAVE ERROR REGISTER
5379  035406  017737  145736  003442            MOV     @RHTDB,TDR              ;SAVE TESTER DATA REG.
5380  035414  017737  145716  003440            MOV     @RHMR2,TC               ;SAVE MR2 TESTER REG.
5381  035422  017737  145722  001162            MOV     @RHTDB,$REG0                    ;GET DATA
5382  035430  032777  000200  145672            BIT     #RDY,@RHCS1             ;IS READY SET
5383  035436  001001                            BNE     8$                      ;YES,CONTINUE TEST
5384  035440  104102                            ERROR   102                     ;READY DID NOT SET
5385  035442  022777  177777  145662  8$:       CMP     #-1,@RHWC               ;DID WC INCREMENT
5386  035450  001001                            BNE     3$                      ;YES,CONT TEST
5387  035452  104140                            ERROR   140                     ;WRITETO OPERATION DID NOT INC WC
5388  035454  022777  004002  145652  3$:       CMP     #ODDAD,@RHBA            ;DID BA INCREMENT
5389  035462  001401                            BEQ     4$                      ;YES CONT TEST
5390  035464  104141                            ERROR   141                     ;BA DID NOT INCREMENT AFTER AN WRITETO OPERATION
5391  035466  023777  004000  145654  4$:       CMP     EVENAD,@RHTDB           ;DID INFO WRITETO TESTER
5392  035474  001401                            BEQ     5$                      ;YES,CONT
5393  035476  104142                            ERROR   142                     ;INFO DID NOT WRITETO TESTER
5394  035500  004737  007260            5$:     JSR     R7,WHYFO                ;ARE ANY ERROR BITS SET
5395  035504  105737  001103                    TSTB    $ERFLG                  ;WAS THER AN ERROR
5396  035510  001402                            BEQ     6$                      ;NO EXIT TEST
5397  035512  104146                            ERROR   146                     ;THESE ARE THE CONTENTS OF ALL RH70 REG.
5398  035514  104170                            ERROR   170                     ;THIS IS TO COMMPLETE ERROR PRINTOUT
5399  035516  004737  006626            6$:     JSR     R7,CLEER                ;CLEER ERRORS IF ANY
5400  035522  004737  050244                    JSR     R7,ERRTST
5401                                    ;;**************************************************************************
5402                                    ;*TEST 60        READ OPERATIONAL TEST (NORMAL) #2
5403                                            ;*THESE TESTS VERIFY ALL READ AND WRITE CODES
5404                                            ;*WHETHER IT BE A READ REV. OR FWD OR A WRITE REV. OR FWD
5405                                            ;*DURING THESE TESTS THE TESTER TIMING IS MARGINED AND
5406                                            ;*NO ERRORS SHOULD OCCUR
5407
5408                                    ;;**************************************************************************
5409  035526  000004            TST60:  SCOPE
5410  035530  012777  000007  145602            MOV     #7,@RHCS2               ;SETUP UNIT SEVEN
5411  035536  012777  177777  145566            MOV     #-1,@RHWC               ;FOR ONE WORD
5412  035544  012777  004100  145562            MOV     #RBUF,@RHBA             ;SRTUP BA
5413  035552  012737  000000  004100            MOV     #ZERO,RBUF              ;SETUP DATA
5414  035560  012777  125252  145562            MOV     #0AB,@RHTDB             ;SETUP TESTER DB
5415  035566  005701                            TST     R1                      ;IS IT AN 11 OR A 70
5416  035570  100403                            BMI     1$                      ;IT'S AN RH11
5417  035572  012777  000000  145560            MOV     #ZERO,@RHBAE            ;ZERO BAE
5418  035600  012777  000073  145522  1$:       MOV     #READ2,@RHCS1           ;TELL IT TO READ2
5419  035606  005037  003446                    CLR     BITCNT                  ;CLEAR BIT COUNTER
5420  035612  032777  000200  145510  18$:      BIT     #RDY,@RHCS1             ;IS RDY SET
5421  035620  001015                            BNE     2$                      ;BIT IS SET
5422  035622  005237  003446                    INC     BITCNT                  ;COUNT UP
5423  035626  001371                            BNE     18$                     ;NOT FINISHED COUNTING
5424  035630  005037  003446                    CLR     BITCNT                  ;GET READY TO DO IT AGAIN
5425  035634  032777  000200  145466  19$:      BIT     #RDY,@RHCS1             ;IS IT SET YET?
5426  035642  001004                            BNE     2$                      ;YES
5427  035644  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
```

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5484  036142  012777  000071  145160          MOV     #READ0,@RHCS1           ;TELL IT TO READFROM
5485  036150  012777  000001  145176          MOV     #DMD,@RHMR1             ;MANIPULATE CLOCK
5486  036156  005037  003446                  CLR     BITCNT                  ;CLEAR LOOP COUNTER
5487  036162  005237  003446          2$:     INC     BITCNT                  ;INCREMENT LOOP COUNTER
5488  036166  022737  000015  003446          CMP     #15,BITCNT              ;IS IT THIRD LOOP FOR 5USEC WAIT
5489  036174  001372                          BNE     2$                      ;NO LOOP AGAIN
5490  036176  012777  000003  145150          MOV     #DMD!MCLK,@RHMR1                ;START CHANGING CLOCK
5491  036204  012777  000001  145142          MOV     #DMD,@RHMR1             ;CHANGE CLOCK AGAIN
5492  036212  012777  000003  145134          MOV     #DMD!MCLK,@RHMR1                ;CHANGE CLOCK AGAIN
5493  036220  012777  000001  145126          MOV     #DMD,@RHMR1             ;CHANGE CLOCK AGAIN
5494  036226  012777  000000  145120          MOV     #ZERO,@RHMR1            ;GET OUT OF DIAG MODE
5495  036234  005037  003446                  CLR     BITCNT                  ;CLEAR BIT COUNTER
5496  036240  032777  000200  145062  18$:    BIT     #RDY,@RHCS1             ;IS RDY SET
5497  036246  001015                          BNE     7$                      ;BIT IS SET
5498  036250  005237  003446                  INC     BITCNT                  ;COUNT UP
5499  036254  001371                          BNE     18$                     ;NOT FINISHED COUNTING
5500  036256  005037  003446                  CLR     BITCNT                  ;GET READY TO DO IT AGAIN
5501  036262  032777  000200  145040  19$:    BIT     #RDY,@RHCS1             ;IS IT SET YET?
5502  036270  001004                          BNE     7$                      ;YES
5503  036272  005237  003446                  INC     BITCNT                  ;COUNT UP
5504  036276  001401                          BEQ     7$                      ;BIT IS NOT GOING TO SET
5505  036300  000770                          BR      19$
5506  036302                          7$:
5507  036302  017737  145022  003420          MOV     @RHCS1,CS1              ;SAVE RHCS1
5508  036310  017737  145016  003444          MOV     @RHWC,WC                ;SAVE WORD COUNT
5509  036316  017737  145012  003414          MOV     @RHBA,BA                ;SAVE BUS ADDRESS
5510  036324  005701                          TST     R1                      ;IS IT AN RH11
5511  036326  001406                          BEQ     87$                     ;NO IT'S A 70
5512  036330  005037  003416                  CLR     BAE                     ;CLEAR BAE
5513  036334  005037  003424                  CLR     CS3                     ;CLEAR CS3
5514  036340  000137  036360                  JMP     86$                     ;CONTINUE
5515  036344  017737  145010  003416  87$:    MOV     @RHBAE,BAE              ;SAVE BUS ADDRESS EXTENSION
5516  036352  017737  145004  003424          MOV     @RHCS3,CS3              ;SAVE RHCS3
5517  036360  017737  144754  003422  86$:    MOV     @RHCS2,CS2              ;SAVE CS2
5518  036366  017737  144750  003432          MOV     @RHST,DS1               ;SAVE TESTER STATUS
5519  036374  017737  144744  003436          MOV     @RHER,ER1               ;SAVE ERROR REGISTER
5520  036402  017737  144742  003442          MOV     @RHTDB,TDR              ;SAVE TESTER DATA REG.
5521  036410  017737  144722  003440          MOV     @RHMR2,TC               ;SAVE MR2 TESTER REG.
5522  036416  017737  144726  001162          MOV     @RHTDB,$REG0                    ;GET DATA
5523  036424  032777  000200  144676          BIT     #RDY,@RHCS1             ;IS READY SET
5524  036432  001001                          BNE     8$                      ;YES,CONTINUE TEST
5525  036434  104102                          ERROR   102                     ;READY DID NOT SET
5526  036436  022777  177777  144666  8$:     CMP     #-1,@RHWC               ;DID WC INCREMENT
5527  036444  001001                          BNE     3$                      ;YES,CONT TEST
5528  036446  104143                          ERROR   143                     ;READFROM OPERATION DID NOT INC WC
5529  036450  022777  004002  144656  3$:     CMP     #ODDAD,@RHBA            ;DID BA INCREMENT
5530  036456  001401                          BEQ     4$                      ;YES CONT TEST
5531  036460  104144                          ERROR   144                     ;BA DID NOT INCREMENT AFTER AN READFROM OPERATIO
5532  036462  023777  004000  144660  4$:     CMP     EVENAD,@RHTDB           ;DID INFO READFROM TESTER
5533  036470  001401                          BEQ     5$                      ;YES,CONT
5534  036472  104145                          ERROR   145                     ;INFO DID NOT READFROM TESTER
5535  036474  004737  007260          5$:     JSR     R7,WHYFO                ;ARE ANY ERROR BITS SET
5536  036500  105737  001103                  TSTB    $ERFLG                  ;WAS THER AN ERROR
5537  036504  001402                          BEQ     6$                      ;NO EXIT TEST
5538  036506  104146                          ERROR   146                     ;THESE ARE THE CONTENTS OF ALL RH70 REG.
5539  036510  104170                          ERROR   170                     ;THIS IS TO COMMPLETE ERROR PRINTOUT
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5540  036512  004737  006626          6$:     JSR     R7,CLEER                ;CLEER ERRORS IF ANY
5541  036516  004737  050244                  JSR     R7,ERRTST
5542                                  ;;*********************************************************************
5543                                  ;*TEST 62        READ OPERATIONAL TEST (NORMAL) #3
5544                                          ;*THESE TESTS VERIFY ALL READ AND WRITE CODES
5545                                          ;*WHETHER IT BE A READ REV. OR FWD OR A WRITE REV. OR FWD
5546                                          ;*DURING THESE TESTS THE TESTER TIMING IS MARGINED AND
5547                                          ;*NO ERRORS SHOULD OCCUR
5548
5549                                  ;;*********************************************************************
5550  036522  000004                  TST62:  SCOPE
5551  036524  012777  000007  144606          MOV     #7,@RHCS2               ;SETUP UNIT SEVEN
5552  036532  012777  177777  144572          MOV     #-1,@RHWC               ;FOR ONE WORD
5553  036540  012777  004100  144566          MOV     #RBUF,@RHBA             ;SRTUP BA
5554  036546  012737  000000  004100          MOV     #ZERO,RBUF              ;SETUP DATA
5555  036554  012777  125252  144566          MOV     #0AB,@RHTDB             ;SETUP TESTER DB
5556  036562  005701                          TST     R1                      ;IS IT AN 11 OR A 70
5557  036564  100403                          BMI     1$                      ;IT'S AN RH11
5558  036566  012777  000000  144564          MOV     #ZERO,@RHBAE            ;ZERO BAE
5559  036574  012777  000075  144526  1$:     MOV     #READ4,@RHCS1           ;TELL IT TO READ4
5560  036602  005037  003446                  CLR     BITCNT                  ;CLEAR BIT COUNTER
5561  036606  032777  000200  144514  18$:    BIT     #RDY,@RHCS1             ;IS RDY SET
5562  036614  001015                          BNE     2$                      ;BIT IS SET
5563  036616  005237  003446                  INC     BITCNT                  ;COUNT UP
5564  036622  001371                          BNE     18$                     ;NOT FINISHED COUNTING
5565  036624  005037  003446                  CLR     BITCNT                  ;GET READY TO DO IT AGAIN
5566  036630  032777  000200  144472  19$:    BIT     #RDY,@RHCS1             ;IS IT SET YET?
5567  036636  001004                          BNE     2$                      ;YES
5568  036640  005237  003446                  INC     BITCNT                  ;COUNT UP
5569  036644  001401                          BEQ     2$                      ;BIT IS NOT GOING TO SET
5570  036646  000770                          BR      19$
5571  036650                          2$:
5572  036650  017737  144454  003420          MOV     @RHCS1,CS1              ;SAVE RHCS1
5573  036656  017737  144450  003444          MOV     @RHWC,WC                ;SAVE WORD COUNT
5574  036664  017737  144444  003414          MOV     @RHBA,BA                ;SAVE BUS ADDRESS
5575  036672  005701                          TST     R1                      ;IS IT AN RH11
5576  036674  001406                          BEQ     87$                     ;NO IT'S A 70
5577  036676  005037  003416                  CLR     BAE                     ;CLEAR BAE
5578  036702  005037  003424                  CLR     CS3                     ;CLEAR CS3
5579  036706  000137  036726                  JMP     86$                     ;CONTINUE
5580  036712  017737  144442  003416  87$:    MOV     @RHBAE,BAE              ;SAVE BUS ADDRESS EXTENSION
5581  036720  017737  144436  003424          MOV     @RHCS3,CS3              ;SAVE RHCS3
5582  036726  017737  144406  003422  86$:    MOV     @RHCS2,CS2              ;SAVE CS2
5583  036734  017737  144402  003432          MOV     @RHST,DS1               ;SAVE TESTER STATUS
5584  036742  017737  144376  003436          MOV     @RHER,ER1               ;SAVE ERROR REGISTER
5585  036750  017737  144374  003442          MOV     @RHTDB,TDR              ;SAVE TESTER DATA REG.
5586  036756  017737  144354  003440          MOV     @RHMR2,TC               ;SAVE MR2 TESTER REG.
5587  036764  017737  144360  001162          MOV     @RHTDB,$REG0                    ;GET DATA
5588  036772  032777  000200  144330          BIT     #RDY,@RHCS1             ;IS OR SET
5589  037000  001003                          BNE     3$                      ;YES RDY IS SET
5590  037002  104102                          ERROR   102                     ;READY DID NOT SET
5591  037004  004737  007260                  JSR     R7,WHYFO                ;ARE ANY ERRORS SET
5592  037010  023777  004100  144332  3$:     CMP     RBUF,@RHTDB             ;DID INFO GET WRITTEN OR READ
5593  037016  001407                          BEQ     4$                      ;INFO GOT LOADED
5594  037020  005737  004100                  TST     RBUF                    ;DOES RBUF = 0
5595  037024  001403                          BEQ     5$                      ;YES INFO DID NOT LOAD
```

```
5596  037026  104147                    ERROR   147                     ;ALL BITS DID NOT LOAD DURING
5597                                                                    ;AN READ4 OPERATION
5598  037030  000137  037036            JMP     4$                      ;EXIT TEST
5599  037034  104150              5$:   ERROR   150                     ;READ4 OPERATION DID NOT WORK
5600                                                                    ;NO BITS WHERE LOADED TO RBUF
5601  037036  004737  007260      4$:   JSR     R7,WHYFO                ;ANY ERRORS SET
5602  037042  105737  001103            TSTB    $EPFLG                  ;ANY ERRORS ?
5603  037046  001402                    BEQ     6$                      ;NO,EXIT TEST
5604  037050  104146                    ERROR   146                     ;PRINT REGISTERS
5605  037052  104170                    ERROR   170
5606  037054  004737  006626      6$:   JSR     R7,CLEER                ;CLEAR ERRORS
5607  037060  004737  050244            JSR     R7,ERRTST
```

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                        ;;*************************************************************
                        ;*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

                        ;;*************************************************************
037064  000004          TST63:  SCOPE
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```
5617  037066  012777  000007  144244          MOV     #7,@RHCS2               ;SETUP UNIT SEVEN
5618  037074  012737  125252  004000          MOV     #0AB,EVENAD             ;SETUP INFORMATION
5619  037102  012777  001003  144244          MOV     #DMD!MCLK!SLKM,@RHMR1           ;SETUP DIAG. MODE
5620  037110  012777  177777  144214          MOV     #-1,@RHWC               ;FOR ONE WORD
5621  037116  005701                          TST     R1                      ;IS IT A 11 OR 70
5622  037120  100403                          BMI     1$                      ;IT'S AN 11
5623  037122  012777  000000  144230          MOV     #ZERO,@RHBAE            ;ZERO BAE
5624  037130  012777  004000  144176  1$:     MOV     #EVENAD,@RHBA           ;SETUP BA
5625  037136  012777  000063  144164          MOV     #WRITE2,@RHCS1          ;TELL IT TO WRITETO
5626  037144  012777  001001  144202          MOV     #DMD!SLKM,@RHMR1                ;MANIPULATE CLOCK
5627  037152  005037  003446                  CLR     BITCNT                  ;CLEAR LOOP COUNTER
5628  037156  005237  003446          2$:     INC     BITCNT                  ;INCREMENT LOOP COUNTER
5629  037162  022737  000015  003446          CMP     #15,BITCNT              ;IS IT THIRD LOOP FOR 5USEC WAIT
5630  037170  001372                          BNE     2$                      ;NO LOOP AGAIN
5631  037172  012777  001003  144154          MOV     #DMD!MCLK!SLKM,@RHMR1           ;START CHANGING CLOCK
5632  037200  012777  001001  144146          MOV     #DMD!SLKM,@RHMR1                ;CHANGE CLOCK AGAIN
5633  037206  012777  001003  144140          MOV     #DMD!MCLK!SLKM,@RHMR1           ;CHANGE CLOCK AGAIN
5634  037214  012777  001001  144132          MOV     #DMD!SLKM,@RHMR1                ;CHANGE CLOCK AGAIN
5635  037222  012777  000000  144124          MOV     #ZERO,@RHMR1            ;GET OUT OF DIAG MODE
5636  037230  005037  003446                  CLR     BITCNT                  ;CLEAR BIT COUNTER
5637  037234  032777  000200  144066  18$:    BIT     #RDY,@RHCS1             ;IS RDY SET
5638  037242  001015                          BNE     7$                      ;BIT IS SET
5639  037244  005237  003446                  INC     BITCNT                  ;COUNT UP
5640  037250  001371                          BNE     18$                     ;NOT FINISHED COUNTING
5641  037252  005037  003446                  CLR     BITCNT                  ;GET READY TO DO IT AGAIN
5642  037256  032777  000200  144044  19$:    BIT     #RDY,@RHCS1             ;IS IT SET YET?
5643  037264  001004                          BNE     7$                      ;YES
5644  037266  005237  003446                  INC     BITCNT                  ;COUNT UP
5645  037272  001401                          BEQ     7$                      ;BIT IS NOT GOING TO SET
5646  037274  000770                          BR      19$
5647  037276                          7$:
5648  037276  017737  144026  003420          MOV     @RHCS1,CS1              ;SAVE RHCS1
5649  037304  017737  144022  003444          MOV     @RHWC,WC                ;SAVE WORD COUNT
5650  037312  017737  144016  003414          MOV     @RHBA,BA                ;SAVE BUS ADDRESS
5651  037320  005701                          TST     R1                      ;IS IT AN RH11
5652  037322  001406                          BEQ     87$                     ;NO IT'S A 70
5653  037324  005037  003416                  CLR     BAE                     ;CLEAR BAE
5654  037330  005037  003424                  CLR     CS3                     ;CLEAR CS3
5655  037334  000137  037354                  JMP     86$                     ;CONTINUE
5656  037340  017737  144014  003416  87$:    MOV     @RHBAE,BAE              ;SAVE BUS ADDRESS EXTENSION
5657  037346  017737  144010  003424          MOV     @RHCS3,CS3              ;SAVE RHCS3
5658  037354  017737  143760  003422  86$:    MOV     @RHCS2,CS2              ;SAVE CS2
5659  037362  017737  143754  003432          MOV     @RHST,DS1               ;SAVE TESTER STATUS
5660  037370  017737  143750  003436          MOV     @RHER,ER1               ;SAVE ERROR REGISTER
5661  037376  017737  143746  003442          MOV     @RHTDB,TDR              ;SAVE TESTER DATA REG.
5662  037404  017737  143726  003440          MOV     @RHMR2,TC               ;SAVE MR2 TESTER REG.
5663  037412  017737  143732  001162          MOV     @RHTDB,$REG0                    ;GET DATA
5664  037420  032777  000200  143702          BIT     #RDY,@RHCS1             ;IS READY SET
5665  037426  001001                          BNE     8$                      ;YES,CONTINUE TEST
5666  037430  104102                          ERROR   102                     ;READY DID NOT SET
5667  037432  022777  177777  143672  8$:     CMP     #-1,@RHWC               ;DID WC INCREMENT
5668  037440  001001                          BNE     3$                      ;YES,CONT TEST
5669  037442  104140                          ERROR   140                     ;WRITETO OPERATION DID NOT INC WC
5670  037444  022777  004002  143662  3$:     CMP     #ODDAD,@RHBA            ;DID BA INCREMENT
5671  037452  001401                          BEQ     4$                      ;YES CONT TEST
5672  037454  104141                          ERROR   141                     ;BA DID NOT INCREMENT AFTER AN WRITETO OPERATION
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```
 5673  037456  023777  004000  143664  4$:     CMP     EVENAD,@RHTDB           ;DID INFO WRITETO TESTER
 5674  037464  001401                          BEQ     5$                      ;YES,CONT
 5675  037466  104142                          ERROR   142                     ;INFO DID NOT WRITETO TESTER
 5676  037470  004737  007260          5$:     JSR     R7,WHYFO                ;ARE ANY ERROR BITS SET
 5677  037474  105737  001103                  TSTB    $ERFLG                  ;WAS THER AN ERROR
 5678  037500  001402                          BEQ     6$                      ;NO EXIT TEST
 5679  037502  104146                          ERROR   146                     ;THESE ARE THE CONTENTS OF ALL RH70 REG.
 5680  037504  104170                          ERROR   170                     ;THIS IS TO COMMPLETE ERROR PRINTOUT
 5681  037506  004737  006626          6$:     JSR     R7,CLEER                ;CLEER ERRORS IF ANY
 5682  037512  004737  050244                  JSR     R7,ERRTST
 5683                                  ;;*****************************************************************
 5684                                  ;*TEST 64        READ OPERATIONAL TEST (NORMAL) #4
 5685                                          ;*THESE TESTS VERIFY ALL RFAD AND WRITE CODES
 5686                                          ;*WHETHER IT BE A READ REV. OR FWD OR A WRITE REV. OR FWD
 5687                                          ;*DURING THESE TESTS THE TESTER TIMING IS MARGINED AND
 5688                                          ;*NO ERRORS SHOULD OCCUR
 5689
 5690                                  ;;*****************************************************************
 5691  037516  000004                  TST64:  SCOPE
 5692  037520  012777  000007  143612          MOV     #7,@RHCS2               ;SETUP UNIT SEVEN
 5693  037526  012777  177777  143576          MOV     #-1,@RHWC               ;FOR ONE WORD
 5694  037534  012777  004100  143572          MOV     #RBUF,@RHBA             ;SRTUP BA
 5695  037542  012737  000000  004100          MOV     #ZERO,RBUF              ;SETUP DATA
 5696  037550  012777  125252  143572          MOV     #0AB,@RHTDB             ;SETUP TESTER DB
 5697  037556  005701                          TST     R1                      ;IS IT AN 11 OR A 70
 5698  037560  100403                          BMI     1$                      ;IT'S AN RH11
 5699  037562  012777  000000  143570          MOV     #ZERO,@RHBAE            ;ZERO BAE
 5700  037570  012777  000077  143532  1$:     MOV     #READ6,@RHCS1           ;TELL IT TO READ6
 5701  037576  005037  003446                  CLR     BITCNT                  ;CLEAR BIT COUNTER
 5702  037602  032777  000200  143520  18$:    BIT     #RDY,@RHCS1             ;IS RDY SET
 5703  037610  001015                          BNE     2$                      ;BIT IS SET
 5704  037612  005237  003446                  INC     BITCNT                  ;COUNT UP
 5705  037616  001371                          BNE     18$                     ;NOT FINISHED COUNTING
 5706  037620  005037  003446                  CLR     BITCNT                  ;GET READY TO DO IT AGAIN
 5707  037624  032777  000200  143476  19$:    BIT     #RDY,@RHCS1             ;IS IT SET YET?
 5708  037632  001004                          BNE     2$                      ;YES
 5709  037634  005237  003446                  INC     BITCNT                  ;COUNT UP
 5710  037640  001401                          BEQ     2$                      ;BIT IS NOT GOING TO SET
 5711  037642  000770                          BR      19$
 5712  037644                          2$:
 5713  037644  017737  143460  003420          MOV     @RHCS1,CS1              ;SAVE RHCS1
 5714  037652  017737  143454  003444          MOV     @RHWC,WC                ;SAVE WORD COUNT
 5715  037660  017737  143450  003414          MOV     @RHBA,BA                ;SAVE BUS ADDRESS
 5716  037666  005701                          TST     R1                      ;IS IT AN RH11
 5717  037670  001406                          BEQ     87$                     ;NO IT'S A 70
 5718  037672  005037  003416                  CLR     BAE                     ;CLEAR BAE
 5719  037676  005037  003424                  CLR     CS3                     ;CLEAR CS3
 5720  037702  000137  037722                  JMP     86$                     ;CONTINUE
 5721  037706  017737  143446  003416  87$:    MOV     @RHBAE,BAE              ;SAVE BUS ADDRESS EXTENSION
 5722  037714  017737  143442  003424          MOV     @RHCS3,CS3              ;SAVE RHCS3
 5723  037722  017737  143412  003422  86$:    MOV     @RHCS2,CS2              ;SAVE CS2
 5724  037730  017737  143406  003432          MOV     @RHST,DS1               ;SAVE TESTER STATUS
 5725  037736  017737  143402  003436          MOV     @RHER,ER1               ;SAVE ERROR REGISTER
 5726  037744  017737  143400  003442          MOV     @RHTDB,TDR              ;SAVE TESTER DATA REG.
 5727  037752  017737  143360  003440          MOV     @RHMR2,TC               ;SAVE MR2 TESTER REG.
 5728  037760  017737  143364  001162          MOV     @RHTDB,$REG0                    ;GET DATA
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5729  037766  032777  000200  143334          BIT     #RDY,@RHCS1             ;IS OR SET
5730  037774  001003                          BNE     3$                      ;YES RDY IS SET
5731  037776  104102                          ERROR   102                     ;READY DID NOT SET
5732  040000  004737  007260                  JSR     R7,WHYFO                ;ARE ANY ERRORS SET
5733  040004  023777  004100  143336  3$:     CMP     RBUF,@RHTDB             ;DID INFO GET WRITTEN OR READ
5734  040012  001407                          BEQ     4$                      ;INFO GOT LOADED
5735  040014  005737  004100                  TST     RBUF                    ;DOES RBUF = 0
5736  040020  001403                          BEQ     5$                      ;YES INFO DID NOT LOAD
5737  040022  104115                          ERROR   115                     ;ALL BITS DID NOT LOAD DURING
5738                                                                          ;AN READ6 OPERATION
5739  040024  000137  040032                  JMP     4$                      ;EXIT TEST
5740  040030  104107                  5$:     ERROR   107                     ;READ6 OPERATION DID NOT WORK
5741                                                                          ;NO BITS WHERE LOADED TO RBUF
5742  040032  004737  007260          4$:     JSR     R7,WHYFO                ;ANY ERRORS SET
5743  040036  105737  001103                  TSTB    $ERFLG                  ;ANY ERRORS ?
5744  040042  001402                          BEQ     6$                      ;NO,EXIT TEST
5745  040044  104146                          ERROR   146                     ;PRINT REGISTERS
5746  040046  104170                          ERROR   170
5747  040050  004737  006626          6$:     JSR     R7,CLEER                ;CLEAR ERRORS
5748  040054  004737  050244                  JSR     R7,ERRTST
5749                                  ;;**********************************************************
5750                                  ;*TEST 65        RH OPERATIONAL READ TEST #2
5751                                          ;*THESE TESTS VERIFY ALL READ AND WRITE CODES
5752                                          ;*WHETHER IT BE A READ REV. OR FWD OR A WRITE REV. OR FWD
5753                                          ;*DURING THESE TESTS THE TESTER TIMING IS MARGINED AND
5754                                          ;*NO ERRORS SHOULD OCCUR
5755
5756                                  ;;**********************************************************
5757  040060  000004                  TST65:  SCOPE
5758  040062  012777  000007  143250          MOV     #7,@RHCS2               ;SETUP UNIT SEVEN
5759  040070  012777  052525  143252          MOV     #AB,@RHTDB              ;SETUP INFORMATION
5760  040076  012777  001003  143250          MOV     #DMD!MCLK!SLKM,@RHMR1           ;SETUP DIAG. MODE
5761  040104  012777  177777  143220          MOV     #-1,@RHWC               ;FOR ONE WORD
5762  040112  005701                          TST     R1                      ;IS IT A 11 OR 70
5763  040114  100403                          BMI     1$                      ;IT'S AN 11
5764  040116  012777  000000  143234          MOV     #ZERO,@RHBAE            ;ZERO BAE
5765  040124  012777  004000  143202  1$:     MOV     #EVENAD,@RHBA           ;SETUP BA
5766  040132  012777  000073  143170          MOV     #READ2,@RHCS1           ;TELL IT TO READFROM
5767  040140  012777  001001  143206          MOV     #DMD!SLKM,@RHMR1                ;MANIPULATE CLOCK
5768  040146  005037  003446                  CLR     BITCNT                  ;CLEAR LOOP COUNTER
5769  040152  005237  003446          2$:     INC     BITCNT                  ;INCREMENT LOOP COUNTER
5770  040156  022737  000015  003446          CMP     #15,BITCNT              ;IS IT THIRD LOOP FOR 5USEC WAIT
5771  040164  001372                          BNE     2$                      ;NO LOOP AGAIN
5772  040166  012777  001003  143160          MOV     #DMD!MCLK!SLKM,@RHMR1           ;START CHANGING CLOCK
5773  040174  012777  001001  143152          MOV     #DMD!SLKM,@RHMR1                ;CHANGE CLOCK AGAIN
5774  040202  012777  001003  143144          MOV     #DMD!MCLK!SLKM,@RHMR1           ;CHANGE CLOCK AGAIN
5775  040210  012777  001001  143136          MOV     #DMD!SLKM,@RHMR1                ;CHANGE CLOCK AGAIN
5776  040216  012777  000000  143130          MOV     #ZERO,@RHMR1            ;GET OUT OF DIAG MODE
5777  040224  005037  003446                  CLR     BITCNT                  ;CLEAR BIT COUNTER
5778  040230  032777  000200  143072  18$:     BIT     #RDY,@RHCS1             ;IS RDY SET
5779  040236  001015                          BNE     7$                      ;BIT IS SET
5780  040240  005237  003446                  INC     BITCNT                  ;COUNT UP
5781  040244  001371                          BNE     18$                     ;NOT FINISHED COUNTING
5782  040246  005037  003446                  CLR     BITCNT                  ;GET READY TO DO IT AGAIN
5783  040252  032777  000200  143050  19$:     BIT     #RDY,@RHCS1             ;IS IT SET YET?
5784  040260  001004                          BNE     7$                      ;YES
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5785  040262  005237  003446                    INC     BITCNT                  ;COUNT UP
5786  040266  001401                            BEQ     7$                      ;BIT IS NOT GOING TO SET
5787  040270  000770                            BR      19$
5788  040272                            7$:
5789  040272  017737  143032  003420            MOV     @RHCS1,CS1              ;SAVE RHCS1
5790  040300  017737  143026  003444            MOV     @RHWC,WC                ;SAVE WORD COUNT
5791  040306  017737  143022  003414            MOV     @RHBA,BA                ;SAVE BUS ADDRESS
5792  040314  005701                            TST     R1                      ;IS IT AN RH11
5793  040316  001406                            BEQ     87$                     ;NO IT'S A 70
5794  040320  005037  003416                    CLR     BAE                     ;CLEAR BAE
5795  040324  005037  003424                    CLR     CS3                     ;CLEAR CS3
5796  040330  000137  040350                    JMP     86$                     ;CONTINUE
5797  040334  017737  143020  003416    87$:    MOV     @RHBAE,BAE              ;SAVE BUS ADDRESS EXTENSION
5798  040342  017737  143014  003424            MOV     @RHCS3,CS3              ;SAVE RHCS3
5799  040350  017737  142764  003422    86$:    MOV     @RHCS2,CS2              ;SAVE CS2
5800  040356  017737  142760  003432            MOV     @RHST,DS1               ;SAVE TESTER STATUS
5801  040364  017737  142754  003436            MOV     @RHER,ER1               ;SAVE ERROR REGISTER
5802  040372  017737  142752  003442            MOV     @RHTDB,TDR              ;SAVE TESTER DATA REG.
5803  040400  017737  142732  003440            MOV     @RHMR2,TC               ;SAVE MR2 TESTER REG.
5804  040406  017737  142736  001162            MOV     @RHTDB,$REG0                    ;GET DATA
5805  040414  032777  000200  142706            BIT     #RDY,@RHCS1             ;IS READY SET
5806  040422  001001                            BNE     8$                      ;YES,CONTINUE TEST
5807  040424  104102                            ERROR   102                     ;READY DID NOT SET
5808  040426  022777  177777  142676    8$:     CMP     #-1,@RHWC               ;DID WC INCREMENT
5809  040434  001001                            BNE     3$                      ;YES,CONT TEST
5810  040436  104143                            ERROR   143                     ;READFROM OPERATION DID NOT INC WC
5811  040440  022777  004002  142666    3$:     CMP     #ODDAD,@RHBA            ;DID BA INCREMENT
5812  040446  001401                            BEQ     4$                      ;YES CONT TEST
5813  040450  104144                            ERROR   144                     ;BA DID NOT INCREMENT AFTER AN READFROM OPERATIO
5814  040452  023777  004000  142670    4$:     CMP     EVENAD,@RHTDB           ;DID INFO READFROM TESTER
5815  040460  001401                            BEQ     5$                      ;YES,CONT
5816  040462  104145                            ERROR   145                     ;INFO DID NOT READFROM TESTER
5817  040464  004737  007260            5$:     JSR     R7,WHYFO                ;ARE ANY ERROR BITS SET
5818  040470  105737  001103                    TSTB    $ERFLG                  ;WAS THER AN ERROR
5819  040474  001402                            BEQ     6$                      ;NO EXIT TEST
5820  040476  104146                            ERROR   146                     ;THESE ARE THE CONTENTS OF ALL RH70 REG.
5821  040500  104170                            ERROR   170                     ;THIS IS TO COMMPLETE ERROR PRINTOUT
5822  040502  004737  006626            6$:     JSR     R7,CLEER                ;CLEER ERRORS IF ANY
5823  040506  004737  050244                    JSR     R7,ERRTST
5824                                    ;;*****************************************************************
5825                                    ;*TEST 66        WRITE OPERATIONAL TEST (NORMAL) #1
5826                                            ;*THESE TESTS VERIFY ALL READ AND WRITE CODES
5827                                            ;*WHETHER IT BE A READ REV. OR FWD OR A WRITE REV. OR FWD
5828                                            ;*DURING THESE TESTS THE TESTER TIMING IS MARGINED AND
5829                                            ;*NO ERRORS SHOULD OCCUR
5830
5831                                    ;;*****************************************************************
5832  040512  000004                    TST66:  SCOPE
5833  040514  012777  000007  142616            MOV     #7,@RHCS2               ;SETUP UNIT SEVEN
5834  040522  012777  177777  142602            MOV     #-1,@RHWC               ;FOR ONE WORD
5835  040530  012777  004100  142576            MOV     #RBUF,@RHBA             ;SRTUP BA
5836  040536  012737  125252  004100            MOV     #0AB,RBUF               ;SETUP DATA
5837  040544  012777  000000  142576            MOV     #ZERO,@RHTDB            ;SETUP TESTER DB
5838  040552  005701                            TST     R1                      ;IS IT AN 11 OR A 70
5839  040554  100403                            BMI     1$                      ;IT'S AN RH11
5840  040556  012777  000000  142574            MOV     #ZERO,@RHBAE            ;ZERO BAE
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5841  040564  012777  000061  142536  1$:     MOV     #WRITE0,@RHCS1          ;TELL IT TO WRITE0
5842  040572  005037  003446                  CLR     BITCNT                  ;CLEAR BIT COUNTER
5843  040576  032777  000200  142524  18$:    BIT     #RDY,@RHCS1            ;IS RDY SET
5844  040604  001015                          BNE     2$                      ;BIT IS SET
5845  040606  005237  003446                  INC     BITCNT                  ;COUNT UP
5846  040612  001371                          BNE     18$                     ;NOT FINISHED COUNTING
5847  040614  005037  003446                  CLR     BITCNT                  ;GET READY TO DO IT AGAIN
5848  040620  032777  000200  142502  19$:    BIT     #RDY,@RHCS1            ;IS IT SET YET?
5849  040626  001004                          BNE     2$                      ;YES
5850  040630  005237  003446                  INC     BITCNT                  ;COUNT UP
5851  040634  001401                          BEQ     2$                      ;BIT IS NOT GOING TO SET
5852  040636  000770                          BR      19$
5853  040640                          2$:
5854  040640  017737  142464  003420          MOV     @RHCS1,CS1              ;SAVE RHCS1
5855  040646  017737  142460  003444          MOV     @RHWC,WC                ;SAVE WORD COUNT
5856  040654  017737  142454  003414          MOV     @RHBA,BA                ;SAVE BUS ADDRESS
5857  040662  005701                          TST     R1                      ;IS IT AN RH11
5858  040664  001406                          BEQ     87$                     ;NO IT'S A 70
5859  040666  005037  003416                  CLR     BAE                     ;CLEAR BAE
5860  040672  005037  003424                  CLR     CS3                     ;CLEAR CS3
5861  040676  000137  040716                  JMP     86$                     ;CONTINUE
5862  040702  017737  142452  003416  87$:    MOV     @RHBAE,BAE              ;SAVE BUS ADDRESS EXTENSION
5863  040710  017737  142446  003424          MOV     @RHCS3,CS3              ;SAVE RHCS3
5864  040716  017737  142416  003422  86$:    MOV     @RHCS2,CS2              ;SAVE CS2
5865  040724  017737  142412  003432          MOV     @RHST,DS1               ;SAVE TESTER STATUS
5866  040732  017737  142406  003436          MOV     @RHER,ER1               ;SAVE ERROR REGISTER
5867  040740  017737  142404  003442          MOV     @RHTDB,TDR              ;SAVE TESTER DATA REG.
5868  040746  017737  142364  003440          MOV     @RHMR2,TC               ;SAVE MR2 TESTER REG.
5869  040754  017737  142370  001162          MOV     @RHTDB,$REG0                    ;GET DATA
5870  040762  032777  000200  142340          BIT     #RDY,@RHCS1            ;IS OR SET
5871  040770  001003                          BNE     3$                      ;YES RDY IS SET
5872  040772  104102                          ERROR   102                     ;READY DID NOT SET
5873  040774  004737  007260                  JSR     R7,WHYFO                ;ARE ANY ERRORS SET
5874  041000  023777  004100  142342  3$:     CMP     RBUF,@RHTDB             ;DID INFO GET WRITTEN OR READ
5875  041006  001407                          BEQ     4$                      ;INFO GOT LOADED
5876  041010  005777  142334                  TST     @RHTDB                  ;DOES @RHTDB = 0
5877  041014  001403                          BEQ     5$                      ;YES INFO DID NOT LOAD
5878  041016  104151                          ERROR   151                     ;ALL BITS DID NOT LOAD DURING
5879                                                                          ;AN WRITE0 OPERATION
5880  041020  000137  041026                  JMP     4$                      ;EXIT TEST
5881  041024  104152                  5$:     ERROR   152                     ;WRITE0 OPERATION DID NOT WORK
5882                                                                          ;NO BITS WHERE LOADED TO @RHTDB
5883  041026  004737  007260          4$:     JSR     R7,WHYFO                ;ANY ERRORS SET
5884  041032  105737  001103                  TSTB    $ERFLG                  ;ANY ERRORS ?
5885  041036  001402                          BEQ     6$                      ;NO,EXIT TEST
5886  041040  104146                          ERROR   146                     ;PRINT REGISTERS
5887  041042  104170                          ERROR   170
5888  041044  004737  006626          6$:     JSR     R7,CLEER                ;CLEAR ERRORS
5889  041050  004737  050244                  JSR     R7,ERRTST
5890                                  ;;*****************************************************************
5891                                  ;*TEST 67        RH OPERATIONAL WRITE TEST #3
5892                                          ;*THESE TESTS VERIFY ALL READ AND WRITE CODES
5893                                          ;*WHETHER IT BE A READ REV. OR FWD OR A WRITE REV. OR FWD
5894                                          ;*DURING THESE TESTS THE TESTER TIMING IS MARGINED AND
5895                                          ;*NO ERRORS SHOULD OCCUR
5896
```

```
5897                                                ;;*****************************************************************
5898  041054  000004                                TST67:  SCOPE
5899  041056  012777  000007  142254                       MOV     #7,@RHCS2               ;SETUP UNIT SEVEN
5900  041064  012737  125252  004000                       MOV     #0AB,EVENAD             ;SETUP INFORMATION
5901  041072  012777  003003  142254                       MOV     #DMD!MCLK!SLKM!ISLK,@RHMR1              ;SETUP DIAG. MODE
5902  041100  012777  177777  142224                       MOV     #-1,@RHWC               ;FOR ONE WORD
5903  041106  005701                                      TST     R1                      ;IS IT A 11 OR 70
5904  041110  100403                                      BMI     1$                      ;IT'S AN 11
5905  041112  012777  000000  142240                       MOV     #ZERO,@RHBAE            ;ZERO BAE
5906  041120  012777  004000  142206  1$:                 MOV     #EVENAD,@RHBA           ;SETUP BA
5907  041126  012777  000065  142174                       MOV     #WRITE4,@RHCS1          ;TELL IT TO WRITETO
5908  041134  012777  003001  142212                       MOV     #DMD!SLKM!ISLK,@RHMR1           ;MANIPULATE CLOCK
5909  041142  005037  003446                              CLR     BITCNT                  ;CLEAR LOOP COUNTER
5910  041146  005237  003446          2$:                 INC     BITCNT                  ;INCREMENT LOOP COUNTER
5911  041152  022737  000015  003446                       CMP     #15,BITCNT              ;IS IT THIRD LOOP FOR 5USEC WAIT
5912  041160  001372                                      BNE     2$                      ;NO LOOP AGAIN
5913  041162  012777  003003  142164                       MOV     #DMD!MCLK!SLKM!ISLK,@RHMR1              ;START CHANGING CLOCK
5914  041170  012777  003001  142156                       MOV     #DMD!SLKM!ISLK,@RHMR1           ;CHANGE CLOCK AGAIN
5915  041176  012777  003003  142150                       MOV     #DMD!MCLK!SLKM!ISLK,@RHMR1              ;CHANGE CLOCK AGAIN
5916  041204  012777  003001  142142                       MOV     #DMD!SLKM!ISLK,@RHMR1           ;CHANGE CLOCK AGAIN
5917  041212  012777  000000  142134                       MOV     #ZERO,@RHMR1            ;GET OUT OF DIAG MODE
5918  041220  005037  003446                              CLR     BITCNT                  ;CLEAR BIT COUNTER
5919  041224  032777  000200  142076  18$:                BIT     #RDY,@RHCS1             ;IS RDY SET
5920  041232  001015                                      BNE     7$                      ;BIT IS SET
5921  041234  005237  003446                              INC     BITCNT                  ;COUNT UP
5922  041240  001371                                      BNE     18$                     ;NOT FINISHED COUNTING
5923  041242  005037  003446                              CLR     BITCNT                  ;GET READY TO DO IT AGAIN
5924  041246  032777  000200  142054  19$:                BIT     #RDY,@RHCS1             ;IS IT SET YET?
5925  041254  001004                                      BNE     7$                      ;YES
5926  041256  005237  003446                              INC     BITCNT                  ;COUNT UP
5927  041262  001401                                      BEQ     7$                      ;BIT IS NOT GOING TO SET
5928  041264  000770                                      BR      19$
5929  041266                                      7$:
5930  041266  017737  142036  003420                       MOV     @RHCS1,CS1              ;SAVE RHCS1
5931  041274  017737  142032  003444                       MOV     @RHWC,WC                ;SAVE WORD COUNT
5932  041302  017737  142026  003414                       MOV     @RHBA,BA                ;SAVE BUS ADDRESS
5933  041310  005701                                      TST     R1                      ;IS IT AN RH11
5934  041312  001406                                      BEQ     87$                     ;NO IT'S A 70
5935  041314  005037  003416                              CLR     BAE                     ;CLEAR BAE
5936  041320  005037  003424                              CLR     CS3                     ;CLEAR CS3
5937  041324  000137  041344                              JMP     86$                     ;CONTINUE
5938  041330  017737  142024  003416  87$:                MOV     @RHBAE,BAE              ;SAVE BUS ADDRESS EXTENSION
5939  041336  017737  142020  003424                       MOV     @RHCS3,CS3              ;SAVE RHCS3
5940  041344  017737  141770  003422  86$:                MOV     @RHCS2,CS2              ;SAVE CS2
5941  041352  017737  141764  003432                       MOV     @RHST,DS1               ;SAVE TESTER STATUS
5942  041360  017737  141760  003436                       MOV     @RHER,ER1               ;SAVE ERROR REGISTER
5943  041366  017737  141756  003442                       MOV     @RHTDB,TDR              ;SAVE TESTER DATA REG.
5944  041374  017737  141736  003440                       MOV     @RHMR2,TC               ;SAVE MR2 TESTER REG.
5945  041402  017737  141742  001162                       MOV     @RHTDB,$REGO                    ;GET DATA
5946  041410  032777  000200  141712                       BIT     #RDY,@RHCS1             ;IS READY SET
5947  041416  001001                                      BNE     8$                      ;YES,CONTINUE TEST
5948  041420  104102                                      ERROR   102                     ;READY DID NOT SET
5949  041422  022777  177777  141702  8$:                 CMP     #-1,@RHWC               ;DID WC INCREMENT
5950  041430  001001                                      BNE     3$                      ;YES,CONT TEST
5951  041432  104140                                      ERROR   140                     ;WRITETO OPERATION DID NOT INC WC
5952  041434  022777  004002  141672  3$:                 CMP     #ODDAD,@RHBA            ;DID BA INCREMENT
```

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 5953  041442  001401                          BEQ     4$                      ;YES CONT TEST
 5954  041444  104141                          ERROR   141                     ;BA DID NOT INCREMENT AFTER AN WRITETO OPERATION
 5955  041446  023777  004000  141674  4$:     CMP     EVENAD,@RHTDB           ;DID INFO WRITETO TESTER
 5956  041454  001401                          BEQ     5$                      ;YES,CONT
 5957  041456  104142                          ERROR   142                     ;INFO DID NOT WRITETO TESTER
 5958  041460  004737  007260          5$:     JSR     R7,WHYFO                ;ARE ANY ERROR BITS SET
 5959  041464  105737  001103                  TSTB    $ERFLG                  ;WAS THER AN ERROR
 5960  041470  001402                          BEQ     6$                      ;NO EXIT TEST
 5961  041472  104146                          ERROR   146                     ;THESE ARE THE CONTENTS OF ALL RH70 REG.
 5962  041474  104170                          ERROR   170                     ;THIS IS TO COMMPLETE ERROR PRINTOUT
 5963  041476  004737  006626          6$:     JSR     R7,CLEER                ;CLEER ERRORS IF ANY
 5964  041502  004737  050244                  JSR     R7,ERRTST
 5965                                  ;;*****************************************************************
 5965                                  ;*TEST 70        WRITE OPERATIONAL TEST (NORMAL) #2
 5967                                  ;*THESE TESTS VERIFY ALL READ AND WRITE CODES
 5968                                  ;*WHETHER IT BE A READ REV. OR FWD OR A WRITE REV. OR FWD
 5969                                  ;*DURING THESE TESTS THE TESTER TIMING IS MARGINED AND
 5970                                  ;*NO ERRORS SHOULD OCCUR
 5971
 5972                                  ;;*****************************************************************
 5973  041506  000004                  TST70:  SCOPE
 5974  041510  012777  000007  141622          MOV     #7,@RHCS2               ;SETUP UNIT SEVEN
 5975  041516  012777  177777  141606          MOV     #-1,@RHWC               ;FOR ONE WORD
 5976  041524  012777  004100  141602          MOV     #RBUF,@RHBA             ;SRTUP BA
 5977  041532  012737  125252  004100          MOV     #0AB,RBUF               ;SETUP DATA
 5978  041540  012777  000000  141602          MOV     #ZERO,@RHTDB            ;SETUP TESTER DB
 5979  041546  005701                          TST     R1                      ;IS IT AN 11 OR A 70
 5980  041550  100403                          BMI     1$                      ;IT'S AN RH11
 5981  041552  012777  000000  141600          MOV     #ZERO,@RHBAE            ;ZERO BAE
 5982  041560  012777  000063  141542  1$:     MOV     #WRITE2,@RHCS1          ;TELL IT TO WRITE2
 5983  041566  005037  003446                  CLR     BITCNT                  ;CLEAR BIT COUNTER
 5984  041572  032777  000200  141530  18$:    BIT     #RDY,@RHCS1             ;IS RDY SET
 5985  041600  001015                          BNE     2$                      ;BIT IS SET
 5986  041602  005237  003446                  INC     BITCNT                  ;COUNT UP
 5987  041606  001371                          BNE     18$                     ;NOT FINISHED COUNTING
 5988  041610  005037  003446                  CLR     BITCNT                  ;GET READY TO DO IT AGAIN
 5989  041614  032777  000200  141506  19$:    BIT     #RDY,@RHCS1             ;IS IT SET YET?
 5990  041622  001004                          BNE     2$                      ;YES
 5991  041624  005237  003446                  INC     BITCNT                  ;COUNT UP
 5992  041630  001401                          BEQ     2$                      ;BIT IS NOT GOING TO SET
 5993  041632  000770                          BR      19$
 5994  041634                          2$:
 5995  041634  017737  141470  003420          MOV     @RHCS1,CS1              ;SAVE RHCS1
 5996  041642  017737  141464  003444          MOV     @RHWC,WC                ;SAVE WORD COUNT
 5997  041650  017737  141460  003414          MOV     @RHBA,BA                ;SAVE BUS ADDRESS
 5998  041656  005701                          TST     R1                      ;IS IT AN RH11
 5999  041660  001406                          BEQ     87$                     ;NO IT'S A 70
 6000  041662  005037  003416                  CLR     BAE                     ;CLEAR BAE
 6001  041666  005037  003424                  CLR     CS3                     ;CLEAR CS3
 6002  041672  000137  041712                  JMP     86$                     ;CONTINUE
 6003  041676  017737  141456  003416  87$:    MOV     @RHBAE,BAE              ;SAVE BUS ADDRESS EXTENSION
 6004  041704  017737  141452  003424          MOV     @RHCS3,CS3              ;SAVE RHCS3
 6005  041712  017737  141422  003422  86$:    MOV     @RHCS2,CS2              ;SAVE CS2
 6006  041720  017737  141416  003432          MOV     @RHST,DS1               ;SAVE TESTER STATUS
 6007  041726  017737  141412  003436          MOV     @RHER,ER1               ;SAVE ERROR REGISTER
 6008  041734  017737  141410  003442          MOV     @RHTDB,TDR              ;SAVE TESTER DATA REG.
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 6009  041742  017737  141370  003440          MOV     @RHMR2,TC               ;SAVE MR2 TESTER REG.
 6010  041750  017737  141374  001162          MOV     @RHTDB,$REGO                    ;GET DATA
 6011  041756  032777  000200  141344          BIT     #RDY,@RHCS1             ;IS OR SET
 6012  041764  001003                          BNE     3$                      ;YES RDY IS SET
 6013  041766  104102                          ERROR   102                     ;READY DID NOT SET
 6014  041770  004737  007260                  JSR     R7,WHYFO                ;ARE ANY ERRORS SET
 6015  041774  023777  004100  141346  3$:     CMP     RBUF,@RHTDB             ;DID INFO GET WRITTEN OR READ
 6016  042002  001407                          BEQ     4$                      ;INFO GOT LOADED
 6017  042004  005777  141340                  TST     @RHTDB                  ;DOES @RHTDB = 0
 6018  042010  001403                          BEQ     5$                      ;YES INFO DID NOT LOAD
 6019  042012  104151                          ERROR   151                     ;ALL BITS DID NOT LOAD DURING
 6020                                                                          ;AN WRITE2 OPERATION
 6021  042014  000137  042022                  JMP     4$                      ;EXIT TEST
 6022  042020  104152                  5$:     ERROR   152                     ;WRITE2 OPERATION DID NOT WORK
 6023                                                                          ;NO BITS WHERE LOADED TO @RHTDB
 6024  042022  004737  007260          4$:     JSR     R7,WHYFO                ;ANY ERRORS SET
 6025  042026  105737  001103                  TSTB    $ERFLG                  ;ANY ERRORS ?
 6026  042032  001402                          BEQ     6$                      ;NO,EXIT TEST
 6027  042034  104146                          ERROR   146                     ;PRINT REGISTERS
 6028  042036  104170                          ERROR   170
 6029  042040  004737  006626          6$:     JSR     R7,CLEER                ;CLEAR ERRORS
 6030  042044  004737  050244                  JSR     R7,ERRTST
 6031                                  ;;*********************************************************************
 6032                                  ;*TEST 71        RH OPERATIONAL READ TEST #3
 6033                                          ;*THESE TESTS VERIFY ALL READ AND WRITE CODES
 6034                                          ;*WHETHER IT BE A READ REV. OR FWD OR A WRITE REV. OR FWD
 6035                                          ;*DURING THESE TESTS THE TESTER TIMING IS MARGINED AND
 6036                                          ;*NO ERRORS SHOULD OCCUR
 6037
 6038                                  ;;*********************************************************************
 6039  042050  000004                  TST71:  SCOPE
 6040  042052  012777  000007  141260          MOV     #7,@RHCS2               ;SETUP UNIT SEVEN
 6041  042060  012777  052525  141262          MOV     #AB,@RHTDB              ;SETUP INFORMATION
 6042  042066  012777  003003  141260          MOV     #DMD!SLKM!ISLK!MCLK,@RHMR1              ;SETUP DIAG. MODE
 6043  042074  012777  177777  141230          MOV     #-1,@RHWC               ;FOR ONE WORD
 6044  042102  005701                          TST     R1                      ;IS IT A 11 OR 70
 6045  042104  100403                          BMI     1$                      ;IT'S AN 11
 6046  042106  012777  000000  141244          MOV     #ZERO,@RHBAE            ;ZERO BAE
 6047  042114  012777  004000  141212  1$:     MOV     #EVENAD,@RHBA           ;SETUP BA
 6048  042122  012777  000075  141200          MOV     #READ4,@RHCS1           ;TELL IT TO READFROM
 6049  042130  012777  003001  141216          MOV     #DMD!SLKM!ISLK,@RHMR1           ;MANIPULATE CLOCK
 6050  042136  005037  003446                  CLR     BITCNT                  ;CLEAR LOOP COUNTER
 6051  042142  005237  003446          2$:     INC     BITCNT                  ;INCREMENT LOOP COUNTER
 6052  042146  022737  000015  003446          CMP     #15,BITCNT              ;IS IT THIRD LOOP FOR 5USEC WAIT
 6053  042154  001372                          BNE     2$                      ;NO LOOP AGAIN
 6054  042156  012777  003003  141170          MOV     #DMD!SLKM!ISLK!MCLK,@RHMR1              ;START CHANGING CLOCK
 6055  042164  012777  003001  141162          MOV     #DMD!SLKM!ISLK,@RHMR1           ;CHANGE CLOCK AGAIN
 6056  042172  012777  003003  141154          MOV     #DMD!SLKM!ISLK!MCLK,@RHMR1              ;CHANGE CLOCK AGAIN
 6057  042200  012777  003001  141146          MOV     #DMD!SLKM!ISLK,@RHMR1           ;CHANGE CLOCK AGAIN
 6058  042206  012777  000000  141140          MOV     #ZERO,@RHMR1            ;GET OUT OF DIAG MODE
 6059  042214  005037  003446                  CLR     BITCNT                  ;CLEAR BIT COUNTER
 6060  042220  032777  000200  141102  18$:     BIT     #RDY,@RHCS1             ;IS RDY SET
 6061  042226  001015                          BNE     7$                      ;BIT IS SET
 6062  042230  005237  003446                  INC     BITCNT                  ;COUNT UP
 6063  042234  001371                          BNE     18$                     ;NOT FINISHED COUNTING
 6064  042236  005037  003446                  CLR     BITCNT                  ;GET READY TO DO IT AGAIN
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6065  042242  032777  000200  141060  19$:    BIT     #RDY,@RHCS1             ;IS IT SET YET?
6066  042250  001004                          BNE     7$                      ;YES
6067  042252  005237  003446                  INC     BITCNT                  ;COUNT UP
6068  042256  001401                          BEQ     7$                      ;BIT IS NOT GOING TO SET
6069  042260  000770                          BR      19$
6070  042262                          7$:
6071  042262  017737  141042  003420          MOV     @RHCS1,CS1              ;SAVE RHCS1
6072  042270  017737  141036  003444          MOV     @RHWC,WC                ;SAVE WORD COUNT
6073  042276  017737  141032  003414          MOV     @RHBA,BA                ;SAVE BUS ADDRESS
6074  042304  005701                          TST     R1                      ;IS IT AN RH11
6075  042306  001406                          BEQ     87$                     ;NO IT'S A 70
6076  042310  005037  003416                  CLR     BAE                     ;CLEAR BAE
6077  042314  005037  003424                  CLR     CS3                     ;CLEAR CS3
6078  042320  000137  042340                  JMP     86$                     ;CONTINUE
6079  042324  017737  141030  003416  87$:    MOV     @RHBAE,BAE              ;SAVE BUS ADDRESS EXTENSION
6080  042332  017737  141024  003424          MOV     @RHCS3,CS3              ;SAVE RHCS3
6081  042340  017737  140774  003422  86$:    MOV     @RHCS2,CS2              ;SAVE CS2
6082  042346  017737  140770  003432          MOV     @RHST,DS1               ;SAVE TESTER STATUS
6083  042354  017737  140764  003436          MOV     @RHER,ER1               ;SAVE ERROR REGISTER
6084  042362  017737  140762  003442          MOV     @RHTDB,TDR              ;SAVE TESTER DATA REG.
6085  042370  017737  140742  003440          MOV     @RHMR2,TC               ;SAVE MR2 TESTER REG.
6086  042376  017737  140746  001162          MOV     @RHTDB,$REG0                    ;GET DATA
6087  042404  032777  000200  140716          BIT     #RDY,@RHCS1             ;IS READY SET
6088  042412  001001                          BNE     8$                      ;YES,CONTINUE TEST
6089  042414  104102                          ERROR   102                     ;READY DID NOT SET
6090  042416  022777  177777  140706  8$:     CMP     #-1,@RHWC               ;DID WC INCREMENT
6091  042424  001001                          BNE     3$                      ;YES,CONT TEST
6092  042426  104143                          ERROR   143                     ;READFROM OPERATION DID NOT INC WC
6093  042430  022777  004002  140676  3$:     CMP     #ODDAD,@RHBA            ;DID BA INCREMENT
6094  042436  001401                          BEQ     4$                      ;YES CONT TEST
6095  042440  104144                          ERROR   144                     ;BA DID NOT INCREMENT AFTER AN READFROM OPERATIO
6096  042442  023777  004000  140700  4$:     CMP     EVENAD,@RHTDB           ;DID INFO READFROM TESTER
6097  042450  001401                          BEQ     5$                      ;YES,CONT
6098  042452  104145                          ERROR   145                     ;INFO DID NOT READFROM TESTER
6099  042454  004737  007260          5$:     JSR     R7,WHYFO                ;ARE ANY ERROR BITS SET
6100  042460  105737  001103                  TSTB    $ERFLG                  ;WAS THER AN ERROR
6101  042464  001402                          BEQ     6$                      ;NO EXIT TEST
6102  042466  104146                          ERROR   146                     ;THESE ARE THE CONTENTS OF ALL RH70 REG.
6103  042470  104170                          ERROR   170                     ;THIS IS TO COMMPLETE ERROR PRINTOUT
6104  042472  004737  006626          6$:     JSR     R7,CLEER                ;CLEER ERRORS IF ANY
6105  042476  004737  050244                  JSR     R7,ERRTST
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                                ;;*****************************************************************
                                ;*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

                                ;;*****************************************************************
042502  000004                  TST72:  SCOPE
042504  012777  000007  140626          MOV     #7,@RHCS2               ;SETUP UNIT SEVEN
042512  012777  177777  140612          MOV     #-1,@RHWC               ;FOR ONE WORD
042520  012777  004100  140606          MOV     #RBUF,@RHBA             ;SRTUP BA
042526  012737  125252  004100          MOV     #0AB,RBUF               ;SETUP DATA
042534  012777  000000  140606          MOV     #ZERO,@RHTDB            ;SETUP TESTER DB
042542  005701                        TST     R1                      ;IS IT AN 11 OR A 70
042544  100403                        BMI     1$                      ;IT'S AN RH11
042546  012777  000000  140604          MOV     #ZERO,@RHBAE            ;ZERO BAE
042554  012777  000065  140546  1$:     MOV     #WRITE4,@RHCS1          ;TELL IT TO WRITE4
042562  005037  003446                  CLR     BITCNT                  ;CLEAR BIT COUNTER
042566  032777  000200  140534  18$:    BIT     #RDY,@RHCS1             ;IS RDY SET
042574  001015                        BNE     2$                      ;BIT IS SET
042576  005237  003446                  INC     BITCNT                  ;COUNT UP
042602  001371                        BNE     18$                     ;NOT FINISHED COUNTING
042604  005037  003446                  CLR     BITCNT                  ;GET READY TO DO IT AGAIN
042610  032777  000200  140512  19$:    BIT     #RDY,@RHCS1             ;IS IT SET YET?
042616  001004                        BNE     2$                      ;YES
042620  005237  003446                  INC     BITCNT                  ;COUNT UP
042624  001401                        BEQ     2$                      ;BIT IS NOT GOING TO SET
042626  000770                        BR      19$
042630                          2$:
042630  017737  140474  003420          MOV     @RHCS1,CS1              ;SAVE RHCS1
042636  017737  140470  003444          MOV     @RHWC,WC                ;SAVE WORD COUNT
042644  017737  140464  003414          MOV     @RHBA,BA                ;SAVE BUS ADDRESS
042652  005701                        TST     R1                      ;IS IT AN RH11
042654  001406                        BEQ     87$                     ;NO IT'S A 70
042656  005037  003416                  CLR     BAE                     ;CLEAR BAE
042662  005037  003424                  CLR     CS3                     ;CLEAR CS3
042666  000137  042706                  JMP     86$                     ;CONTINUE
042672  017737  140462  003416  87$:     MOV     @RHBAE,BAE              ;SAVE BUS ADDRESS EXTENSION
042700  017737  140456  003424          MOV     @RHCS3,CS3              ;SAVE RHCS3
042706  017737  140426  003422  86$:     MOV     @RHCS2,CS2              ;SAVE CS2
042714  017737  140422  003432          MOV     @RHST,DS1               ;SAVE TESTER STATUS
042722  017737  140416  003436          MOV     @RHER,ER1               ;SAVE ERROR REGISTER
042730  017737  140414  003442          MOV     @RHTDB,TDR              ;SAVE TESTER DATA REG.
042736  017737  140374  003440          MOV     @RHMR2,TC               ;SAVE MR2 TESTER REG.
042744  017737  140400  001162          MOV     @RHTDB,$REG0                    ;GET DATA
042752  032777  000200  140350          BIT     #RDY,@RHCS1             ;IS OR SET
042760  001003                        BNE     3$                      ;YES RDY IS SET
042762  104102                        ERROR   102                     ;READY DID NOT SET
042764  004737  007260                  JSR     R7,WHYFO                ;ARE ANY ERRORS SET
042770  023777  004100  140352  3$:     CMP     RBUF,@RHTDB             ;DID INFO GET WRITTEN OR READ
042776  001407                        BEQ     4$                      ;INFO GOT LOADED
043000  005777  140344                  TST     @RHTDB                  ;DOES @RHTDB = 0
043004  001403                        BEQ     5$                      ;YES INFO DID NOT LOAD
043006  104151                        ERROR   151                     ;ALL BITS DID NOT LOAD DURING
                                                                        ;AN WRITE4 OPERATION
```

```
                        JMP     4$                      ;EXIT TEST
                5$:     ERROR   152                     ;WRITE4 OPERATION DID NOT WORK
                                                        ;NO BITS WHERE LOADED TO @RHTDB
                4$:     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 73       RH OPERATIONAL WRITE TEST #4
                        ;*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

                ;;*******************************************************************
                TST73:  SCOPE
                        MOV     #7,@RHCS2               ;SETUP UNIT SEVEN
                        MOV     #0AB,EVENAD             ;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$:     MOV     #EVENAD,@RHBA           ;SETUP BA
                        MOV     #WRITE6,@RHCS1          ;TELL IT TO WRITETO
                        MOV     #DMD,@RHMR1             ;MANIPULATE CLOCK
                        CLR     BITCNT                  ;CLEAR LOOP COUNTER
                2$:     INC     BITCNT                  ;INCREMENT LOOP COUNTER
                        CMP     #15,BITCNT              ;IS IT THIRD LOOP FOR 5USEC WAIT
                        BNE     2$                      ;NO LOOP AGAIN
                        MOV     #DMD!MCLK,@RHMR1                ;START CHANGING CLOCK
                        MOV     #DMD,@RHMR1             ;CHANGE CLOCK AGAIN
                        MOV     #DMD!MCLK,@RHMR1                ;CHANGE CLOCK AGAIN
                        MOV     #DMD,@RHMR1             ;CHANGE CLOCK AGAIN
                        MOV     #ZERO,@RHMR1            ;GET OUT OF DIAG MODE
                        CLR     BITCNT                  ;CLEAR BIT COUNTER
                18$:    BIT     #RDY,@RHCS1             ;IS RDY SET
                        BNE     7$                      ;BIT IS SET
                        INC     BITCNT                  ;COUNT UP
                        BNE     18$                     ;NOT FINISHED COUNTING
                        CLR     BITCNT                  ;GET READY TO DO IT AGAIN
                19$:    BIT     #RDY,@RHCS1             ;IS IT SET YET?
                        BNE     7$                      ;YES
                        INC     BITCNT                  ;COUNT UP
                        BEQ     7$                      ;BIT IS NOT GOING TO SET
                        BR      19$
                7$:
                        MOV     @RHCS1,CS1              ;SAVE RHCS1
                        MOV     @RHWC,WC                ;SAVE WORD COUNT
                        MOV     @RHBA,BA                ;SAVE BUS ADDRESS
                        TST     R1                      ;IS IT AN RH11
                        BEQ     87$                     ;NO IT'S A 70
                        CLR     BAE                     ;CLEAR BAE
```

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6218  043310  005037  003424                  CLR     CS3                     ;CLEAR CS3
6219  043314  000137  043334                  JMP     86$                     ;CONTINUE
6220  043320  017737  140034  003416  87$:    MOV     @RHBAE,BAE              ;SAVE BUS ADDRESS EXTENSION
6221  043326  017737  140030  003424          MOV     @RHCS3,CS3              ;SAVE RHCS3
6222  043334  017737  140000  003422  86$:    MOV     @RHCS2,CS2              ;SAVE CS2
6223  043342  017737  137774  003432          MOV     @RHST,DS1               ;SAVE TESTER STATUS
6224  043350  017737  137770  003436          MOV     @RHER,ER1               ;SAVE ERROR REGISTER
6225  043356  017737  137766  003442          MOV     @RHTDB,TDR              ;SAVE TESTER DATA REG.
6226  043364  017737  137746  003440          MOV     @RHMR2,TC               ;SAVE MR2 TESTER REG.
6227  043372  017737  137752  001162          MOV     @RHTDB,$REG0                    ;GET DATA
6228  043400  032777  000200  137722          BIT     #RDY,@RHCS1             ;IS READY SET
6229  043406  001001                          BNE     8$                      ;YES,CONTINUE TEST
6230  043410  104102                          ERROR   102                     ;READY DID NOT SET
6231  043412  022777  177777  137712  8$:     CMP     #-1,@RHWC               ;DID WC INCREMENT
6232  043420  001001                          BNE     3$                      ;YES,CONT TEST
6233  043422  104140                          ERROR   140                     ;WRITETO OPERATION DID NOT INC WC
6234  043424  022777  003776  137702  3$:     CMP     #EVENAD-2,@RHBA         ;DID BA INCREMENT
6235  043432  001401                          BEQ     4$                      ;YES CONT TEST
6236  043434  104141                          ERROR   141                     ;BA DID NOT INCREMENT AFTER AN WRITETO OPERATION
6237  043436  023777  004000  137704  4$:     CMP     EVENAD,@RHTDB           ;DID INFO WRITETO TESTER
6238  043444  001401                          BEQ     5$                      ;YES,CONT
6239  043446  104142                          ERROR   142                     ;INFO DID NOT WRITETO TESTER
6240  043450  004737  007260          5$:     JSR     R7,WHYFO                ;ARE ANY ERROR BITS SET
6241  043454  105737  001103                  TSTB    $ERFLG                  ;WAS THER AN ERROR
6242  043460  001402                          BEQ     6$                      ;NO EXIT TEST
6243  043462  104146                          ERROR   146                     ;THESE ARE THE CONTENTS OF ALL RH70 REG.
6244  043464  104170                          ERROR   170                     ;THIS IS TO COMMPLETE ERROR PRINTOUT
6245  043466  004737  006626          6$:     JSR     R7,CLEER                ;CLEER ERRORS IF ANY
6246  043472  004737  050244                  JSR     R7,ERRTST
6247                                ;;**************************************************************************
6248                                ;*TEST 74        WRITE OPERATIONAL TEST (NORMAL) #4
6249                                ;*THESE TESTS VERIFY ALL READ ..  WRITE CODES
6250                                ;*WHETHER IT BE A READ REV. OR FWD OR A WRITE REV. OR FWD
6251                                ;*DURING THESE TESTS THE TESTER TIMING IS MARGINED AND
6252                                ;*NO ERRORS SHOULD OCCUR
6253
6254                                ;;**************************************************************************
6255  043476  000004          TST74:  SCOPE
6256  043500  012777  000007  137632          MOV     #7,@RHCS2               ;SETUP UNIT SEVEN
6257  043506  012777  177777  137616          MOV     #-1,@RHWC               ;FOR ONE WORD
6258  043514  012777  004100  137612          MOV     #RBUF,@RHBA             ;SRTUP BA
6259  043522  012737  125252  004100          MOV     #0AB,RBUF               ;SETUP DATA
6260  043530  012777  000000  137612          MOV     #ZERO,@RHTDB            ;SETUP TESTER DB
6261  043536  005701                          TST     R1                      ;IS IT AN 11 OR A 70
6262  043540  100403                          BMI     1$                      ;IT'S AN RH11
6263  043542  012777  000000  137610          MOV     #ZERO,@RHBAE            ;ZERO BAE
6264  043550  012777  000067  137552  1$:     MOV     #WRITE6,@RHCS1          ;TELL IT TO WRITE6
6265  043556  005037  003446                  CLR     BITCNT                  ;CLEAR BIT COUNTER
6266  043562  032777  000200  137540  18$:    BIT     #RDY,@RHCS1             ;IS RDY SET
6267  043570  001015                          BNE     2$                      ;BIT IS SET
6268  043572  005237  003446                  INC     BITCNT                  ;COUNT UP
6269  043576  001371                          BNE     18$                     ;NOT FINISHED COUNTING
6270  043600  005037  003446                  CLR     BITCNT                  ;GET READY TO DO IT AGAIN
6271  043604  032777  000200  137516  19$:    BIT     #RDY,@RHCS1             ;IS IT SET YET?
6272  043612  001004                          BNE     2$                      ;YES
6273  043614  005237  003446                  INC     BITCNT                  ;COUNT UP
```

```
6274  043620  001401                          BEQ     2$                      ;BIT IS NOT GOING TO SET
6275  043622  000770                          BR      19$
6276  043624                          2$:
6277  043624  017737  137500  003420          MOV     @RHCS1,CS1              ;SAVE RHCS1
6278  043632  017737  137474  003444          MOV     @RHWC,WC                ;SAVE WORD COUNT
6279  043640  017737  137470  003414          MOV     @RHBA,BA                ;SAVE BUS ADDRESS
6280  043646  005701                          TST     R1                      ;IS IT AN RH11
6281  043650  001406                          BEQ     87$                     ;NO IT'S A 70
6282  043652  005037  003416                  CLR     BAE                     ;CLEAR BAE
6283  043656  005037  003424                  CLR     CS3                     ;CLEAR CS3
6284  043662  000137  043702                  JMP     86$                     ;CONTINUE
6285  043666  017737  137466  003416  87$:    MOV     @RHBAE,BAE              ;SAVE BUS ADDRESS EXTENSION
6286  043674  017737  137462  003424          MOV     @RHCS3,CS3              ;SAVE RHCS3
6287  043702  017737  137432  003422  86$:    MOV     @RHCS2,CS2              ;SAVE CS2
6288  043710  017737  137426  003432          MOV     @RHST,DS1               ;SAVE TESTER STATUS
6289  043716  017737  137422  003436          MOV     @RHER,ER1               ;SAVE ERROR REGISTER
6290  043724  017737  137420  003442          MOV     @RHTDB,TDR              ;SAVE TESTER DATA REG.
6291  043732  017737  137400  003440          MOV     @RHMR2,TC               ;SAVE MR2 TESTER REG.
6292  043740  017737  137404  001162          MOV     @RHTDB,$REG0                    ;GET DATA
6293  043746  032777  000200  137354          BIT     #RDY,@RHCS1             ,IS OR SET
6294  043754  001003                          BNE     3$                      ;YES RDY IS SET
6295  043756  104102                          ERROR   102                     ;READY DID NOT SET
6296  043760  004737  007260                  JSR     R7,WHYFO                ;ARE ANY ERRORS SET
6297  043764  023777  004100  137356  3$:     CMP     RBUF,@RHTDB             ;DID INFO GET WRITTEN OR READ
6298  043772  001407                          BEQ     4$                      ;INFO GOT LOADED
6299  043774  005777  137350                  TST     @RHTDB                  ;DOES @RHTDB = 0
6300  044000  001403                          BEQ     5$                      ;YES INFO DID NOT LOAD
6301  044002  104117                          ERROR   117                     ;ALL BITS DID NOT LOAD DURING
6302                                                                          ;AN WRITE6 OPERATION
6303  044004  000137  044012                  JMP     4$                      ;EXIT TEST
6304  044010  104101                  5$:     ERROR   101                     ;WRITE6 OPERATION DID NOT WORK
6305                                                                          ;NO BITS WHERE LOADED TO @RHTDB
6306  044012  004737  007260          4$:     JSR     R7,WHYFO                ;ANY ERRORS SET
6307  044016  105737  001103                  TSTB    $ERFLG                  ;ANY ERRORS ?
6308  044022  001402                          BEQ     6$                      ;NO,EXIT TEST
6309  044024  104146                          ERROR   146                     ;PRINT REGISTERS
6310  044026  104170                          ERROR   170
6311  044030  004737  006626          6$:     JSR     R7,CLEER                ;CLEAR ERRORS
6312  044034  004737  050244                  JSR     R7,ERRTST
6313                                  ;;*****************************************************************
6314                                  ;*TEST 75        RH OPERATIONAL READ TEST #4
6315                                  ;*THESE TESTS VERIFY ALL READ AND WRITE CODES
6316                                  ;*WHETHER IT BE A READ REV. OR FWD OR A WRITE REV. OR FWD
6317                                  ;*DURING THESE TESTS THE TESTER TIMING IS MARGINED AND
6318                                  ;*NO ERRORS SHOULD OCCUR
6319
6320                                  ;;*****************************************************************
6321  044040  000004                  TST75:  SCOPE
6322  044042  012777  000007  137270          MOV     #7,@RHCS2               ;SETUP UNIT SEVEN
6323  044050  012777  052525  137272          MOV     #AB,@RHTDB              ;SETUP INFORMATION
6324  044056  012777  000003  137270          MOV     #DMD!MCLK,@RHMR1                ;SETUP DIAG. MODE
6325  044064  012777  177777  137240          MOV     #-1,@RHWC               ;FOR ONE WORD
6326  044072  005701                          TST     R1                      ;IS IT A 11 OR 70
6327  044074  100403                          BMI     1$                      ;IT'S AN 11
6328  044076  012777  000000  137254          MOV     #ZERO,@RHBAE            ;ZERO BAE
6329  044104  012777  004000  137222  1$:     MOV     #EVENAD,@RHBA           ;SETUP BA
```

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6330  044112  012777  000077  137210          MOV     #READ6,@RHCS1           ;TELL IT TO READFROM
6331  044120  012777  000001  137226          MOV     #DMD,@RHMR1             ;MANIPULATE CLOCK
6332  044126  005037  003446                  CLR     BITCNT                  ;CLEAR LOOP COUNTER
6333  044132  005237  003446          2$:     INC     BITCNT                  ;INCREMENT LOOP COUNTER
6334  044136  022737  000015  003446          CMP     #15,BITCNT              ;IS IT THIRD LOOP FOR 5USEC WAIT
6335  044144  001372                          BNE     2$                      ;NO LOOP AGAIN
6336  044146  012777  000003  137200          MOV     #DMD!MCLK,@RHMR1                ;START CHANGING CLOCK
6337  044154  012777  000001  137172          MOV     #DMD,@RHMR1             ;CHANGE CLOCK AGAIN
6338  044162  012777  000003  137164          MOV     #DMD!MCLK,@RHMR1                ;CHANGE CLOCK AGAIN
6339  044170  012777  000001  137156          MOV     #DMD,@RHMR1             ;CHANGE CLOCK AGAIN
6340  044176  012777  000000  137150          MOV     #ZERO,@RHMR1            ;GET OUT OF DIAG MODE
6341  044204  005037  003446                  CLR     BITCNT                  ;CLEAR BIT COUNTER
6342  044210  032777  000200  137112  18$:    BIT     #RDY,@RHCS1             ;IS RDY SET
6343  044216  001015                          BNE     7$                      ;BIT IS SET
6344  044220  005237  003446                  INC     BITCNT                  ;COUNT UP
6345  044224  001371                          BNE     18$                     ;NOT FINISHED COUNTING
6346  044226  005037  003446                  CLR     BITCNT                  ;GET READY TO DO IT AGAIN
6347  044232  032777  000200  137070  19$:    BIT     #RDY,@RHCS1             ;IS IT SET YET?
6348  044240  001004                          BNE     7$                      ;YES
6349  044242  005237  003446                  INC     BITCNT                  ;COUNT UP
6350  044246  001401                          BEQ     7$                      ;BIT IS NOT GOING TO SET
6351  044250  000770                          BR      19$
6352  044252                          7$:
6353  044252  017737  137052  003420          MOV     @RHCS1,CS1              ;SAVE RHCS1
6354  044260  017737  137046  003444          MOV     @RHWC,WC                ;SAVE WORD COUNT
6355  044266  017737  137042  003414          MOV     @RHBA,BA                ;SAVE BUS ADDRESS
6356  044274  005701                          TST     R1                      ;IS IT AN RH11
6357  044276  001406                          BEQ     87$                     ;NO IT'S A 70
6358  044300  005037  003416                  CLR     BAE                     ;CLEAR BAE
6359  044304  005037  003424                  CLR     CS3                     ;CLEAR CS3
6360  044310  000137  044330                  JMP     86$                     ;CONTINUE
6361  044314  017737  137040  003416  87$:    MOV     @RHBAE,BAE              ;SAVE BUS ADDRESS EXTENSION
6362  044322  017737  137034  003424          MOV     @RHCS3,CS3              ;SAVE RHCS3
6363  044330  017737  137004  003422  86$:    MOV     @RHCS2,CS2              ;SAVE CS2
6364  044336  017737  137000  003432          MOV     @RHST,DS1               ;SAVE TESTER STATUS
6365  044344  017737  136774  003436          MOV     @RHER,ER1               ;SAVE ERROR REGISTER
6366  044352  017737  136772  003442          MOV     @RHTDB,TDR              ;SAVE TESTER DATA REG.
6367  044360  017737  136752  003440          MOV     @RHMR2,TC               ;SAVE MR2 TESTER REG.
6368  044366  017737  136756  001162          MOV     @RHTDB,$REG0                    ;GET DATA
6369  044374  032777  000200  136726          BIT     #RDY,@RHCS1             ;IS READY SET
6370  044402  001001                          BNE     8$                      ;YES,CONTINUE TEST
6371  044404  104102                          ERROR   102                     ;READY DID NOT SET
6372  044406  022777  177777  136716  8$:     CMP     #-1,@RHWC               ;DID WC INCREMENT
6373  044414  001001                          BNE     3$                      ;YES,CONT TEST
6374  044416  104143                          ERROR   143                     ;READFROM OPERATION DID NOT INC WC
6375  044420  022777  003776  136706  3$:     CMP     #EVENAD-2,@RHBA         ;DID BA INCREMENT
6376  044426  001401                          BEQ     4$                      ;YES CONT TEST
6377  044430  104144                          ERROR   144                     ;BA DID NOT INCREMENT AFTER AN READFROM OPERATIO
6378  044432  023777  004000  136710  4$:     CMP     EVENAD,@RHTDB           ;DID INFO READFROM TESTER
6379  044440  001401                          BEQ     5$                      ;YES,CONT
6380  044442  104145                          ERROR   145                     ;INFO DID NOT READFROM TESTER
6381  044444  004737  007260          5$:     JSR     R7,WHYFO                ;ARE ANY ERROR BITS SET
6382  044450  105737  001103                  TSTB    $ERFLG                  ;WAS THER AN ERROR
6383  044454  001402                          BEQ     6$                      ;NO EXIT TEST
6384  044456  104146                          ERROR   146                     ;THESE ARE THE CONTENTS OF ALL RH70 REG.
6385  044460  104170                          ERROR   170                     ;THIS IS TO COMMPLETE ERROR PRINTOUT
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6386  044462  004737  006626          6$:     JSR     R7,CLEER                ;CLEER ERRORS IF ANY
6387  044466  004737  050244                  JSR     R7,ERRTST
6388                                  ;;*****************************************************************
6389                                  ;*TEST 76        LARGE TRANSFER TEST
6390                                          ;THIS TEST DOES A 4K (OCTAL) WORD TRANSFER
6391                                          ;THE SECOND TIME THROUGH THE TEST SYNC CLOCK
6392                                          ;IS MARGINED TO MAKE SURE NO ERRORS OCCUR
6393                                  ;;*****************************************************************
6394  044472  000004                  TST76:  SCOPE
6395
6396
6397  044474  012777  000007  136636          MOV     #7,@RHCS2
6398  044502  005037  177776                  CLR     @#PSW
6399  044506  005037  003452                  CLR     PASS
6400  044512  005037  003450          BLITZ:  CLR     LOOCNT                  ;CLEAR THE LOOP COUNTER
6401  044516  005701                  IN:     TST     R1                      ;IS IT AN 11 OR 70
6402  044520  100403                          BMI     1$                      ;IT IS AN 11
6403  044522  012777  000000  136630          MOV     #ZERO,@RHBAE            ;IT'S A 70 ZERO THE BAE
6404  044530  012777  005000  136576  1$:     MOV     #5000,@RHBA             ;SET THE BUS ADDRESS
6405  044536  012777  174000  136566          MOV     #-4000,@RHWC
6406  044544  012777  050370  136634          MOV     #BLKTST,@VECADD         ;USE IT IN INTERUPT MODE
6407
6408  044552  005701                          TST     R1
6409  044554  001412                          BEQ     BLIP
6410  044556  005737  003452                  TST     PASS
6411  044562  001407                          BEQ     BLIP
6412  044564  032737  000002  177570          BIT     #BIT1,@#177570
6413  044572  001571                          BEQ     BOTTOM
6414  044574  004737  047660                  JSR     R7,DUPORT
6415  044600  000434                          BR      RHNINT
6416  044602  012777  000161  136520  BLIP:   MOV     #WRITE0!IE,@RHCS1       ;SET INTERUPT AND TELL IT TO WRITE
6417
6418  044610  005037  003446                  CLR     BITCNT                  ;CLEAR BIT COUNTER
6419  044614  032777  000200  136506  18$:    BIT     #RDY,@RHCS1             ;IS RDY SET
6420  044622  001015                          BNE     2$                      ;BIT IS SET
6421  044624  005237  003446                  INC     BITCNT                  ;COUNT UP
6422  044630  001371                          BNE     18$                     ;NOT FINISHED COUNTING
6423  044632  005037  003446                  CLR     BITCNT                  ;GET READY TO DO IT AGAIN
6424  044636  032777  000200  136464  19$:    BIT     #RDY,@RHCS1             ;IS IT SET YET?
6425  044644  001004                          BNE     2$                      ;YES
6426  044646  005237  003446                  INC     BITCNT                  ;COUNT UP
6427  044652  001401                          BEQ     2$                      ;BIT IS NOT GOING TO SET
6428  044654  000770                          BR      19$
6429  044656                          2$:
6430  044656  032777  000200  136444          BIT     #RDY,@RHCS1             ;DID READY SET
6431  044664  001001                          BNE     25$                     ;YES READY SET
6432  044666  104102                          ERROR   102                     ;READY DID NOT SET
6433  044670  104205                  25$:    ERROR   205                     ;IT DID NOT INTERUPT
6434  044672                          RHNINT:
6435  044672  017737  136432  003420          MOV     @RHCS1,CS1              ;SAVE RHCS1
6436  044700  017737  136426  003444          MOV     @RHWC,WC                ;SAVE WORD COUNT
6437  044706  017737  136422  003414          MOV     @RHBA,BA                ;SAVE BUS ADDRESS
6438  044714  005701                          TST     R1                      ;IS IT AN RH11
6439  044716  001406                          BEQ     87$                     ;NO IT'S A 70
6440  044720  005037  003416                  CLR     BAE                     ;CLEAR BAE
6441  044724  005037  003424                  CLR     CS3                     ;CLEAR CS3
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6442  044730  000137  044750                    JMP     86$                     ;CONTINUE
6443  044734  017737  136420  003416  87$:      MOV     @RHBAE,BAE              ;SAVE BUS ADDRESS EXTENSION
6444  044742  017737  136414  003424            MOV     @RHCS3,CS3              ;SAVE RHCS3
6445  044750  017737  136364  003422  86$:      MOV     @RHCS2,CS2              ;SAVE CS2
6446  044756  017737  136360  003432            MOV     @RHST,DS1               ;SAVE TESTER STATUS
6447  044764  017737  136354  003436            MOV     @RHER,ER1               ;SAVE ERROR REGISTER
6448  044772  017737  136352  003442            MOV     @RHTDB,TDR              ;SAVE TESTER DATA REG.
6449  045000  017737  136332  003440            MOV     @RHMR2,TC               ;SAVE MR2 TESTER REG.
6450  045006  032777  140000  136326  9$:       BIT     #ATA!ERR,@RHST          ;IS ATTEN OR ERROR SET
6451  045014  001033                            BNE     3$                      ;YES THERE WAS A PROBLEM
6452  045016  032777  000200  136304            BIT     #RDY,@RHCS1             ;DID RDY SET
6453  045024  001001                            BNE     4$                      ;YES IT SET
6454  045026  104102                            ERROR   102                     ;RDY DID NOT SET
6455  045030  022777  015000  136276  4$:       CMP     #5000+<4000*2>,@RHBA    ;DID BA INC PROPERLY
6456  045036  001401                            BEQ     5$                      ;YES
6457  045040  104203                            ERROR   203                     ;BA DID NOT INC PROPERLY
6458  045042  023777  014776  136300  5$:       CMP     @#14776,@RHTDB  ;WAS CORRECT INFO WRITTEN
6459  045050  001401                            BEQ     6$                      ;YES
6460  045052  104204                            ERROR   204                     ;CORRECT INFO NOT IN RHTDB
6461  045054  005777  136252          6$:       TST     @RHWC                   ;IS WC 0
6462  045060  001401                            BEQ     7$                      ;YES
6463  045062  104206                            ERROR   206                     ;RHWC IS NOT ZERO
6464  045064  105737  001103          7$:       TSTB    $ERFLG                  ;WAS THERE ANY ERRORS
6465  045070  001407                            BEQ     8$                      ;NO
6466  045072  032777  002000  136230            BIT     #PSEL,@RHCS1
6467  045100  001401                            BEQ     3$
6468  045102  104207                            ERROR   207
6469  045104  104146          3$:               ERROR   146                     ;OUTPUT THE REGISTERS
6470  045106  104170                            ERROR   170
6471  045110  005737  003450          8$:       TST     LOOCNT                  ;IS IT FIRST PASS IN TEST
6472  045114  001007                            BNE     11$                     ;NO
6473  045116  005237  003450                    INC     LOOCNT                  ;MAKE IT SECOND PASS
6474  045122  012777  000017  136206            MOV     #SCLK!7,@RHMR2
6475                                                                            ;SET THE SYNC CLOCK BIT AND 441 BLK SIZE
6476  045130  000137  044516                    JMP     IN                      ;DO THE TEST AGAIN
6477  045134  005037  003450          11$:      CLR     LOOCNT                  ;CLEAR THE COUNTER
6478  045140  005737  003452                    TST     PASS
6479  045144  001004                            BNE     BOTTOM
6480  045146  005237  003452                    INC     PASS
6481  045152  000137  044512                    JMP     BLITZ
6482  045156  004737  007260          BOTTOM:   JSR     R7,WHYFO                ;TO SEE WHY IT DIED
6483  045162  004737  006626                    JSR     R7,CLEER                ;CLEAR THE REGISTERS
6484  045166  004737  050244                    JSR     R7,ERRTST               ;UNDERLINE ERROR MESGES
6485                                                                            ;IF NEEDED
6486                                  ;;*********************************************************************
6487                                  ;*TEST 77        HERE IS WHERE I HANDLE 4 RH'S
6488                                          ;*THIS IS THE ROUTINE THAT ALLOWS THE
6489                                          ;*THE DIAGNOSTIC TO TEST FOUR RH'S
6490                                  ;;*********************************************************************
6491  045172  000004                 TST77:   SCOPE
6492
6493  045174  005237  003376          ENDPAS:  INC     DEVCNT                  ;INCREMENT THE DEVICE COUNT
6494  045200  022737  000001  003376            CMP     #1,DEVCNT               ;IS IT DEVICE 2
6495  045206  001552                            BEQ     CLEVER                  ;YES
6496  045210  022737  000002  003376            CMP     #2,DEVCNT               ;IS IT DEVICE 3
6497  045216  001002                            BNE     1$
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6498  045220  000137  045640                  JMP     ROTEEN                  ;YES
6499  045224  022737  000003  003376  1$:     CMP     #3,DEVCNT               ;IS IT DEVICE 4
6500  045232  001002                          BNE     2$                      ;NO,CONTINUE SEARCH
6501  045234  000137  045744                  JMP     IS                      ;YES
6502  045240  022737  000004  003376  2$:     CMP     #4,DEVCNT               ;HAVE WE TESTED ALL 4 RH'S
6503  045246  001470                          BEQ     RESTAT                  ;YES
6504  045250  104401  045256                  TYPE    ,65$            ;;TYPE ASCIZ STRING
6505  045254  000421                          BR      64$             ;;GET OVER THE ASCIZ
6506                                  ;;65$:  .ASCIZ  <15><12>/PROGRAM ERROR ON TESTING 4 RH'S/
6507  045320                          64$:
6508  045320  104401  045326                  TYPE    ,67$            ;;TYPE ASCIZ STRING
6509  045324  000426                          BR      66$             ;;GET OVER THE ASCIZ
6510                                  ;;67$:  .ASCIZ  <15><12>/RESTARTING TO TEST RH #1 AT BASE ADDRESS /
6511  045402                          66$:
6512  045402  013746  003366                  MOV     DEVIC1,-(SP)    ;;SAVE DEVIC1 FOR TYPEOUT
6513  045406  104402                          TYPOC                   ;;GO TYPE--OCTAL ASCII(ALL DIGITS)
6514  045410  013737  003366  003400          MOV     DEVIC1,DEVIC5           ;FOR REG. ADDRESS CREATION
6515  045416  012737  005302  003410          MOV     #GIGO,RETAIN            ;GET ADDRESS ERROR RETURN
6516  045424  000137  046050                  JMP     CORREG                  ;CORRECT REG. ADDRESSES
6517  045430  005037  003376          RESTAT: CLR     DEVCNT                  ;CLEAR DEVICE COUNTER
6518  045434  005726                          TST     (SP)+                   ;CORRECT STACK
6519  045436  013737  003366  003400          MOV     DEVIC1,DEVIC5           ;SET UP TO CREATE ADDRESSES
6520  045444  104401  045452                  TYPE    ,65$            ;;TYPE ASCIZ STRING
6521  045450  000421                          BR      64$             ;;GET OVER THE ASCIZ
6522                                  ;;65$:  .ASCIZ  <15><12>/TESTING RH #1 AT BASE ADDRESS /
6523  045514                          64$:
6524  045514  013746  003366                  MOV     DEVIC1,-(SP)    ;;SAVE DEVIC1 FOR TYPEOUT
6525  045520  104402                          TYPOC                   ;;GO TYPE--OCTAL ASCII(ALL DIGITS)
6526  045522  012737  005302  003410          MOV     #GIGO,RETAIN            ;SAVE RETURN ADDRESS
6527  045530  000137  046050                  JMP     CORREG                  ;GO CREATE ADDRESSES
6528  045534  005737  003370          CLEVER: TST     DEVIC2                  ;IS IT 0
6529  045540  001733                          BEQ     RESTAT                  ;YES,END PASS
6530  045542  013737  003370  003400          MOV     DEVIC2,DEVIC5           ;GET READY TO CONSTRUCT
6531  045550  012737  005456  003410          MOV     #GIGO1,RETAIN           ;SAVE RETURN ERROR ADDRESS
6532  045556  104401  045564                  TYPE    ,65$            ;;TYPE ASCIZ STRING
6533  045562  000421                          BR      64$             ;;GET OVER THE ASCIZ
6534                                  ;;65$:  .ASCIZ  <15><12>/TESTING RH #2 AT BASE ADDRESS /
6535  045626                          64$:
6536  045626  013746  003370                  MOV     DEVIC2,-(SP)    ;;SAVE DEVIC2 FOR TYPEOUT
6537  045632  104402                          TYPOC                   ;;GO TYPE--OCTAL ASCII(ALL DIGITS)
6538  045634  000137  046050                  JMP     CORREG                  ;CREATE REG. ADDRESSES
6539  045640  005737  003372          ROTEEN: TST     DEVIC3                  ;IS IT 0
6540  045644  001671                          BEQ     RESTAT          ;YES ,END PASS
6541  045646  013737  003372  003400          MOV     DEVIC3,DEVIC5           ;GET BASE ADDRESS
6542  045654  012737  005616  003410          MOV     #GIGO2,RETAIN           ;SAVE RETURN ADDRESS
6543  045662  104401  045670                  TYPE    ,65$            ;;TYPE ASCIZ STRING
6544  045666  000421                          BR      64$             ;;GET OVER THE ASCIZ
6545                                  ;;65$:  .ASCIZ  <15><12>/TESTING RH #3 AT BASE ADDRESS /
6546  045732                          64$:
6547  045732  013746  003372                  MOV     DEVIC3,-(SP)    ;;SAVE DEVIC3 FOR TYPEOUT
6548  045736  104402                          TYPOC                   ;;GO TYPE--OCTAL ASCII(ALL DIGITS)
6549  045740  000137  046050                  JMP     CORREG                  ;CORRECT REG. ADDRESSES
6550  045744  005737  003374          IS:     TST     DEVIC4                  ;IS IT 0
6551  045750  001627                          BEQ     RESTAT                  ;YES ,END PASS
6552  045752  013737  003374  003400          MOV     DEVIC4,DEVIC5           ;GET BASE ADDRESS
6553  045760  012737  005756  003410          MOV     #GIGO3,RETAIN           ;SAVE RETURN ADDRESS
```

```
                                        TYPE    ,65$            ;;TYPE ASCIZ STRING
                                        BR      64$             ;;GET OVER THE ASCIZ
                                ;;65$:  .ASCIZ  <15><12>/TESTING RH #4 AT BASE ADDRESS /
                                64$:
                                        MOV     DEVIC4,-(SP)    ;;SAVE DEVIC4 FOR TYPEOUT
                                        TYPOC                   ;;GO TYPE--OCTAL ASCII(ALL DIGITS)
                                        JMP     CORREG          ;CORRECT REG. ADDRESSES
                                CORREG: MOV     DEVIC5,OFF11            ;GET BASE ADDRESS
                                        MOV     #RHCS1,R2               ;GET ADDRESS TO START STORING
                                BEHIND: MOV     OFF11,(R2)+             ;STORE ADDRESS
                                        CMP     #RHBAE,R2               ;WAS IT LAST ADDRESS
                                        BEQ     AHEAD                   ;YES
                                        ADD     #TWO,OFF11              ;CREATE NEXT ADDRESS
                                        JMP     BEHIND                  ;GO STORE IT
                                AHEAD:  MOV     DEVIC5,@#OFF11
                                        ADD     REGEND,OFF11            ;SETUP BAE ADDRWESS
                                        MOV     OFF11,RHBAE             ;STORE ADDRESS
                                        ADD     #2,OFF11                ;SETUP CS3 ADDRESS
                                        MOV     OFF11,RHCS3             ;SAVE THE ADDRESS
                                        MOV     RHCS1,RHCS1B            ;SETUP HIGH BYTE
                                        INC     RHCS1B                  ;FOR RHCS1
                                        CLR     $TSTNM                  ;CLEAR TEST NUMBER
                                        INC     $TSTNM                  ;SET TO TEST 1
                                        MOV     #1,$TIMES               ;FOR ONE ITERATION
                                        TST     DEVCNT                  ;ARE WE AT END OF PASS
                                        BEQ     $EOP                    ;YES DO END OF PASS
                                        JMP     TSTADD                  ;NO,SEE IF RH IS PRESENT
                                .SBTTL  END OF PASS ROUTINE

                                ;;**************************************************************************
                                ;*INCREMENT THE PASS NUMBER ($PASS)
                                ;*TYPE 'END PASS #XXXXX TOTAL NUMBER OF ERRORS SINCE LAST REPORT YYYYY''
                                ;*WHERE XXXXX AND YYYYY ARE DECIMAL NUMBERS
                                ;*IF THERES A MONITOR GO TO IT
                                ;*IF THERE ISN'T JUMP TO BEGIN2

                                $EOP:
                                        SCOPE
                                        CLR     $TSTNM          ;;ZERO THE TEST NUMBER
                                        CLR     $TIMES          ;;ZERO THE NUMBER OF ITERATIONS
                                        INC     $PASS           ;;INCREMENT THE PASS NUMBER
                                        BIC     #100000,$PASS   ;;DON'T ALLOW A NEG. NUMBER
                                        DEC     (PC)+           ;;LOOP?
                                $EOPCT: .WORD   1
                                        BGT     $DOAGN          ;;YES
                                        MOV     (PC)+,@(PC)+    ;;RESTORE COUNTER
                                $ENDCT: .WORD   1
                                        $EOPCT
                                        TYPE    ,65$            ;;TYPE ASCIZ STRING
                                        BR      64$             ;;GET OVER THE ASCIZ
                                ;;65$:  .ASCIZ  <12><15>/END PASS #/
                                64$:
                                        MOV     $PASS,-(SP)     ;;SAVE $PASS FOR TYPEOUT
                                                                ;;TYPE PASS NUMBER
                                        TYPDS                   ;;GO TYPE--DECIMAL ASCII WITH SIGN
                                        TYPE    ,67$            ;;TYPE ASCIZ STRING
```

```
6610  046304  000421                          BR      66$             ;;GET OVER THE ASCIZ
6611                                  ;;67$:    .ASCIZ  /  TOTAL ERRORS SINCE LAST REPORT /
6612  046350                          66$:
6613  046350  013746  001112                  MOV     $ERTTL,-(SP)    ;;SAVE $ERTTL FOR TYPEOUT
6614                                                                  ;;TOTAL NUMBER OF ERRORS
6615  046354  104405                          TYPDS                   ;;GO TYPE--DECIMAL ASCII WITH SIGN
6616  046356  104401  001223                  TYPE    ,$CRLF          ;;TYPE CARRIAGE RETURN, LINE FEED
6617  046362  005037  001112                  CLR     $ERTTL          ;;CLEAR ERROR TOTAL
6618  046366  013700  000042          $GET42: MOV     @#42,R0         ;;GET MONITOR ADDRESS
6619  046372  001405                          BEQ     $DOAGN          ;;BRANCH IF NO MONITOR
6620  046374  000005                          RESET                   ;;CLEAR THE WORLD
6621  046376  004710          $ENDAD: JSR     PC,(R0)                 ;;GO TO MONITOR
6622  046400  000240                          NOP                     ;;SAVE ROOM
6623  046402  000240                          NOP                     ;;FOR
6624  046404  000240                          NOP                     ;;ACT11
6625  046406                  $DOAGN:
6626  046406  000137                          JMP     @(PC)+          ;;RETURN
6627  046410  004166          $RTNAD: .WORD   BEGIN2
6628  046412     377     377     000  $ENULL: .BYTE   -1,-1,0         ;;NULL CHARACTER STRING
6629          046416                          .EVEN
6630
6631                                  ;;*****************************************************************
6632                                          ;THIS IS THE WATBIT PROGRAM
6633                                  ;;*****************************************************************
6634
6635  046416  032737  020000  177570  WATBIT: BIT     #SW13,@#177570          ;SKIP ERROR PRINTOUT ?
6636  046424  001155                          BNE     RITURN                  ;YES
6637                                  ;;*****************************************************************
6638  046426  032737  000400  177570  CHGE2:  BIT     #BIT8,@#177570
6639                                  ;;*****************************************************************
6640  046434  001151                          BNE     RITURN
6641                                  ;;*****************************************************************
6642  046436  032737  000001  177570  CHGE3:  BIT     #BIT0,@#177570
6643                                  ;;*****************************************************************
6644  046444  001145                          BNE     RITURN
6645  046446  005037  003446                  CLR     BITCNT                  ;CLEAR BIT COUNTER
6646  046452  013737  001162  001202          MOV     $REG0,$TMP2             ;SAVE GOOD DATA IN $REG0
6647  046460  013737  001200  001204          MOV     $TMP1,$TMP3             ;SAVE CONTENTS OF BAD DATA
6648  046466  043737  001162  001204          BIC     $REG0,$TMP3             ;WHERE EXTRA BITS SET ?
6649  046474  005737  001204                  TST     $TMP3                   ;FIND OUT
6650  046500  001447                          BEQ     NEXTST                  ;NO,FIND OUT WHAT BITS WHERE NOT SET
6651  046502  104401  046510                  TYPE    ,65$            ;;TYPE ASCIZ STRING
6652  046506  000427                          BR      64$             ;;GET OVER THE ASCIZ
6653                                  ;;65$:    .ASCIZ  <15><12>/THESE ARE THE BIT NO. OF THE EXTRA BITS./<15><12>
6654  046566                          64$:
6655  046566  032737  000001  001204  MOAR:   BIT     #ONE,$TMP3              ;FIND THE EXTRA
6656  046574  001076                          BNE     PRIBIT                  ;GO TO PRINT BIT NO.
6657  046576  006037  001204          MOOR:   ROR     $TMP3                   ;SETUP FOR NEXT BIT
6658  046602  022737  000017  003446          CMP     #17,BITCNT              ;IS IT BIT 15 LAST TESTED
6659  046610  001403                          BEQ     NEXTST                  ;YES,SEE IF ANY BITS WHER NOT SET
6660  046612  005237  003446                  INC     BITCNT                  ;NO NOT LAST BIT YET
6661  046616  000763                          BR      MOAR                    ;GO TO TEST NEXT BIT
6662  046620  005037  003446          NEXTST: CLR     BITCNT                  ;ZERO BIT COUNTER
6663  046624  043737  001200  001202          BIC     $TMP1,$TMP2             ;FIND WHAT BITS WHER NOT SET
6664  046632  005737  001202                  TST     $TMP2                   ;WAS ALL BITS SET THAT SHOULD HAVE BEEN
6665  046636  001446                          BEQ     RETURN                  ;YES,AND TEST FINISHED
```

```
6666  046640  104401  046646                TYPE    ,65$            ;;TYPE ASCIZ STRING
6667  046644  000426                        BR      64$             ;;GET OVER THE ASCIZ
6668                                  ;;65$:  .ASCIZ  <15><12>/BIT NO. OF THE BITS THAT WHERE NOT SET/<15><12>
6669  046722                          64$:
6670  046722  032737  000001  001202  MORE2:  BIT     #ONE,$TMP2              ;FIND BIT NOT SET
6671  046730  001014                        BNE     PRTBIT                  ;ERROR BIT FOUND
6672  046732  006037  001202          MORE:   ROR     $TMP2                   ;SETUP TO FIND MORE
6673  046736  022737  000017  003446        CMP     #17,BITCNT              ;WAS LAST BIT BIT 15
6674  046744  001403                        BEQ     RETURN                  ;YES AND TEST FINISHED
6675  046746  005237  003446                INC     BITCNT                  ;NO SETUP FOR NEXT BIT
6676  046752  000763                        BR      MORE2                   ;CONTINUE TEST
6677  046754  104401  001223          RETURN: TYPE    ,$CRLF
6678  046760  000207                  RITURN: RTS     R7                      ;RETURN TO MAIN PROG.
6679  046762                          PRTBIT:
6680  046762  013746  003446                MOV     BITCNT,-(SP)    ;;SAVE BITCNT FOR TYPEOUT
6681  046766  104405                        TYPDS                   ;;GO TYPE--DECIMAL ASCII WITH SIGN
6682  046770  000760                        BR      MORE                    ;LOOK FOR MORE
6683  046772                          PRIBIT:
6684  046772  013746  003446                MOV     BITCNT,-(SP)    ;;SAVE BITCNT FOR TYPEOUT
6685  046776  104405                        TYPDS                   ;;GO TYPE--DECIMAL ASCII WITH SIGN
6686  047000  000676                        BR      MOOR                    ;LOOK FOR MORE
6687                                  ;;**************************************************************
6688                                          ;THIS ROUTINE HANDLES TIMEOUT ERRORS
6689                                  ;;**************************************************************
6690
6691  047002                          TIEOUT:
6692  047002  104401  047010                TYPE    ,65$            ;;TYPE ASCIZ STRING
6693  047006  000434                        BR      64$             ;;GET OVER THE ASCIZ
6694                                  ;;65$:  .ASCIZ  <15><12><12>/PROGRAM INSTRUCTION OR ADDRESS HAS CREATED A TIMEOUT/
6695  047100                          64$:
6696  047100  104401  047106                TYPE    ,67$            ;;TYPE ASCIZ STRING
6697  047104  000422                        BR      66$             ;;GET OVER THE ASCIZ
6698                                  ;;67$:  .ASCIZ  <15><12>/ADDRESS WHICH CAUSED TIMEOUT WAS /
6699  047152                          66$:
6700  047152  012637  001206                MOV     (SP)+,$TMP4             ;MOVE ADDRESS TO STORAGE
6701  047156  162737  000002  001206        SUB     #TWO,$TMP4              ;CORRECT ADDRESS
6702  047164  013746  001206                MOV     $TMP4,-(SP)     ;;SAVE $TMP4 FOR TYPEOUT
6703  047170  104402                        TYPOC                   ;;GO TYPE--OCTAL ASCII(ALL DIGITS)
6704  047172  104401  047200                TYPE    ,69$            ;;TYPE ASCIZ STRING
6705  047176  000406                        BR      68$             ;;GET OVER THE ASCIZ
6706                                  ;;69$:  .ASCIZ  <15><12>/PSW WAS  /
6707  047214                          68$:
6708  047214  012637  001206                MOV     (SP)+,$TMP4             ;GET OLD PSW
6709  047220  013746  001206                MOV     $TMP4,-(SP)     ;;SAVE $TMP4 FOR TYPEOUT
6710  047224  104402                        TYPOC                   ;;GO TYPE--OCTAL ASCII(ALL DIGITS)
6711  047226  013716  001106                MOV     $LPADR,(SP)             ;FAKE RETURN
6712  047232  000002                        RTI
6713
6714                                  ;;**************************************************************
6715                                          ;THIS ROUTINE HANDLES PARITY ERRORS
6716                                  ;;**************************************************************
6717
6718  047234                          PARITY:
6719  047234  104401  047242                TYPE    ,65$            ;;TYPE ASCIZ STRING
6720  047240  000422                        BR      64$             ;;GET OVER THE ASCIZ
6721                                  ;;65$:  .ASCIZ  <15><12>/PARITY TRAP TO VECTOR ADDRESS 114/
```

```
6722  047306
6723  047306  104401  047314          64$:    TYPE    ,67$            ;;TYPE ASCIZ STRING
6724  047312  000420                          BR      66$             ;;GET OVER THE ASCIZ
6725                                  ;;67$:  .ASCIZ  <15><12>/ADDRESS THAT CAUSED TRAP WAS /
6726  047354                          66$:
6727  047354  012637  004100                  MOV     (SP)+,RBUF              ;GET PC+2
6728  047360  162737  000002  004100          SUB     #TWO,RBUF               ;CORECT PC
6729  047366  013746  004100                  MOV     RBUF,-(SP)      ;;SAVE RBUF FOR TYPEOUT
6730  047372  104402                          TYPOC                   ;;GO TYPE--OCTAL ASCII(ALL DIGITS)
6731  047374  104401  047402                  TYPE    ,69$            ;;TYPE ASCIZ STRING
6732  047400  000406                          BR      68$             ;;GET OVER THE ASCIZ
6733                                  ;;69$:  .ASCIZ  <15><12>/PSW WAS  /
6734  047416                          68$:
6735  047416  012637  004100                  MOV     (SP)+,RBUF              ;GET OLD PSW
6736  047422  013746  004100                  MOV     RBUF,-(SP)      ;;SAVE RBUF FOR TYPEOUT
6737  047426  104402                          TYPOC                   ;;GO TYPE--OCTAL ASCII(ALL DIGITS)
6738  047430  005701                          TST     R1                      ;ARE WE ON AN 11/70
6739  047432  100507                          BMI     TRAPED                  ;NO,ITS A 11/05-11/45
6740  047434  104401  047442                  TYPE    ,71$            ;;TYPE ASCIZ STRING
6741  047440  000417                          BR      70$             ;;GET OVER THE ASCIZ
6742                                  ;;71$:  .ASCIZ  <15><12>/HIGH ERROR ADDRESS REG. = /
6743  047500                          70$:
6744  047500  013737  177742  004100          MOV     HERADD,RBUF
6745  047506  013746  004100                  MOV     RBUF,-(SP)      ;;SAVE RBUF FOR TYPEOUT
6746  047512  104402                          TYPOC                   ;;GO TYPE--OCTAL ASCII(ALL DIGITS)
6747  047514  104401  047522                  TYPE    ,73$            ;;TYPE ASCIZ STRING
6748  047520  000416                          BR      72$             ;;GET OVER THE ASCIZ
6749                                  ;;73$:  .ASCIZ  <15><12>/LOW ERROR ADDRESS REG. = /
6750  047556                          72$:
6751  047556  013737  177740  004100          MOV     LERADD,RBUF
6752  047564  013746  004100                  MOV     RBUF,-(SP)      ;;SAVE RBUF FOR TYPEOUT
6753  047570  104402                          TYPOC                   ;;GO TYPE--OCTAL ASCII(ALL DIGITS)
6754  047572  104401  047600                  TYPE    ,75$            ;;TYPE ASCIZ STRING
6755  047576  000417                          BR      74$             ;;GET OVER THE ASCIZ
6756                                  ;;75$:  .ASCIZ  <15><12>/MEMORY SYSTEM ERROR REG. = /
6757  047636                          74$:
6758  047636  013737  177744  004100          MOV     MEMERR,RBUF
6759  047644  013746  004100                  MOV     RBUF,-(SP)      ;;SAVE RBUF FOR TYPEOUT
6760  047650  104402                          TYPOC                   ;;GO TYPE--OCTAL ASCII(ALL DIGITS)
6761  047652  013716  001106          TRAPED: MOV     $LPADR,(SP)             ;FAKE RETURN
6762  047656  000002                          RTI                             ;RETURN WHERE LEFT OFF
6763
6764                                  ;;**************************************************************
6765                                  ;THIS IS THE DUAL PORT ROUTINE
6766                                  ;;**************************************************************
6767  047660  012777  002161  133442  DUPORT: MOV     #WRITE0!PSEL!IE,@RHCS1
6768  047666  005037  003446                  CLR     BITCNT                  ;CLEAR BIT COUNTER
6769  047672  032777  000200  133430  18$:    BIT     #RDY,@RHCS1             ;IS RDY SET
6770  047700  001015                          BNE     BULL                    ;BIT IS SET
6771  047702  005237  003446                  INC     BITCNT                  ;COUNT UP
6772  047706  001371                          BNE     18$                     ;NOT FINISHED COUNTING
6773  047710  005037  003446                  CLR     BITCNT                  ;GET READY TO DO IT AGAIN
6774  047714  032777  000200  133406  19$:    BIT     #RDY,@RHCS1             ;IS IT SET YET?
6775  047722  001004                          BNE     BULL                    ;YES
6776  047724  005237  003446                  INC     BITCNT                  ;COUNT UP
6777  047730  001401                          BEQ     BULL                    ;BIT IS NOT GOING TO SET
```

```
 6778  047732  000770                          BR      19$
 6779  047734                          BULL:
 6780  047734  032777  000200  133366          BIT     #RDY,@RHCS1
 6781  047742  001001                          BNE     CUTE
 6782  047744  104102                          ERROR   102
 6783  047746  000207                  CUTE:   RTS     PC
 6784                                  ;;*****************************************************************
 6785                                          ;THESE ARE THE CLEARS ROUTINES
 6786                                  ;;*****************************************************************
 6787
 6788  047750  012737  000000  001162  FINDIT: MOV     #0,$REG0                ;GET READY TO FIND ERROR
 6789  047756  017737  133346  001200          MOV     @RHCS1,$TMP1                    ;GET COMPARE READY
 6790  047764  042737  007777  001200          BIC     #READ6!GO!IE!RDY!A16!A17!PSEL!DVA,$TMP1
 6791                                                                  ;CLEAR BITS NOT NEEDED
 6792  047772  000207                          RTS     R7              ;RETURN TO PROGRAM
 6793  047774  012737  000000  001162  LOOKFO: MOV     #0,$REG0                ;GET READY TO FIND ERROR
 6794  050002  017737  133332  001200          MOV     @RHCS2,$TMP1                    ;GET COMPARE READY
 6795  050010  042737  000377  001200          BIC     #US1!US2!US4!BAI!PAT!CLR!IR!OR,$TMP1
 6796                                                                  ;CLEAR BITS NOT NEEDED
 6797  050016  000207                          RTS     R7              ;RETURN TO PROGRAM
 6798  050020  012737  000000  001162  LOOKED: MOV     #0,$REG0                ;GET READY TO FIND ERROR
 6799  050026  017737  133312  001200          MOV     @RHER,$TMP1                     ;GET COMPARE READY
 6800  050034  042737  000000  001200          BIC     #ZERO,$TMP1
 6801                                                                  ;CLEAR BITS NOT NEEDED
 6802  050042  000207                          RTS     R7              ;RETURN TO PROGRAM
 6803  050044  012737  000000  001162  FIND:   MOV     #0,$REG0                ;GET READY TO FIND ERROR
 6804  050052  017737  133264  001200          MOV     @RHST,$TMP1                     ;GET COMPARE READY
 6805  050060  042737  030600  001200          BIC     #DRY!DPR!MOL!PIP,$TMP1
 6806                                                                  ;CLEAR BITS NOT NEEDED
 6807  050066  000207                          RTS     R7              ;RETURN TO PROGRAM
 6808  050070  012737  000007  001162  FOUND:  MOV     #7,$REG0                ;GET READY TO FIND ERROR
 6809  050076  017737  133236  001200          MOV     @RHCS2,$TMP1                    ;GET COMPARE READY
 6810  050104  042737  177770  001200          BIC     #BAI!PAT!CLR!IR!OR!MPE!MXF!PGE!NEM!NED!UPE!WCE!DLT,$TMP1
 6811                                                                  ;CLEAR BITS NOT NEEDED
 6812  050112  000207                          RTS     R7              ;RETURN TO PROGRAM
 6813  050114  012737  000000  001162  CS3ERR: MOV     #0,$REG0                ;GET READY TO FIND ERROR
 6814  050122  017737  133234  001200          MOV     @RHCS3,$TMP1                    ;GET COMPARE READY
 6815  050130  042737  000117  001200          BIC     #IE3!IPCK0!IPCK1!IPCK2!IPCK3,$TMP1
 6816                                                                  ;CLEAR BITS NOT NEEDED
 6817  050136  000207                          RTS     R7              ;RETURN TO PROGRAM
 6818
 6819                                  ;;*****************************************************************
 6820                                          ;* THIS ROUTINE IS THE TEST NUMBER CORRECTION ROUTINE
 6821                                  ;;*****************************************************************
 6822
 6823  050140  013737  001102  003454  TSTNMB: MOV     $TSTNM,TSTNM            ;GET THE TEST NUMBER
 6824  050146  105037  003455                  CLRB    TSTNM+1                 ;CLEAR UPPER BYTE
 6825  050152  032737  020000  177570          BIT     #SW13,@#177570          ;INHIBIT TYPEOUT
 6826  050160  001026                          BNE     TSTNMA                  ;YES
 6827  050162  122737  000001  001103          CMPB    #1,$ERFLG               ;IS IT FIRST ERROR
 6828  050170  001022                          BNE     TSTNMA                  ;NO
 6829  050172  013737  003454  003456          MOV     TSTNM,OFFSET            ;GET TEST NUMBER
 6830  050200  006137  003456                  ROL     OFFSET                  ;CREAT OFFSET
 6831  050204  012737  072446  003460          MOV     #HEADER,HEDDAD          ;GET BEGINING OF TABLE
 6832  050212  063737  003456  003460          ADD     OFFSET,HEDDAD           ;CREATE MES ADDRESS
 6833  050220  017737  133234  050234          MOV     @HEDDAD,HEDADD          ;SET UP FOR MESSAGE
```

```
 6834  050226  104401  001223            TYPE    ,$CRLF
 6835  050232  104401                    TYPE
 6836  050234  000000            HEDADD: 0
 6837  050236  004737  074166    TSTNMA: JSR     R7,@#$ERRTYP            ;GO TO ERROR TYPE ROUTINE
 6838  050242  000207                    RTS     R7                      ;RETURN TO ERROR ROUTINE
 6839
 6840                            ;;**********************************************************************
 6841                                    ;THIS PROGRAM WHILL DEVIDE THE ERROR
 6842                                    ;PRINTOUT BETWEEN TESTS
 6843                            ;;**********************************************************************
 6844
 6845  050244  105737  001103    ERRTST: TSTB    $ERFLG                  ;WAS THERE AN ERROR FOUND
 6846  050250  001446                    BEQ     OUTOF                   ;NO ,GO TO NEXT TEST
 6847  050252  032737  020000  177570    BIT     #SW13,@#177570          ;INHIBIT TYPEOUT ?
 6848  050260  001042                    BNE     OUTOF                   ;YES
 6849  050262  013737  001102  003454    MOV     $TSTNM,TSTNM            ;GET TEST NO.
 6850  050270  105037  003455            CLRB    TSTNM+1                 ;CLEAR UPPER BYTE
 6851  050274  104401  050302            TYPE    ,65$             ;;TYPE ASCIZ STRING
 6852  050300  000406                    BR      64$              ;;GET OVER THE ASCIZ
 6853                            ;;65$:  .ASCIZ  <15><12>/^^^^TEST /
 6854  050316                    64$:
 6855  050316  013746  003454            MOV     TSTNM,-(SP)      ;;SAVE TSTNM FOR TYPEOUT
 6856  050322  104402                    TYPOC                    ;;GO TYPE--OCTAL ASCII(ALL DIGITS)
 6857  050324  104401  050332            TYPE    ,67$             ;;TYPE ASCIZ STRING
 6858  050330  000416                    BR      66$              ;;GET OVER THE ASCIZ
 6859                            ;;67$:  .ASCIZ  / ERROR MESSAGE(S) ^^^^/<15><12><12><12>
 6860  050366                    66$:
 6861  050366  000207            OUTOF:  RTS     R7
 6862
 6863                            ;;**********************************************************************
 6864                                    ;THIS IS THE INTERUPT ROUTINE
 6865                                    ;FOR THE LARGE TRANSFER TEST
 6866                            ;;**********************************************************************
 6867
 6868  050370  012716  044672    BLKTST: MOV     #RHNINT,(SP)            ;SET THE CORRET RETURN
 6869  050374  000002                    RTI                             ;AND RETURN
```

```
 6870                                   ;;*****************************************************************
 6871                                   ;;HEADER MESSAGES FOR ERROR PRINT OUTS
 6872                                   ;;*****************************************************************
 6873
 6874  050376  044122  040440  042104  HED1:   .ASCIZ/RH ADDRESS DECODE TEST (TEST 1)/
 6875  050404  042522  051523  042040
 6876  050412  041505  042117  020105
 6877  050420  042524  052123  024040
 6878  050426  042524  052123  030440
 6879  050434  000051
 6880  050436  046103  040505  020122  HED2:   .ASCIZ/CLEAR  TEST (TEST 2)/
 6881  050444  052040  051505  020124
 6882  050452  052050  051505  020124
 6883  050460  024462     000
 6884  050463     124  051505  042524  HED3:   .ASCIZ/TESTER CONNECTED TEST (TEST 3)/
 6885  050470  020122  047503  047116
 6886  050476  041505  042524  020104
 6887  050504  042524  052123  024040
 6888  050512  042524  052123  031440
 6889  050520  000051
 6890  050522  047527  042122  041440  HED4:   .ASCIZ/WORD COUNT CLEAR TEST (TEST 4)/
 6891  050530  052517  052116  041440
 6892  050536  042514  051101  052040
 6893  050544  051505  020124  052050
 6894  050552  051505  020124  024464
 6895  050560     000
 6896  050561     122  041110  020101  HED5:   .ASCIZ/RHBA CLEAR TEST (TEST 5)/
 6897  050566  046103  040505  020122
 6898  050574  042524  052123  024040
 6899  050602  042524  052123  032440
 6900  050610  000051
 6901  050612  044122  040502  020105  HED6:   .ASCIZ/RHBAE CLEAR TEST (TEST 6)/
 6902  050620  046103  040505  020122
 6903  050626  042524  052123  024040
 6904  050634  042524  052123  033040
 6905  050642  000051
 6906  050644  044122  041104  041440  HED7:   .ASCIZ/RHDB CLEAR TEST (TEST 7)/
 6907  050652  042514  051101  052040
 6908  050660  051505  020124  052050
 6909  050666  051505  020124  024467
 6910  050674     000
 6911  050675     120  047522  020115  HED10:  .ASCIZ/PROM REGISTER DECODE TEST (TEST 10)/
 6912  050702  042522  044507  052123
 6913  050710  051105  042040  041505
 6914  050716  042117  020105  042524
 6915  050724  052123  024040  042524
 6916  050732  052123  030440  024460
 6917  050740     000
 6918  050741     122  041510  031523  HED11:  .ASCIZ/RHCS3 BIT TEST (TEST 11)/
 6919  050746  041040  052111  052040
 6920  050754  051505  020124  052050
 6921  050762  051505  020124  030461
 6922  050770  000051
 6923  050772  044122  041527  041040  HED12:  .ASCIZ/RHWC BIT TEST (TEST 12)/
 6924  051000  052111  052040  051505
 6925  051006  020124  052050  051505
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 6926  051014  020124  031061  000051
 6927  051022  044122  040502  020105  HED13:  .ASCIZ/RHBAE BIT TEST (TEST 13)/
 6928  051030  044502  020124  042524
 6929  051036  052123  024040  042524
 6930  051044  052123  030440  024463
 6931  051052     000
 6932  051053     122  041110  020101  HED14:  .ASCIZ/RHBA BIT TEST (TEST 14)/
 6933  051060  044502  020124  042524
 6934  051066  052123  024040  042524
 6935  051074  052123  030440  024464
 6936  051102     000
 6937  051103     122  042110  020102  HED15:  .ASCIZ/RHDB BIT TEST (TEST 15)/
 6938  051110  044502  020124  042524
 6939  051116  052123  024040  042524
 6940  051124  052123  030440  024465
 6941  051132     000
 6942  051133     122  053510  020103  HED16:  .ASCIZ/RHWC OPERATIONAL TEST (TEST 16)/
 6943  051140  050117  051105  052101
 6944  051146  047511  040516  020114
 6945  051154  042524  052123  024040
 6946  051162  042524  052123  030440
 6947  051170  024466     000
 6948  051173     122  041110  020101  HED17:  .ASCIZ/RHBA OPERATIONAL TEST (TEST 17)/
 6949  051200  050117  051105  052101
 6950  051206  047511  040516  020114
 6951  051214  042524  052123  024040
 6952  051222  042524  052123  030440
 6953  051230  024467     000
 6954  051233     116  046505  052054  HED20:  .ASCIZ/NEM,TRE AND SC BIT TEST (TEST 20)/
 6955  051240  042522  040440  042116
 6956  051246  051440  020103  044502
 6957  051254  020124  042524  052123
 6958  051262  024040  042524  052123
 6959  051270  031040  024460     000
 6960  051275     127  042503  052054  HED21:  .ASCIZ/WCE,TRE AND SC BIT TEST (TEST 21)/
 6961  051302  042522  040440  042116
 6962  051310  051440  020103  044502
 6963  051316  020124  042524  052123
 6964  051324  024040  042524  052123
 6965  051332  031040  024461     000
 6966  051337     115  050104  026105  HED22:  .ASCIZ/MDPE,TRE AND SC BIT TEST (TEST 22)/
 6967  051344  051124  020105  047101
 6968  051352  020104  041523  041040
 6969  051360  052111  052040  051505
 6970  051366  020124  052050  051505
 6971  051374  020124  031062  000051
 6972  051402  050125  026105  051124  HED23:  .ASCIZ/UPE,TRE AND SC BIT TEST (TEST 23) RH11 ONLY/
 6973  051410  020105  047101  020104
 6974  051416  041523  041040  052111
 6975  051424  052040  051505  020124
 6976  051432  052050  051505  020124
 6977  051440  031462  020051  044122
 6978  051446  030461  047440  046116
 6979  051454  000131
 6980  051456  050125  026105  051124  HED24:  .ASCIZ/UPE,TRE AND SC BIT TEST (TEST 24)/
 6981  051464  020105  047101  020104
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 6982  051472  041523  041040  052111
 6983  051500  052040  051505  020124
 6984  051506  052050  051505  020124
 6985  051514  032062  000051
 6986  051520  042516  026104  051124  HED25:  .ASCIZ/NED,TRE AND SC BIT TEST (TEST 25)/
 6987  051526  020105  047101  020104
 6988  051534  041523  041040  052111
 6989  051542  052040  051505  020124
 6990  051550  052050  051505  020124
 6991  051556  032462  000051
 6992  051562  054115  026106  051124  HED26:  .ASCIZ/MXF,TRE AND SC BIT TEST (TEST 26)/
 6993  051570  020105  047101  020104
 6994  051576  041523  041040  052111
 6995  051604  052040  051505  020124
 6996  051612  052050  051505  020124
 6997  051620  033062  000051
 6998  051624  043520  020105  051124  HED27:  .ASCIZ/PGE TRE AND SC BIT TEST (TEST 27)/
 6999  051632  020105  047101  020104
 7000  051640  041523  041040  052111
 7001  051646  052040  051505  020124
 7002  051654  052050  051505  020124
 7003  051662  033462  000051
 7004  051666  054115  026106  051124  HED30:  .ASCIZ/MXF,TRE AND SC BIT TEST (TEST 30)/
 7005  051674  020105  047101  020104
 7006  051702  041523  041040  052111
 7007  051710  052040  051505  020124
 7008  051716  052050  051505  020124
 7009  051724  030063  000051
 7010  051730  041515  042520  040440  HED31:  .ASCIZ/MCPE AND SC ERROR BIT TEST (TEST 31)/
 7011  051736  042116  051440  020103
 7012  051744  051105  047522  020122
 7013  051752  044502  020124  042524
 7014  051760  052123  024040  042524
 7015  051766  052123  031440  024461
 7016  051774     000
 7017  051775     104  046102  052040  HED32:  .ASCIZ/DBL TEST,1 WORD FROM A BASE 4 ADDRESS (TEST 32)/
 7018  052002  051505  026124  020061
 7019  052010  047527  042122  043040
 7020  052016  047522  020115  020101
 7021  052024  040502  042523  032040
 7022  052032  040440  042104  042522
 7023  052040  051523  024040  042524
 7024  052046  052123  031440  024462
 7025  052054     000
 7026  052055     104  046102  052040  HED33:  .ASCIZ/DBL TEST,2 WORD FROM A BASE 4 ADD. (TEST 33)/
 7027  052062  051505  026124  020062
 7028  052070  047527  042122  043040
 7029  052076  047522  020115  020101
 7030  052104  040502  042523  032040
 7031  052112  040440  042104  020056
 7032  052120  052050  051505  020124
 7033  052126  031463  000051
 7034  052132  041104  020114  042524  HED34:  .ASCIZ/DBL TEST,3 WORD FROM A BASE 4 ADD. (TEST 34)/
 7035  052140  052123  031454  053440
 7036  052146  051117  020104  051106
 7037  052154  046517  040440  041040
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 7038  052162  051501  020105  020064
 7039  052170  042101  027104  024040
 7040  052176  042524  052123  031440
 7041  052204  024464     000
 7042  052207     104  046102  052040  HED35:  .ASCIZ/DBL TEST,4 WORDS FROM A BASE 4 ADD. (TEST 35)/
 7043  052214  051505  026124  020064
 7044  052222  047527  042122  020123
 7045  052230  051106  046517  040440
 7046  052236  041040  051501  020105
 7047  052244  020064  042101  027104
 7048  052252  024040  042524  052123
 7049  052260  031440  024465     000
 7050  052265     104  046102  052040  HED36:  .ASCIZ/DBL TEST,1 WORD FROM A BASE 4 ADD.(TEST 36)/
 7051  052272  051505  026124  020061
 7052  052300  047527  042122  043040
 7053  052306  047522  020115  020101
 7054  052314  040502  042523  032040
 7055  052322  040440  042104  024056
 7056  052330  042524  052123  031440
 7057  052336  024466     000
 7058  052341     104  046102  052040  HED37:  .ASCIZ/DBL TEST,2 WORD FROM A BASE 4 ADD. WITH BAI SET (TEST 37)/
 7059  052346  051505  026124  020062
 7060  052354  047527  042122  043040
 7061  052362  047522  020115  020101
 7062  052370  040502  042523  032040
 7063  052376  040440  042104  020056
 7064  052404  044527  044124  041040
 7065  052412  044501  051440  052105
 7066  052420  024040  042524  052123
 7067  052426  031440  024467     000
 7068  052433     104  046102  052040  HED40:  .ASCIZ/DBL TEST,2 WORD WITH BAI SET AND WRITE REV )TEST 40)/
 7069  052440  051505  026124  020062
 7070  052446  047527  042122  053440
 7071  052454  052111  020110  040502
 7072  052462  020111  042523  020124
 7073  052470  047101  020104  051127
 7074  052476  052111  020105  042522
 7075  052504  020126  052051  051505
 7076  052512  020124  030064  000051
 7077  052520  041104  020114  042524  HED41:  .ASCIZ/DBL TEST,NOT A BASE 4 ADD (TEST 41)/
 7078  052526  052123  047054  052117
 7079  052534  040440  041040  051501
 7080  052542  020105  020064  042101
 7081  052550  020104  052050  051505
 7082  052556  020124  030464  000051
 7083  052564  041104  020114  042524  HED42:  .ASCIZ/DBL TEST BASE 4 ADD. WRITE FWD (TEST 42)/
 7084  052572  052123  041040  051501
 7085  052600  020105  020064  042101
 7086  052606  027104  053440  044522
 7087  052614  042524  043040  042127
 7088  052622  024040  042524  052123
 7089  052630  032040  024462     000
 7090  052635     104  046102  052040  HED43:  .ASCIZ/DBL TEST ,2 WORD ,NOT A BASE 4 ADD. (TEST 43)/
 7091  052642  051505  020124  031054
 7092  052650  053440  051117  020104
 7093  052656  047054  052117  040440
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 7094  052664  041040  051501  020105
 7095  052672  020064  042101  027104
 7096  052700  024040  042524  052123
 7097  052706  032040  024463     000
 7098  052713     104  046102  052040  HED44:  .ASCIZ/DBL TEST,3 WORD ,NOT A BASE 4 ADD.,WRITE REV (TEST 44)/
 7099  052720  051505  026124  020063
 7100  052726  047527  042122  026040
 7101  052734  047516  020124  020101
 7102  052742  040502  042523  032040
 7103  052750  040440  042104  026056
 7104  052756  051127  052111  020105
 7105  052764  042522  020126  052050
 7106  052772  051505  020124  032064
 7107  053000  000051
 7108  053002  041104  020114  042524  HED45:  .ASCIZ/DBL TEST,2 WORD READ FWD (TEST 45)/
 7109  053010  052123  031054  053440
 7110  053016  051117  020104  042522
 7111  053024  042101  043040  042127
 7112  053032  024040  042524  052123
 7113  053040  032040  024465     000
 7114  053045     104  046102  052040  HED46:  .ASCIZ/DBL TEST,2 WORD READ FWD,NOT A BASE 4 ADD. (TEST 46)/
 7115  053052  051505  026124  020062
 7116  053060  047527  042122  051040
 7117  053066  040505  020104  053506
 7118  053074  026104  047516  020124
 7119  053102  020101  040502  042523
 7120  053110  032040  040440  042104
 7121  053116  020056  052050  051505
 7122  053124  020124  033064  000051
 7123  053132  041104  020114  042524  HED47:  .ASCIZ/DBL TEST,2 WORD READ REV,BASE 4 ADD. (TEST 47)/
 7124  053140  052123  031054  053440
 7125  053146  051117  020104  042522
 7126  053154  042101  051040  053105
 7127  053162  041054  051501  020105
 7128  053170  020064  042101  027104
 7129  053176  024040  042524  052123
 7130  053204  032040  024467     000
 7131  053211     104  046102  052040  HED50:  .ASCIZ/DBL TEST,2 WORD READ REV,NOT A BASE 4 ADD. (TEST 50)/
 7132  053216  051505  026124  020062
 7133  053224  047527  042122  051040
 7134  053232  040505  020104  042522
 7135  053240  026126  047516  020124
 7136  053246  020101  040502  042523
 7137  053254  032040  040440  042104
 7138  053262  020056  052050  051505
 7139  053270  020124  030065  000051
 7140  053276  041104  020114  042524  HED51:  .ASCIZ/DBL TEST,3 WORD READ FWD,BASE 4 ADD. (TEST 51)/
 7141  053304  052123  031454  053440
 7142  053312  051117  020104  042522
 7143  053320  042101  043040  042127
 7144  053326  041054  051501  020105
 7145  053334  020064  042101  027104
 7146  053342  024040  042524  052123
 7147  053350  032440  024461     000
 7148  053355     104  046102  052040  HED52:  .ASCIZ/DBL TEST,3 WORD READ REV,BASE 4 ADD. (TEST 52)/
 7149  053362  051505  026124  020063
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 7150  053370  047527  042122  051040
 7151  053376  040505  020104  042522
 7152  053404  026126  040502  042523
 7153  053412  032040  040440  042104
 7154  053420  020056  052050  051505
 7155  053426  020124  031065  000051
 7156  053434  041527  020105  053505  HED53:  .ASCIZ/WCE EW ERROR TEST 'WCELO'' (TEST 53)/
 7157  053442  042440  051122  051117
 7158  053450  052040  051505  020124
 7159  053456  053442  042503  047514
 7160  053464  020042  052050  051505
 7161  053472  020124  031465  000051
 7162  053500  041527  020105  053517  HED54:  .ASCIZ/WCE OW ERROR TEST 'WCEHI'' (TEST 54)/
 7163  053506  042440  051122  051117
 7164  053514  052040  051505  020124
 7165  053522  053442  042503  044510
 7166  053530  020042  052050  051505
 7167  053536  020124  032065  000051
 7168  053544  047111  042524  052522  HED55:  .ASCIZ/INTERUPT ENABLE TEST (TEST 55)/
 7169  053552  052120  042440  040516
 7170  053560  046102  020105  042524
 7171  053566  052123  024040  042524
 7172  053574  052123  032440  024465
 7173  053602     000
 7174  053603     122  040505  020104  HED56:  .ASCIZ/READ OPERATIONAL TEST (NORMAL #1) (TEST 56)/
 7175  053610  050117  051105  052101
 7176  053616  047511  040516  020114
 7177  053624  042524  052123  024040
 7178  053632  047516  046522  046101
 7179  053640  021440  024461  024040
 7180  053646  042524  052123  032440
 7181  053654  024466     000
 7182  053657     122  020110  050117  HED57:  .ASCIZ/RH OPERATIONAL WRITE TEST #1 (TEST 57)/
 7183  053664  051105  052101  047511
 7184  053672  040516  020114  051127
 7185  053700  052111  020105  042524
 7186  053706  052123  021440  020061
 7187  053714  052050  051505  020124
 7188  053722  033465  000051
 7189  053726  042522  042101  047440  HED60:  .ASCIZ/READ OPERATIONAL TEST (NORMAL #2)(TEST 60)/
 7190  053734  042520  040522  044524
 7191  053742  047117  046101  052040
 7192  053750  051505  020124  047050
 7193  053756  051117  040515  020114
 7194  053764  031043  024051  042524
 7195  053772  052123  033040  024460
 7196  054000     000
 7197  054001     122  020110  050117  HED61:  .ASCIZ/RH OPERATIONAL READ TEST #1 (TEST 61)/
 7198  054006  051105  052101  047511
 7199  054014  040516  020114  042522
 7200  054022  042101  052040  051505
 7201  054030  020124  030443  024040
 7202  054036  042524  052123  033040
 7203  054044  024461     000
 7204  054047     122  040505  020104  HED62:  .ASCIZ/READ OPERATIONAL TEST (NORMAL #3)(TEST 62)/
 7205  054054  050117  051105  052101
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7206  054062  047511  040516  020114
7207  054070  042524  052123  024040
7208  054076  047516  046522  046101
7209  054104  021440  024463  052050
7210  054112  051505  020124  031066
7211  054120  000051
7212  054122  044122  047440  042520  HED63:  .ASCIZ/RH OPERATIONAL WRITE TEST #2 (TEST 63)/
7213  054130  040522  044524  047117
7214  054136  046101  053440  044522
7215  054144  042524  052040  051505
7216  054152  020124  031043  024040
7217  054160  042524  052123  033040
7218  054166  024463     000
7219  054171     122  040505  020104  HED64:  .ASCIZ/READ OPERATIONAL TEST (NORMAL #4)(TEST 64)/
7220  054176  050117  051105  052101
7221  054204  047511  040516  020114
7222  054212  042524  052123  024040
7223  054220  047516  046522  046101
7224  054226  021440  024464  052050
7225  054234  051505  020124  032066
7226  054242  000051
7227  054244  044122  047440  042520  HED65:  .ASCIZ/RH OPERATIONAL READ TEST #2 (TEST 65)/
7228  054252  040522  044524  047117
7229  054260  046101  051040  040505
7230  054266  020104  042524  052123
7231  054274  021440  020062  052050
7232  054302  051505  020124  032466
7233  054310  000051
7234  054312  051127  052111  020105  HED66:  .ASCIZ/WRITE OPERATIONAL TEST (NORMAL #1)(TEST 66)/
7235  054320  050117  051105  052101
7236  054326  047511  040516  020114
7237  054334  042524  052123  024040
7238  054342  047516  046522  046101
7239  054350  021440  024461  052050
7240  054356  051505  020124  033066
7241  054364  000051
7242  054366  044122  047440  042520  HED67:  .ASCIZ/RH OPERATIONAL WRITE TEST #3 (TEST 67)/
7243  054374  040522  044524  047117
7244  054402  046101  053440  044522
7245  054410  042524  052040  051505
7246  054416  020124  031443  024040
7247  054424  042524  052123  033040
7248  054432  024467     000
7249  054435     127  044522  042524  HED70:  .ASCIZ/WRITE OPERATIONAL TEST (NORMAL #3)(TEST 70)/
7250  054442  047440  042520  040522
7251  054450  044524  047117  046101
7252  054456  052040  051505  020124
7253  054464  047050  051117  040515
7254  054472  020114  031443  024051
7255  054500  042524  052123  033440
7256  054506  024460     000
7257  054511     122  020110  050117  HED71:  .ASCIZ/RH OPERATIONAL READ TEST #3 (TEST 71)/
7258  054516  051105  052101  047511
7259  054524  040516  020114  042522
7260  054532  042101  052040  051505
7261  054540  020124  031443  024040
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7262  054546  042524  052123  033440
7263  054554  024461     000
7264  054557     127  044522  042524  HED72:  .ASCIZ/WRITE OPERATIONAL TEST (NORMAL #3)(TEST 72)/
7265  054564  047440  042520  040522
7266  054572  044524  047117  046101
7267  054600  052040  051505  020124
7268  054606  047050  051117  040515
7269  054614  020114  031443  024051
7270  054622  042524  052123  033440
7271  054630  024462     000
7272  054633     122  020110  050117  HED73:  .ASCIZ/RH OPERATIONAL WRITE TEST #4 (TEST 73)/
7273  054640  051105  052101  047511
7274  054646  040516  020114  051127
7275  054654  052111  020105  042524
7276  054662  052123  021440  020064
7277  054670  052050  051505  020124
7278  054676  031467  000051
7279  054702  051127  052111  020105  HED74:  .ASCIZ/WRITE OPERATIONAL TEST (NORMAL #4)(TEST 74)/
7280  054710  050117  051105  052101
7281  054716  047511  040516  020114
7282  054724  042524  052123  024040
7283  054732  047516  046522  046101
7284  054740  021440  024464  052050
7285  054746  051505  020124  032067
7286  054754  000051
7287  054756  044122  047440  042520  HED75:  .ASCIZ/RH OPERATIONAL READ TEST #4 (TEST 75)/
7288  054764  040522  044524  047117
7289  054772  046101  051040  040505
7290  055000  020104  042524  052123
7291  055006  021440  020064  052050
7292  055014  051505  020124  032467
7293  055022  000051
7294  055024  040514  043522  020105  HED76:  .ASCIZ/LARGE TRANSFER TEST 671 WORDS (TEST 76)/
7295  055032  051124  047101  043123
7296  055040  051105  052040  051505
7297  055046  020124  033466  020061
7298  055054  047527  042122  020123
7299  055062  052050  051505  020124
7300  055070  033067  000051
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                                                                ;;*****************************************************************
                                                                ;;      ;ERROR MESSAGES
                                                                ;;*****************************************************************

                                                                .EVEN
055074  047503  051122  041505  EM1:    .ASCIZ/CORRECT BIT DID NOT SET IN RHWC/
055102  020124  044502  020124
055110  044504  020104  047516
055116  020124  042523  020124
055124  047111  051040  053510
055132  000103
055134  047503  051122  041505  EM2:    .ASCIZ/CORRECT BIT DID NOT SET IN RHBA/
055142  020124  044502  020124
055150  044504  020104  047516
055156  020124  042523  020124
055164  047111  051040  041110
055172  000101
055174  047503  051122  041505  EM3:    .ASCIZ/CORRECT BIT DID NOT SET IN BUS ADDRESS REG./
055202  020124  044502  020124
055210  044504  020104  047516
055216  020124  042523  020124
055224  047111  041040  051525
055232  040440  042104  042522
055240  051523  051040  043505
055246  000056
055250  047503  051122  041505  EM4:    .ASCIZ/CORRECT BIT DID NOT SET IN RHDB/
055256  020124  044502  020124
055264  044504  020104  047516
055272  020124  042523  020124
055300  047111  051040  042110
055306  000102
055310  047516  026516  054105  EM5:    .ASCIZ/NON-EXISTANT MEMORY DID NOT SET IN RHCS2/
055316  051511  040524  052116
055324  046440  046505  051117
055332  020131  044504  020104
055340  047516  020124  042523
055346  020124  047111  051040
055354  041510  031123     000
055361     040  047514  044507  EM6:    .ASCII/ LOGIC TO SET TRE BIT IN RHCS1 REGISTER/<15><12>
055366  020103  047524  051440
055374  052105  052040  042522
055402  041040  052111  044440
055410  020116  044122  051503
055416  020061  042522  044507
055424  052123  051105  005015
055432  051511  047040  052117          .ASCII/IS NOT WORKING,GO TO (CSRB) PRINTS IF RH11/<15><12>
055440  053440  051117  044513
055446  043516  043454  020117
055454  047524  024040  051503
055462  041122  020051  051120
055470  047111  051524  044440
055476  020106  044122  030461
055504  005015
055506  051117  024040  051503          .ASCIZ/OR (CSTB) PRINTS IF RH70 IN LOCATION B7 ON BOTH PRINTS/
055514  041124  020051  051120
```

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 7357  055522  047111  051524  044440
 7358  055530  020106  044122  030067
 7359  055536  044440  020116  047514
 7360  055544  040503  044524  047117
 7361  055552  041040  020067  047117
 7362  055560  041040  052117  020110
 7363  055566  051120  047111  051524
 7364  055574     000
 7365  055575     116  046505  041040  EM7:    .ASCIZ/NEM BIT DOES NOT READ AS SET IN RHCS2/
 7366  055602  052111  042040  042517
 7367  055610  020123  047516  020124
 7368  055616  042522  042101  040440
 7369  055624  020123  042523  020124
 7370  055632  047111  051040  041510
 7371  055640  031123     000
 7372  055643     116  046505  040440  EM10:   .ASCIZ/NEM AND SC NOT SET IN RHCS1/
 7373  055650  042116  051440  020103
 7374  055656  047516  020124  042523
 7375  055664  020124  047111  051040
 7376  055672  041510  030523     000
 7377  055677     123  020103  044502  EM11:   .ASCIZ/SC BIT SET BY ATTN OR MCPE ERROR/
 7378  055704  020124  042523  020124
 7379  055712  054502  040440  052124
 7380  055720  020116  051117  046440
 7381  055726  050103  020105  051105
 7382  055734  047522  000122
 7383  055740  051440  020103  044504  EM12:   .ASCIZ/ SC DID NOT SET/
 7384  055746  020104  047516  020124
 7385  055754  042523  000124
 7386  055760  051124  020105  044502  EM13:   .ASCIZ/TRE BIT IS SET BUT SC READS AS CLEARED/
 7387  055766  020124  051511  051440
 7388  055774  052105  041040  052125
 7389  056002  051440  020103  042522
 7390  056010  042101  020123  051501
 7391  056016  041440  042514  051101
 7392  056024  042105     000
 7393  056027     127  042503  041040  EM14:   .ASCIZ/WCE BIT DID NOT SET/
 7394  056034  052111  042040  042111
 7395  056042  047040  052117  051440
 7396  056050  052105     000
 7397  056053     127  042503  041040  EM15:   .ASCIZ/WCE BIT DID NOT SET/
 7398  056060  052111  042040  042111
 7399  056066  047040  052117  051440
 7400  056074  052105     000
 7401  056077     124  042522  041040  EM16:   .ASCIZ/TRE BIT NOT SET/
 7402  056104  052111  047040  052117
 7403  056112  051440  052105     000
 7404  056117     127  042503  040440  EM17:   .ASCIZ/WCE AND TRE ARE SET BUT SC BIT NOT SET/
 7405  056124  042116  052040  042520
 7406  056132  040440  042522  051440
 7407  056140  052105  041040  052125
 7408  056146  051440  020103  044502
 7409  056154  020124  047516  020124
 7410  056162  042523  000124
 7411  056166  050125  020105  044504  EM20:   .ASCIZ/UPE DID NOT SET IN RHCS2/
 7412  056174  020104  047516  020124
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 7413  056202  042523  020124  047111
 7414  056210  051040  041510  031123
 7415  056216     000
 7416  056217     124  042522  040440  EM21:   .ASCII/TRE AND SC BITS ARE SET/
 7417  056224  042116  051440  020103
 7418  056232  044502  051524  040440
 7419  056240  042522  051440  052105
 7420  056246  050125  020105  047101  EM22:   .ASCIZ/UPE AND SC BIT DID NOT SET/
 7421  056254  020104  041523  041040
 7422  056262  052111  042040  042111
 7423  056270  047040  052117  051440
 7424  056276  052105     000
 7425  056301     123  020103  044502  EM23:   .ASCIZ/SC BIT NOT SET/
 7426  056306  020124  047516  020124
 7427  056314  042523  000124
 7428  056320  042516  020104  044504  EM24:   .ASCIZ/NED DID NOT SET IN RHCS2/
 7429  056326  020104  047516  020124
 7430  056334  042523  020124  047111
 7431  056342  051040  041510  031123
 7432  056350     000
 7433  056351     124  042522  040440  EM25:   .ASCIZ/TRE AND SC SHOULD NOT SET/
 7434  056356  042116  051440  020103
 7435  056364  044123  052517  042114
 7436  056372  047040  052117  051440
 7437  056400  052105     000
 7438  056403     124  042522  051440  EM26:   .ASCIZ/TRE SHOULD NOT BE SET/
 7439  056410  047510  046125  020104
 7440  056416  047516  020124  042502
 7441  056424  051440  052105     000
 7442  056431     124  042522  041040  EM27:   .ASCIZ/TRE BIT WAS NOT SET BY NED/
 7443  056436  052111  053440  051501
 7444  056444  047040  052117  051440
 7445  056452  052105  041040  020131
 7446  056460  042516  000104
 7447  056464  054115  020106  044502  EM30:   .ASCIZ/MXF BIT DID NOT SET IN RHCS2/
 7448  056472  020124  044504  020104
 7449  056500  047516  020124  042523
 7450  056506  020124  047111  051040
 7451  056514  041510  031123     000
 7452  056521     115  043130  041040  EM31:   .ASCIZ/MXF BIT SHOULD BE SET IN RHCS2/
 7453  056526  052111  051440  047510
 7454  056534  046125  020104  042502
 7455  056542  051440  052105  044440
 7456  056550  020116  044122  051503
 7457  056556  000062
 7458  056560  054115  020106  047101  EM32:   .ASCIZ/MXF AND SC ARE NOT SET/
 7459  056566  020104  041523  040440
 7460  056574  042522  047040  052117
 7461  056602  051440  052105     000
 7462  056607     124  042522  051040  EM33:   .ASCIZ/TRE READS AS CLEARED,MXF AND SC ARE SET/
 7463  056614  040505  051504  040440
 7464  056622  020123  046103  040505
 7465  056630  042522  026104  054115
 7466  056636  020106  047101  020104
 7467  056644  041523  040440  042522
 7468  056652  051440  052105     000
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 7469  056657     124  051505  042524  EM34:   .ASCIZ/TESTER DOES NOT READ AS BEING CONNECTED/
 7470  056664  020122  047504  051505
 7471  056672  047040  052117  051040
 7472  056700  040505  020104  051501
 7473  056706  041040  044505  043516
 7474  056714  041440  047117  042516
 7475  056722  052103  042105     000
 7476  056727     102  052111  044440  EM35:   .ASCIZ/BIT IN RHCS3 WILL NOT SET/
 7477  056734  020116  044122  051503
 7478  056742  020063  044527  046114
 7479  056750  047040  052117  051440
 7480  056756  052105     000
 7481  056761     122  020110  044504  EM36:   .ASCIZ/RH DID NOT RESPOND TO ADDRESS/
 7482  056766  020104  047516  020124
 7483  056774  042522  050123  047117
 7484  057002  020104  047524  040440
 7485  057010  042104  042522  051523
 7486  057016     000
 7487  057017     104  052114  042040  EM37:   .ASCIZ/DLT DID NOT SET IN RHCS2/
 7488  057024  042111  047040  052117
 7489  057032  051440  052105  044440
 7490  057040  020116  044122  051503
 7491  057046  000062
 7492  057050  046104  020124  051511  EM40:   .ASCII/DLT IS NOT SET IN RHCS2,BUT TRE AND SC ARE SET/<15><12>
 7493  057056  047040  052117  051440
 7494  057064  052105  044440  020116
 7495  057072  044122  051503  026062
 7496  057100  052502  020124  051124
 7497  057106  020105  047101  020104
 7498  057114  041523  040440  042522
 7499  057122  051440  052105  005015
 7500  057130  051124  020105  047101          .ASCIZ/TRE AND SC COULD HAVE BEEN SET BY ANOTHER ERROR/
 7501  057136  020104  041523  041440
 7502  057144  052517  042114  044040
 7503  057152  053101  020105  042502
 7504  057160  047105  051440  052105
 7505  057166  041040  020131  047101
 7506  057174  052117  042510  020122
 7507  057202  051105  047522  000122
 7508  057210  052517  050124  052125  EM41:   .ASCIZ/OUTPUT READY DID NOT SET WHEN INFO WAS LOADED INTO THE DATA BUFFER/
 7509  057216  051040  040505  054504
 7510  057224  042040  042111  047040
 7511  057232  052117  051440  052105
 7512  057240  053440  042510  020116
 7513  057246  047111  047506  053440
 7514  057254  051501  046040  040517
 7515  057262  042504  020104  047111
 7516  057270  047524  052040  042510
 7517  057276  042040  052101  020101
 7518  057304  052502  043106  051105
 7519  057312     000
 7520  057313     101  046114  041040  EM42:   .ASCIZ/ALL BITS DID NOT LOAD INTO RHWC (177777)/
 7521  057320  052111  020123  044504
 7522  057326  020104  047516  020124
 7523  057334  047514  042101  044440
 7524  057342  052116  020117  044122
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 7525  057350  041527  024040  033461
 7526  057356  033467  033467  000051
 7527  057364  044122  041527  042040  EM43:   .ASCIZ/RHWC DID NOT LOAD ANY BITS (177777)/
 7528  057372  042111  047040  052117
 7529  057400  046040  040517  020104
 7530  057406  047101  020131  044502
 7531  057414  051524  024040  033461
 7532  057422  033467  033467  000051
 7533  057430  047523  042515  041040  EM44:   .ASCIZ/SOME BITS CLEARED IN RHWC AFTER CLR WAS LOADED INTO RHCS2/
 7534  057436  052111  020123  046103
 7535  057444  040505  042522  020104
 7536  057452  047111  051040  053510
 7537  057460  020103  043101  042524
 7538  057466  020122  046103  020122
 7539  057474  040527  020123  047514
 7540  057502  042101  042105  044440
 7541  057510  052116  020117  044122
 7542  057516  051503  000062
 7543  057522  047516  026516  054105  EM45:   .ASCIZ/NON-EXISTANT MEMORY BIT SET IN RHCS2 (NEM)/
 7544  057530  051511  040524  052116
 7545  057536  046440  046505  051117
 7546  057544  020131  044502  020124
 7547  057552  042523  020124  047111
 7548  057560  051040  041510  031123
 7549  057566  024040  042516  024515
 7550  057574     000
 7551  057575     122  041110  020101  EM46:   .ASCIZ/RHBA DID NOT CLR AFTER CLR WAS LOADED INTO RHCS2/
 7552  057602  044504  020104  047516
 7553  057610  020124  046103  020122
 7554  057616  043101  042524  020122
 7555  057624  046103  020122  040527
 7556  057632  020123  047514  042101
 7557  057640  042105  044440  052116
 7558  057646  020117  044122  051503
 7559  057654  000062
 7560  057656  046101  020114  044502  EM47:   .ASCIZ/ALL BITS DID NOT LOAD INTO RHBA (177776)/
 7561  057664  051524  042040  042111
 7562  057672  047040  052117  046040
 7563  057700  040517  020104  047111
 7564  057706  047524  051040  041110
 7565  057714  020101  030450  033467
 7566  057722  033467  024466     000
 7567  057727     114  040517  044504  EM50:   .ASCIZ/LOADING TRE AFTER ITS SET DOES NOT CLEAR ERROR/
 7568  057734  043516  052040  042522
 7569  057742  040440  052106  051105
 7570  057750  044440  051524  051440
 7571  057756  052105  042040  042517
 7572  057764  020123  047516  020124
 7573  057772  046103  040505  020122
 7574  060000  051105  047522  000122
 7575  060006  043520  020105  044504  EM51:   .ASCIZ/PGE DID NOT SET IN RHCS2/
 7576  060014  020104  047516  020124
 7577  060022  042523  020124  047111
 7578  060030  051040  041510  031123
 7579  060036     000
 7580  060037     124  042510  050040  EM52:   .ASCII/THE PROM WHILE ACCESSING A REGISTER/<15><12>
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 7581  060044  047522  020115  044127
 7582  060052  046111  020105  041501
 7583  060060  042503  051523  047111
 7584  060066  020107  020101  042522
 7585  060074  044507  052123  051105
 7586  060102  005015
 7587  060104  044127  041511  020110          .ASCII/WHICH YOUR TESTER CANNOT SUPPLY INFORMATION/<15><12>
 7588  060112  047531  051125  052040
 7589  060120  051505  042524  020122
 7590  060126  040503  047116  052117
 7591  060134  051440  050125  046120
 7592  060142  020131  047111  047506
 7593  060150  046522  052101  047511
 7594  060156  006516     012
 7595  060161     106  051117  051440          .ASCIZ/FOR SAYS INFO IS PRESENT/
 7596  060166  054501  020123  047111
 7597  060174  047506  044440  020123
 7598  060202  051120  051505  047105
 7599  060210  000124
 7600  060212  044122  051503  000061  EM53:   .ASCIZ/RHCS1/
 7601  060220  044122  041527     000  EM54:   .ASCIZ/RHWC/
 7602  060225     122  041110  000101  EM55:   .ASCIZ/RHBA/
 7603  060232  044122  051115  000062  EM56:   .ASCIZ/RHMR2/
 7604  060240  044122  051503  000062  EM57:   .ASCIZ/RHCS2/
 7605  060246  044122  052123     000  EM60:   .ASCIZ/RHST/
 7606  060253     122  042510  000122  EM61:   .ASCIZ/RHER/
 7607  060260  044122  051501     000  EM62:   .ASCIZ/RHAS/
 7608  060265     122  052110  041104  EM63:   .ASCIZ/RHTDB/
 7609  060272     000
 7610  060273     122  042110  000123  EM64:   .ASCIZ/RHDS/
 7611  060300  044122  051115  000061  EM65:   .ASCIZ/RHMR1/
 7612  060306  044122  052104     000  EM66:   .ASCIZ/RHDT/
 7613  060313     122  041110  042501  EM67:   .ASCIZ/RHBAE/
 7614  060320     000
 7615  060321     122  041510  031523  EM70:   .ASCIZ/RHCS3/
 7616  060326     000
 7617  060327     104  053105  041511  EM71:   .ASCIZ/DEVICE NUMBER IN RHMR2 DOES NOT EQUAL A 7AFTER A CLEAR/
 7618  060334  020105  052516  041115
 7619  060342  051105  044440  020116
 7620  060350  044122  051115  020062
 7621  060356  047504  051505  047040
 7622  060364  052117  042440  052521
 7623  060372  046101  040440  033440
 7624  060400  043101  042524  020122
 7625  060406  020101  046103  040505
 7626  060414  000122
 7627  060416  044122  051503  020061  EM72:   .ASCIZ/RHCS1 HAS AN ERROR BIT SET/<15><12>
 7628  060424  040510  020123  047101
 7629  060432  042440  051122  051117
 7630  060440  041040  052111  051440
 7631  060446  052105  005015     000
 7632  060453     105  051122  051117  EM73:   .ASCIZ/ERROR BIT SET IN RHCS2/
 7633  060460  041040  052111  051440
 7634  060466  052105  044440  020116
 7635  060474  044122  051503  000062
 7636  060502  051105  047522  020122  EM74:   .ASCIZ/ERROR BIT SET IN RHER/
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 7637  060510  044502  020124  042523
 7638  060516  020124  047111  051040
 7639  060524  042510  000122
 7640  060530  051105  047522  020122  EM75:   .ASCIZ/ERROR BIT SET IN RHST/<15><12>
 7641  060536  044502  020124  042523
 7642  060544  020124  047111  051040
 7643  060552  051510  006524  000012
 7644  060560  044122  040502  044440  EM76:   .ASCIZ/RHBA INCREMENTED BUT IT DID NOT CARRY OVER TO RHBAE,RHBAE SHOULD =40/
 7645  060566  041516  042522  042515
 7646  060574  052116  042105  041040
 7647  060602  052125  044440  020124
 7648  060610  044504  020104  047516
 7649  060616  020124  040503  051122
 7650  060624  020131  053117  051105
 7651  060632  052040  020117  044122
 7652  060640  040502  026105  044122
 7653  060646  040502  020105  044123
 7654  060654  052517  042114  036440
 7655  060662  030064     000
 7656  060665     122  054504  042040  EM77:   .ASCII/RDY DID NOT SET,AND WORD COUNT DID NOT INCREMENT/<15><12>
 7657  060672  042111  047040  052117
 7658  060700  051440  052105  040454
 7659  060706  042116  053440  051117
 7660  060714  020104  047503  047125
 7661  060722  020124  044504  020104
 7662  060730  047516  020124  047111
 7663  060736  051103  046505  047105
 7664  060744  006524     012
 7665  060747     104  044517  043516          .ASCIZ/DOING A WRITE OPERATION/
 7666  060754  040440  053440  044522
 7667  060762  042524  047440  042520
 7668  060770  040522  044524  047117
 7669  060776     000
 7670  060777     122  041110  042501  EM100:  .ASCII/RHBAE DID NOT CLEAR AFTER CLR WAS LOADED/<15><12>
 7671  061004  042040  042111  047040
 7672  061012  052117  041440  042514
 7673  061020  051101  040440  052106
 7674  061026  051105  041440  051114
 7675  061034  053440  051501  046040
 7676  061042  040517  042504  006504
 7677  061050     012
 7678  061051     111  052116  020117          .ASCIZ/INTO RHCS2/
 7679  061056  044122  051503  000062
 7680  061064  051127  052111  020105  EM101:  .ASCIZ/WRITE REVERSE OPERATION DID NOT WORK/
 7681  061072  042522  042526  051522
 7682  061100  020105  050117  051105
 7683  061106  052101  047511  020116
 7684  061114  044504  020104  047516
 7685  061122  020124  047527  045522
 7686  061130     000
 7687
 7688  061131     122  054504  042040  EM102:  .ASCIZ/RDY DID NOT SET IN RHCS1/
 7689  061136  042111  047040  052117
 7690  061144  051440  052105  044440
 7691  061152  020116  044122  051503
 7692  061160  000061
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7693  061162  052504  044522  043516  EM103:  .ASCII/DURING A WRITE OPERATION RDY DID NOT SET/<15><12>
7694  061170  040440  053440  044522
7695  061176  042524  047440  042520
7696  061204  040522  044524  047117
7697  061212  051040  054504  042040
7698  061220  042111  047040  052117
7699  061226  051440  052105  005015
7700  061234  047527  042122  041440          .ASCII/WORD COUNT DID NOT INCREMENT,BUT INFORMATION/<15><12>
7701  061242  052517  052116  042040
7702  061250  042111  047040  052117
7703  061256  044440  041516  042522
7704  061264  042515  052116  041054
7705  061272  052125  044440  043116
7706  061300  051117  040515  044524
7707  061306  047117  005015
7708  061312  040527  020123  051127          .ASCIZ/WAS WRITTEN TO TESTER/
7709  061320  052111  042524  020116
7710  061326  047524  052040  051505
7711  061334  042524  000122
7712  061340  052504  044522  043516  EM104:  .ASCII/DURING A WRITE OPERATION RDY DID NOT SET/<15><12>
7713  061346  040440  053440  044522
7714  061354  042524  047440  042520
7715  061362  040522  044524  047117
7716  061370  051040  054504  042040
7717  061376  042111  047040  052117
7718  061404  051440  052105  005015
7719  061412  047527  042122  041440          .ASCII/WORD COUNT DID NOT INCREMENT,AND INFORMATION/<15><12>
7720  061420  052517  052116  042040
7721  061426  042111  047040  052117
7722  061434  044440  041516  042522
7723  061442  042515  052116  040454
7724  061450  042116  044440  043116
7725  061456  051117  040515  044524
7726  061464  047117  005015
7727  061470  040527  020123  047516          .ASCIZ/WAS NOT TRANSFERED TO THE TESTER/
7728  061476  020124  051124  047101
7729  061504  043123  051105  042105
7730  061512  052040  020117  044124
7731  061520  020105  042524  052123
7732  061526  051105     000
7733  061531     102  042501  044440  EM105:  .ASCIZ/BAE IS MESSED UP,IT SHOULD EQUAL 40,/
7734  061536  020123  042515  051523
7735  061544  042105  052440  026120
7736  061552  052111  051440  047510
7737  061560  046125  020104  050505
7738  061566  040525  020114  030064
7739  061574  000054
7740  061576  040502  020105  044504  EM106:  .ASCIZ/BAE DID NOT INCREMENT/
7741  061604  020104  047516  020124
7742  061612  047111  051103  046505
7743  061620  047105  000124
7744  061624  042522  042101  051040  EM107:  .ASCIZ/READ REV OPERATION DID NOT READ FROM TESTER TO STORAGE LOCATION (RBUF)/
7745  061632  053105  047440  042520
7746  061640  040522  044524  047117
7747  061646  042040  042111  047040
7748  061654  052117  051040  040505
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 7749  061662  020104  051106  046517
 7750  061670  052040  051505  042524
 7751  061676  020122  047524  051440
 7752  061704  047524  040522  042507
 7753  061712  046040  041517  052101
 7754  061720  047511  020116  051050
 7755  061726  052502  024506     000
 7756  061733     122  041110  042501  EM110:  .ASCII/RHBAE EQUALS 0,IT SHOULD EQUAL 40/<15><12>
 7757  061740  042440  052521  046101
 7758  061746  020123  026060  052111
 7759  061754  051440  047510  046125
 7760  061762  020104  050505  040525
 7761  061770  020114  030064  005015
 7762  061776  043101  042524  020122          .ASCIZ/AFTER A ONE WORD WRITE/
 7763  062004  020101  047117  020105
 7764  062012  047527  042122  053440
 7765  062020  044522  042524     000
 7766  062025     101  033461  042040  EM111:  .ASCIZ/A17 DID NOT SET AFTER BA WAS INCREMENTED/<15><12>
 7767  062032  042111  047040  052117
 7768  062040  051440  052105  040440
 7769  062046  052106  051105  041040
 7770  062054  020101  040527  020123
 7771  062062  047111  051103  046505
 7772  062070  047105  042524  006504
 7773  062076  000012
 7774  062100  040502  042040  042111  EM112:  .ASCIZ/BA DID NOT INCREMENT/
 7775  062106  047040  052117  044440
 7776  062114  041516  042522  042515
 7777  062122  052116     000
 7778  062125     102  020101  047111  EM113:  .ASCII/BA INCREMENTED BUT IT DID NOT CARRY TO/<15><12>
 7779  062132  051103  046505  047105
 7780  062140  042524  020104  052502
 7781  062146  020124  052111  042040
 7782  062154  042111  047040  052117
 7783  062162  041440  051101  054522
 7784  062170  052040  006517     012
 7785  062175     101  033061  040440          .ASCIZ/A16 AND A17 IN RHCS1/
 7786  062202  042116  040440  033461
 7787  062210  044440  020116  044122
 7788  062216  051503  000061
 7789  062222  052517  050124  052125  EM114:  .ASCII/OUTPUT READY WAS NOT NEGATED AFTER CLR WAS/<15><12>
 7790  062230  051040  040505  054504
 7791  062236  053440  051501  047040
 7792  062244  052117  047040  043505
 7793  062252  052101  042105  040440
 7794  062260  052106  051105  041440
 7795  062266  051114  053440  051501
 7796  062274  005015
 7797  062276  047514  042101  042105          .ASCIZ/LOADED INTO RHCS2/
 7798  062304  044440  052116  020117
 7799  062312  044122  051503  000062
 7800  062320  046101  020114  044502  EM115:  .ASCIZ/ALL BITS DID NOT READ TO STORAGE LOC. (RBUF) DURING A READ REV. OPERATION
 7801  062326  051524  042040  042111
 7802  062334  047040  052117  051040
 7803  062342  040505  020104  047524
 7804  062350  051440  047524  040522
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 7805  062356  042507  046040  041517
 7806  062364  020056  051050  052502
 7807  062372  024506  042040  051125
 7808  062400  047111  020107  020101
 7809  062406  042522  042101  051040
 7810  062414  053105  020056  050117
 7811  062422  051105  052101  047511
 7812  062430  000116
 7813  062432  042115  042520  042040  EM116:  .ASCIZ/MDPE DID NOT SET IN RHCS2/
 7814  062440  042111  047040  052117
 7815  062446  051440  052105  044440
 7816  062454  020116  044122  051503
 7817  062462  000062
 7818  062464  047111  047506  042040  EM117:  .ASCII/INFO DID NOT WRITE TO TESTER DOING A/<15><12>
 7819  062472  042111  047040  052117
 7820  062500  053440  044522  042524
 7821  062506  052040  020117  042524
 7822  062514  052123  051105  042040
 7823  062522  044517  043516  040440
 7824  062530  005015
 7825  062532  051127  052111  020105          .ASCIZ/WRITE REVERSE OPERATION/
 7826  062540  042522  042526  051522
 7827  062546  020105  050117  051105
 7828  062554  052101  047511  000116
 7829  062562  051124  020105  047101  EM120:  .ASCIZ/TRE AND SC WHERE NOT SET BY MDPE/
 7830  062570  020104  041523  053440
 7831  062576  042510  042522  047040
 7832  062604  052117  051440  052105
 7833  062612  041040  020131  042115
 7834  062620  042520     000
 7835  062623     124  042522  044440  EM121:  .ASCIZ/TRE IS SET IN RHCS1,MDPE AND SC/
 7836  062630  020123  042523  020124
 7837  062636  047111  051040  041510
 7838  062644  030523  046454  050104
 7839  062652  020105  047101  020104
 7840  062660  041523     000
 7841  062663     123  047510  046125          .ASCIZ/SHOULD ALSO BE SET/
 7842  062670  020104  046101  047523
 7843  062676  041040  020105  042523
 7844  062704  000124
 7845  062706  042115  042520  040440  EM122:  .ASCIZ/MDPE AND SC SHOULD BE SET/
 7846  062714  042116  051440  020103
 7847  062722  044123  052517  042114
 7848  062730  041040  020105  042523
 7849  062736  000124
 7850  062740  051124  020105  047101  EM123:  .ASCIZ/TRE AND SC ARE SET, PGE SHOULD ALSO BE SET/
 7851  062746  020104  041523  040440
 7852  062754  042522  051440  052105
 7853  062762  020054  043520  020105
 7854  062770  044123  052517  042114
 7855  062776  040440  051514  020117
 7856  063004  042502  051440  052105
 7857  063012     000
 7858  063013     104  046102  042040  EM124:  .ASCII/DBL DID NOT SET AFTER A 4 WORD WRITE FROM/<15><12>
 7859  063020  042111  047040  052117
 7860  063026  051440  052105  040440
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 7861  063034  052106  051105  040440
 7862  063042  032040  053440  051117
 7863  063050  020104  051127  052111
 7864  063056  020105  051106  046517
 7865  063064  005015
 7866  063066  047101  042440  042526          .ASCIZ/AN EVEN ADDRESS/
 7867  063074  020116  042101  051104
 7868  063102  051505  000123
 7869  063106  041104  020114  042523  EM125:  .ASCII/DBL SET IN RHCS3 DOING A 1 WORD WRITE FROM/<15><12>
 7870  063114  020124  047111  051040
 7871  063122  041510  031523  042040
 7872  063130  044517  043516  040440
 7873  063136  030440  053440  051117
 7874  063144  020104  051127  052111
 7875  063152  020105  051106  046517
 7876  063160  005015
 7877  063162  047101  042440  042526          .ASCIZ/AN EVEN ADDRESS/
 7878  063170  020116  042101  051104
 7879  063176  051505  000123
 7880  063202  041104  020114  042523  EM126:  .ASCII/DBL SET IN RHCS3 ON A 3 WORD WRITE FROM/<15><12>
 7881  063210  020124  047111  051040
 7882  063216  041510  031523  047440
 7883  063224  020116  020101  020063
 7884  063232  047527  042122  053440
 7885  063240  044522  042524  043040
 7886  063246  047522  006515     012
 7887  063253     101  020116  053105          .ASCIZ/AN EVEN ADDRESS/
 7888  063260  047105  040440  042104
 7889  063266  042522  051523     000
 7890  063273     104  046102  042040  EM127:  .ASCII/DBL DID NOT SET IN RHCS3 AFTER A 2 WORD/<15><12>
 7891  063300  042111  047040  052117
 7892  063306  051440  052105  044440
 7893  063314  020116  044122  051503
 7894  063322  020063  043101  042524
 7895  063330  020122  020101  020062
 7896  063336  047527  042122  005015
 7897  063344  051106  046517  040440          .ASCIZ/FROM AN EVEN ADDRESS/
 7898  063352  020116  053105  047105
 7899  063360  040440  042104  042522
 7900  063366  051523     000
 7901  063371     115  050103  020105  EM130:  .ASCIZ/MCPE SET IN RHCS1 BUT SC READS AS CLEARED/
 7902  063376  042523  020124  047111
 7903  063404  051040  041510  030523
 7904  063412  041040  052125  051440
 7905  063420  020103  042522  042101
 7906  063426  020123  051501  041440
 7907  063434  042514  051101  042105
 7908  063442     000
 7909  063443     115  050103  020105  EM131:  .ASCIZ/MCPE DID NOT SET IN RHCS1/
 7910  063450  044504  020104  047516
 7911  063456  020124  042523  020124
 7912  063464  047111  051040  041510
 7913  063472  030523     000
 7914  063475     127  042503  046040  EM132:  .ASCIZ/WCE LO IN RHCS3 DID NOT SET/
 7915  063502  020117  047111  051040
 7916  063510  041510  031523  042040
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7917  063516  042111  047040  052117
7918  063524  051440  052105     000
7919  063531     127  042503  046040  EM133:  .ASCII/WCE LO SHOULD ONLY BE SET IN RHCS3 BUT/<15><12>
7920  063536  020117  044123  052517
7921  063544  042114  047440  046116
7922  063552  020131  042502  051440
7923  063560  052105  044440  020116
7924  063566  044122  051503  020063
7925  063574  052502  006524     012
7926  063601     127  042503  044040          .ASCIZ/WCE HI ALSO READS AS SET/
7927  063606  020111  046101  047523
7928  063614  051040  040505  051504
7929  063622  040440  020123  042523
7930  063630  000124
7931  063632  041527  020105  047514  EM134:  .ASCIZ/WCE LO SET IN RHCS3 BUT WCE DID NOT SET IN RHCS2/
7932  063640  051440  052105  044440
7933  063646  020116  044122  051503
7934  063654  020063  052502  020124
7935  063662  041527  020105  044504
7936  063670  020104  047516  020124
7937  063676  042523  020124  047111
7938  063704  051040  041510  031123
7939  063712     000
7940  063713     127  042503  044040  EM135:  .ASCIZ/WCE HI DID NOT SET IN RHCS3/
7941  063720  020111  044504  020104
7942  063726  047516  020124  042523
7943  063734  020124  047111  051040
7944  063742  041510  031523     000
7945  063747     127  042503  044040  EM136:  .ASCIZ/WCE HI SET IN RHCS3 BUT WCE DID NOT SET IN RHCS2/
7946  063754  020111  042523  020124
7947  063762  047111  051040  041510
7948  063770  031523  041040  052125
7949  063776  053440  042503  042040
7950  064004  042111  047040  052117
7951  064012  051440  052105  044440
7952  064020  020116  044122  051503
7953  064026  000062
7954  064030  041527  020105  044510  EM137:  .ASCII/WCE HI SHOULD ONLY BE SET IN RHCS3 BUT/<15><12>
7955  064036  051440  047510  046125
7956  064044  020104  047117  054514
7957  064052  041040  020105  042523
7958  064060  020124  047111  051040
7959  064066  041510  031523  041040
7960  064074  052125  005015
7961  064100  041527  020105  047514          .ASCIZ/WCE LO ALSO READS AS SET/
7962  064106  040440  051514  020117
7963  064114  042522  042101  020123
7964  064122  051501  051440  052105
7965  064130     000
7966  064131     127  044522  042524  EM140:  .ASCIZ/WRITE OPERATION DID NOT INCREMENT WORD COUNT/
7967  064136  047440  042520  040522
7968  064144  044524  047117  042040
7969  064152  042111  047040  052117
7970  064160  044440  041516  042522
7971  064166  042515  052116  053440
7972  064174  051117  020104  047503
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 7973  064202  047125  000124
 7974  064206  052502  020123  042101  EM141:  .ASCIZ/BUS ADDRESS DID NOT INCREMENT AFTER A WRITE/
 7975  064214  051104  051505  020123
 7976  064222  044504  020104  047516
 7977  064230  020124  047111  051103
 7978  064236  046505  047105  020124
 7979  064244  043101  042524  020122
 7980  064252  020101  051127  052111
 7981  064260  000105
 7982  064262  047111  047506  046522  EM142:  .ASCIZ/INFORMATION DID NOT GET WRITTEN TO TESTER/
 7983  064270  052101  047511  020116
 7984  064276  044504  020104  047516
 7985  064304  020124  042507  020124
 7986  064312  051127  052111  042524
 7987  064320  020116  047524  052040
 7988  064326  051505  042524  000122
 7989  064334  042522  042101  047440  EM143:  .ASCIZ/READ OPERATION DID NOT INCREMENT WORD COUNT/
 7990  064342  042520  040522  044524
 7991  064350  047117  042040  042111
 7992  064356  047040  052117  044440
 7993  064364  041516  042522  042515
 7994  064372  052116  053440  051117
 7995  064400  020104  047503  047125
 7996  064406  000124
 7997  064410  052502  020123  042101  EM144:  .ASCII/BUS ADDRESS DID NOT INCREMENT AFTER A READ/<15><12>
 7998  064416  051104  051505  020123
 7999  064424  044504  020104  047516
 8000  064432  020124  047111  051103
 8001  064440  046505  047105  020124
 8002  064446  043101  042524  020122
 8003  064454  020101  042522  042101
 8004  064462  005015
 8005  064464  050117  051105  052101          .ASCIZ/OPERATION/
 8006  064472  047511  000116
 8007  064476  047111  047506  046522  EM145:  .ASCIZ/INFORMATION DID NOT READ FROM TESTER/
 8008  064504  052101  047511  020116
 8009  064512  044504  020104  047516
 8010  064520  020124  042522  042101
 8011  064526  043040  047522  020115
 8012  064534  042524  052123  051105
 8013  064542     000
 8014  064543     124  044510  020123  EM146:  .ASCIZ/THIS IS THE CONTENTS OF THE RH REGISTERS/
 8015  064550  051511  052040  042510
 8016  064556  041440  047117  042524
 8017  064564  052116  020123  043117
 8018  064572  052040  042510  051040
 8019  064600  020110  042522  044507
 8020  064606  052123  051105  000123
 8021  064614  046101  020114  044502  EM147:  .ASCII/ALL BITS DID NOT GET TRANSFERED DURING A/<15><12>
 8022  064622  051524  042040  042111
 8023  064630  047040  052117  043440
 8024  064636  052105  052040  040522
 8025  064644  051516  042506  042522
 8026  064652  020104  052504  044522
 8027  064660  043516  040440  005015
 8028  064666  042522  042101  047440          .ASCIZ/READ OPERATION/
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8029  064674  042520  040522  044524
8030  064702  047117     000
8031  064705     122  040505  020104  EM150:  .ASCII/READ OPERATION DID NOT SEEM TO WORK,NO /<15><12>
8032  064712  050117  051105  052101
8033  064720  047511  020116  044504
8034  064726  020104  047516  020124
8035  064734  042523  046505  052040
8036  064742  020117  047527  045522
8037  064750  047054  020117  005015
8038  064756  047111  047506  046522          .ASCIZ/INFORMATION WAS TRANSFERED TO STORAGE LOC.(RBUF)/
8039  064764  052101  047511  020116
8040  064772  040527  020123  051124
8041  065000  047101  043123  051105
8042  065006  042105  052040  020117
8043  065014  052123  051117  043501
8044  065022  020105  047514  027103
8045  065030  051050  052502  024506
8046  065036     000
8047  065037     101  046114  041040  EM151:  .ASCII/ALL BITS WHERE NOT TRANSFERED TO TESTER/<15><12>
8048  065044  052111  020123  044127
8049  065052  051105  020105  047516
8050  065060  020124  051124  047101
8051  065066  043123  051105  042105
8052  065074  052040  020117  042524
8053  065102  052123  051105  005015
8054  065110  052504  044522  043516          .ASCIZ/DURING A WRITE OPERATION/
8055  065116  040440  053440  044522
8056  065124  042524  047440  042520
8057  065132  040522  044524  047117
8058  065140     000
8059  065141     127  044522  042524  EM152:  .ASCIZ/WRITE OPERATION DID NOT WRITE TO TESTER/
8060  065146  047440  042520  040522
8061  065154  044524  047117  042040
8062  065162  042111  047040  052117
8063  065170  053440  044522  042524
8064  065176  052040  020117  042524
8065  065204  052123  051105     000
8066  065211     104  046102  051440  EM153:  .ASCII/DBL SET ON A 2 WORD TRANSFER WITH BAI/<15><12>
8067  065216  052105  047440  020116
8068  065224  020101  020062  047527
8069  065232  042122  052040  040522
8070  065240  051516  042506  020122
8071  065246  044527  044124  041040
8072  065254  044501  005015
8073  065260  042523  020124  047111          .ASCIZ/SET IN RHCS2/
8074  065266  051040  041510  031123
8075  065274     000
8076  065275     104  046102  051440  EM154:  .ASCIZ/DBL SET IN RHCS3 ON A 1 WORD READ FROM/<15><12>
8077  065302  052105  044440  020116
8078  065310  044122  051503  020063
8079  065316  047117  040440  030440
8080  065324  053440  051117  020104
8081  065332  042522  042101  043040
8082  065340  047522  006515  000012
8083  065346  047101  042440  042526          .ASCIZ/AN EVEN ADDRESS/
8084  065354  020116  042101  051104
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 8085  065362  051505  000123
 8086  065366  041104  020114  042523  EM155:  .ASCII/DBL SET ON A 2 WORD WRITE REV. WITH BAI SET/<15><12>
 8087  065374  020124  047117  040440
 8088  065402  031040  053440  051117
 8089  065410  020104  051127  052111
 8090  065416  020105  042522  027126
 8091  065424  053440  052111  020110
 8092  065432  040502  020111  042523
 8093  065440  006524     012
 8094  065443     111  020116  044122          .ASCIZ/IN RHCS2/
 8095  065450  051503  000062
 8096  065454  041104  020114  042523  EM156:  .ASCII/DBL SET ON A 2 WORD TRANSFER(WRITE)/<15><12>
 8097  065462  020124  047117  040440
 8098  065470  031040  053440  051117
 8099  065476  020104  051124  047101
 8100  065504  043123  051105  053450
 8101  065512  044522  042524  006451
 8102  065520     012
 8103  065521     106  047522  020115          .ASCIZ/FROM AN ODD ADDRESS/
 8104  065526  047101  047440  042104
 8105  065534  040440  042104  042522
 8106  065542  051523     000
 8107  065545     104  046102  042040  EM157:  .ASCII/DBL DID NOT SET ON A 2 WORD WRITE REV.FROM AN EVEN/<15><12>
 8108  065552  042111  047040  052117
 8109  065560  051440  052105  047440
 8110  065566  020116  020101  020062
 8111  065574  047527  042122  053440
 8112  065602  044522  042524  051040
 8113  065610  053105  043056  047522
 8114  065616  020115  047101  042440
 8115  065624  042526  006516     012
 8116  065631     101  042104  042522          .ASCIZ/ADDRESS/
 8117  065636  051523     000
 8118  065641     104  046102  051440  EM160:  .ASCII/DBL SET ON A 2 WORD WRITE REVERSE/<15><12>
 8119  065646  052105  047440  020116
 8120  065654  020101  020062  047527
 8121  065662  042122  053440  044522
 8122  065670  042524  051040  053105
 8123  065676  051105  042523  005015
 8124  065704  051106  046517  040440          .ASCIZ/FROM AN ODD ADDRESS/
 8125  065712  020116  042117  020104
 8126  065720  042101  051104  051505
 8127  065726  000123
 8128  065730  041104  020114  042523  EM161:  .ASCII/DBL SET ON A 3 WORD WRITE REVERSE/<15><12>
 8129  065736  020124  047117  040440
 8130  065744  031440  053440  051117
 8131  065752  020104  051127  052111
 8132  065760  020105  042522  042526
 8133  065766  051522  006505     012
 8134  065773     106  047522  020115          .ASCIZ/FROM AN ODD ADDRESS/
 8135  066000  047101  047440  042104
 8136  066006  040440  042104  042522
 8137  066014  051523     000
 8138  066017     104  046102  042040  EM162:  .ASCII/DBL DID NOT SET ON A 2 WORD READ FROM AN/<15><12>
 8139  066024  042111  047040  052117
 8140  066032  051440  052105  047440
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8141  066040  020116  020101  020062
8142  066046  047527  042122  051040
8143  066054  040505  020104  051106
8144  066062  046517  040440  006516
8145  066070     012
8146  066071     105  042526  020116          .ASCIZ/EVEN ADDRESS/
8147  066076  042101  051104  051505
8148  066104  000123
8149  066106  041104  020114  042523  EM163:  .ASCII/DBL SET ON A 2 WORD READ FROM/<15><12>
8150  066114  020124  047117  040440
8151  066122  031040  053440  051117
8152  066130  020104  042522  042101
8153  066136  043040  047522  006515
8154  066144     012
8155  066145     101  020116  042117          .ASCIZ/AN ODD ADDRESS/
8156  066152  020104  042101  051104
8157  066160  051505  000123
8158  066164  041104  020114  042523  EM164:  .ASCII/DBL SET ON A 2 WORD READ REVERSE/<15><12>
8159  066172  020124  047117  040440
8160  066200  031040  053440  051117
8161  066206  020104  042522  042101
8162  066214  051040  053105  051105
8163  066222  042523  005015
8164  066226  051106  046517  040440          .ASCIZ/FROM AN EVEN ADDRESS/
8165  066234  020116  053105  047105
8166  066242  040440  042104  042522
8167  066250  051523     000
8168  066253     104  046102  042040  EM165:  .ASCII/DBL DID NOT SET ON A 2 WORD READ REVERSE/<15><12>
8169  066260  042111  047040  052117
8170  066266  051440  052105  047440
8171  066274  020116  020101  020062
8172  066302  047527  042122  051040
8173  066310  040505  020104  042522
8174  066316  042526  051522  006505
8175  066324     012
8176  066325     106  047522  020115          .ASCIZ/FROM AN ODD ADDRESS/
8177  066332  047101  047440  042104
8178  066340  040440  042104  042522
8179  066346  051523     000
8180  066351     104  046102  051440  EM166:  .ASCII/DBL SET ON A 3 WORD READ FROM/<15><12>
8181  066356  052105  047440  020116
8182  066364  020101  020063  047527
8183  066372  042122  051040  040505
8184  066400  020104  051106  046517
8185  066406  005015
8186  066410  047101  042440  042526          .ASCIZ/AN EVEN ADDRESS/
8187  066416  020116  042101  051104
8188  066424  051505  000123
8189  066430  041104  020114  044504  EM167:  .ASCII/DBL DID NOT SET ON A 3 WORD READ REVERSE/<15><12>
8190  066436  020104  047516  020124
8191  066444  042523  020124  047117
8192  066452  040440  031440  053440
8193  066460  051117  020104  042522
8194  066466  042101  051040  053105
8195  066474  051105  042523  005015
8196  066502  051106  046517  040440          .ASCIZ/FROM AN EVEN ADDRESS/
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 8197  066510  020116  053105  047105
 8198  066516  040440  042104  042522
 8199  066524  051523     000
 8200  066527     124  042522  051040  EM171:  .ASCIZ/TRE READS AS SET PGE AND SC SHOULD BE SET/
 8201  066534  040505  051504  040440
 8202  066542  020123  042523  020124
 8203  066550  043520  020105  047101
 8204  066556  020104  041523  051440
 8205  066564  047510  046125  020104
 8206  066572  042502  051440  052105
 8207  066600     000
 8208  066601     123  020103  044123  EM172:  .ASCIZ/SC SHOULD BE SET/
 8209  066606  052517  042114  041040
 8210  066614  020105  042523  000124
 8211  066622  042122  020131  047111  EM173:  .ASCIZ/RDY IN RHCS1 DID NOT CAUSE AN INTERRUPT WITH IE SET/
 8212  066630  051040  041510  030523
 8213  066636  042040  042111  047040
 8214  066644  052117  041440  052501
 8215  066652  042523  040440  020116
 8216  066660  047111  042524  051122
 8217  066666  050125  020124  044527
 8218  066674  044124  044440  020105
 8219  066702  042523  000124
 8220  066706  042511  053440  046111  EM174:  .ASCIZ/IE WILL NOT SET IN RHCS1/
 8221  066714  020114  047516  020124
 8222  066722  042523  020124  047111
 8223  066730  051040  041510  030523
 8224  066736     000
 8225  066737     111  020105  040510  EM175:  .ASCIZ/IE HAS AN OPEN GOING TO THE BUS/
 8226  066744  020123  047101  047440
 8227  066752  042520  020116  047507
 8228  066760  047111  020107  047524
 8229  066766  052040  042510  041040
 8230  066774  051525     000
 8231  066777     122  041510  031523  EM176:  .ASCIZ/RHCS3 HAS AN ERROR BIT SET/
 8232  067004  044040  051501  040440
 8233  067012  020116  051105  047522
 8234  067020  020122  044502  020124
 8235  067026  042523  000124
 8236  067032  046104  020124  047101  EM177:  .ASCIZ/DLT AND TRE ARE SET,SC SHOULD BE SET/
 8237  067040  020104  051124  020105
 8238  067046  051101  020105  042523
 8239  067054  026124  041523  051440
 8240  067062  047510  046125  020104
 8241  067070  042502  051440  052105
 8242  067076     000
 8243  067077     110  041111  052131  EM200:  .ASCIZ/HIBYTE ,LOBYTE GATE FOR RHWC NOT WORKING PROPERLY/
 8244  067104  020105  046054  041117
 8245  067112  052131  020105  040507
 8246  067120  042524  043040  051117
 8247  067126  051040  053510  020103
 8248  067134  047516  020124  047527
 8249  067142  045522  047111  020107
 8250  067150  051120  050117  051105
 8251  067156  054514     000
 8252  067161     110  041111  052131  EM201:  .ASCIZ/HIBYTE ,LOBYTE GATE FOR RHDB NOT WORKING PROPERLY/
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 8253  067166  020105  046054  041117
 8254  067174  052131  020105  040507
 8255  067202  042524  043040  051117
 8256  067210  051040  042110  020102
 8257  067216  047516  020124  047527
 8258  067224  045522  047111  020107
 8259  067232  051120  050117  051105
 8260  067240  054514     000
 8261  067243     110  041111  052131  EM202:  .ASCIZ/HIBYTE ,LOBYTE GATE FOR RHBA NOT WORKING PROPERLY/
 8262  067250  020105  046054  041117
 8263  067256  052131  020105  040507
 8264  067264  042524  043040  051117
 8265  067272  051040  041110  020101
 8266  067300  047516  020124  047527
 8267  067306  045522  047111  020107
 8268  067314  051120  050117  051105
 8269  067322  054514     000
 8270  067325     124  042510  041040  EM203:  .ASCIZ/THE BUS \DDRESS IS INCORRECT IT SHOULD BE 15000/
 8271  067332  051525  040440  042104
 8272  067340  042522  051523  044440
 8273  067346  020123  047111  047503
 8274  067354  051122  041505  020124
 8275  067362  052111  051440  047510
 8276  067370  046125  020104  042502
 8277  067376  030440  030065  030060
 8278  067404     000
 8279  067405     124  051505  042524  EM204:  .ASCIZ/TESTER DATA BUFFER DOES NOT CONTAIN THE CORRECT INFO/
 8280  067412  020122  040504  040524
 8281  067420  041040  043125  042506
 8282  067426  020122  047504  051505
 8283  067434  047040  052117  041440
 8284  067442  047117  040524  047111
 8285  067450  052040  042510  041440
 8286  067456  051117  042522  052103
 8287  067464  044440  043116  000117
 8288  067472  044122  042040  042111  EM205:  .ASCIZ/RH DID NOT INTERUPT LOOK AT CS1 TO SEE IF IE IS SET/
 8289  067500  047040  052117  044440
 8290  067506  052116  051105  050125
 8291  067514  020124  047514  045517
 8292  067522  040440  020124  051503
 8293  067530  020061  047524  051440
 8294  067536  042505  044440  020106
 8295  067544  042511  044440  020123
 8296  067552  042523  000124
 8297  067556  044122  041527  051440  EM206:  .ASCIZ/RHWC SHOULD BE ZERO/
 8298  067564  047510  046125  020104
 8299  067572  042502  055040  051105
 8300  067600  000117
 8301
 8302  067602  051124  047101  043123  EM207:  .ASCIZ/TRANSFER WAS DONE ON PORT B/
 8303  067610  051105  053440  051501
 8304  067616  042040  047117  020105
 8305  067624  047117  050040  051117
 8306  067632  020124  000102
 8307  067636  041520  020040  020040  DH1:    .ASCII/PC       TEST    RHWC    CONTENTS RHWC/<15><12>
 8308  067644  020040  042524  052123
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 8309  067652  020040  020040  044122
 8310  067660  041527  020040  020040
 8311  067666  047503  052116  047105
 8312  067674  051524  051040  053510
 8313  067702  006503     012
 8314  067705     040  020040  020040          .ASCIZ/       NO.            SHOULD HAVE BEEN/
 8315  067712  020040  047040  027117
 8316  067720  020040  020040  020040
 8317  067726  020040  020040  020040
 8318  067734  051440  047510  046125
 8319  067742  020104  040510  042526
 8320  067750  041040  042505  000116
 8321  067756  041520  020040  020040  DH2:    .ASCII/PC     TEST    RHBAE  CONTENTS RHBAE/<15><12>
 8322  067764  020040  042524  052123
 8323  067772  020040  020040  044122
 8324  070000  040502  020105  020040
 8325  070006  047503  052116  047105
 8326  070014  051524  051040  041110
 8327  070022  042501  005015
 8328  070026  020040  020040  020040          .ASCIZ/       NO.            SHOULD HAVE BEEN/
 8329  070034  020040  047516  020056
 8330  070042  020040  020040  020040
 8331  070050  020040  020040  020040
 8332  070056  044123  052517  042114
 8333  070064  044040  053101  020105
 8334  070072  042502  047105     000
 8335  070077     120  020103  020040  DH3:    .ASCII/PC     TEST    RHBA   CONTENTS RHBA/<15><12>
 8336  070104  020040  052040  051505
 8337  070112  020124  020040  051040
 8338  070120  041110  020101  020040
 8339  070126  041440  047117  042524
 8340  070134  052116  020123  044122
 8341  070142  040502  005015
 8342  070146  020040  020040  020040          .ASCIZ/       NO.            SHOULD HAVE BEEN/
 8343  070154  020040  047516  020056
 8344  070162  020040  020040  020040
 8345  070170  020040  020040  020040
 8346  070176  044123  052517  042114
 8347  070204  044040  053101  020105
 8348  070212  042502  047105     000
 8349  070217     120  020103  020040  DH4:    .ASCII/PC     TEST    RHDB   CONTENTS RHDB/<15><12>
 8350  070224  020040  052040  051505
 8351  070232  020124  020040  051040
 8352  070240  042110  020102  020040
 8353  070246  041440  047117  042524
 8354  070254  052116  020123  044122
 8355  070262  041104  005015
 8356  070266  020040  020040  020040          .ASCIZ/       NO.            SHOULD HAVE BEEN/
 8357  070274  020040  047516  020056
 8358  070302  020040  020040  020040
 8359  070310  020040  020040  020040
 8360  070316  044123  052517  042114
 8361  070324  044040  053101  020105
 8362  070332  042502  047105     000
 8363  070337     120  020103  020040  DH5:    .ASCII/PC     TEST    RHCS2  TRE AND SC/<15><12>
 8364  070344  020040  052040  051505
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 8365  070352  020124  020040  051040
 8366  070360  041510  031123  020040
 8367  070366  052040  042522  040440
 8368  070374  042116  051440  006503
 8369  070402     012
 8370  070403     040  020040  020040          .ASCIZ/       NO.                  BITS/
 8371  070410  020040  047040  027117
 8372  070416  020040  020040  020040
 8373  070424  020040  020040  020040
 8374  070432  020040  020040  041040
 8375  070440  052111  000123
 8376  070444  041520  020040  020040  DH11:   .ASCII/PC      TEST    CONTENTS OF/<15><12>
 8377  070452  020040  042524  052123
 8378  070460  020040  020040  047503
 8379  070466  052116  047105  051524
 8380  070474  047440  006506     012
 8381  070501     040  020040  020040          .ASCIZ/       NO.       RHCS2/
 8382  070506  020040  047040  027117
 8383  070514  020040  020040  020040
 8384  070522  020040  044122  051503
 8385  070530  000062
 8386  070532  041520  020040  020040  DH34:   .ASCII/PC      TEST    DEVICE/<15><12>
 8387  070540  020040  042524  052123
 8388  070546  020040  020040  042504
 8389  070554  044526  042503  005015
 8390  070562  020040  020040  020040          .ASCIZ/       NO.     CODE/
 8391  070570  020040  047516  020056
 8392  070576  020040  020040  047503
 8393  070604  042504     000
 8394  070607     120  000103          DH35:   .ASCIZ/PC/
 8395  070612  041520  020040  020040  DH36:   .ASCII/PC      TEST    FAILING/<15><12>
 8396  070620  020040  042524  052123
 8397  070626  020040  020040  040506
 8398  070634  046111  047111  006507
 8399  070642     012
 8400  070643     040  020040  020040          .ASCIZ/       NO.     ADDRESS/
 8401  070650  020040  047040  027117
 8402  070656  020040  020040  040440
 8403  070664  042104  042522  051523
 8404  070672     000
 8405  070673     120  020103  020040  DH41:   .ASCIZ/PC      TEST NUMBER/
 8406  070700  020040  052040  051505
 8407  070706  020124  052516  041115
 8408  070714  051105     000
 8409  070717     120  020103  020040  DH52:   .ASCII/PC      TEST    ADDRESS  DATA   RHAS/<15><12>
 8410  070724  020040  052040  051505
 8411  070732  020124  020040  040440
 8412  070740  042104  042522  051523
 8413  070746  020040  040504  040524
 8414  070754  020040  051040  040510
 8415  070762  006523     012
 8416  070765     040  020040  020040          .ASCIZ/       NO.     CONTENTS/
 8417  070772  020040  047040  027117
 8418  071000  020040  020040  041440
 8419  071006  047117  042524  052116
 8420  071014  000123
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 8421  071016  041520  020040  020040  DH71:   .ASCII/PC      TEST    DEVICE/<15><12>
 8422  071024  020040  042524  052123
 8423  071032  020040  020040  042504
 8424  071040  044526  042503  005015
 8425  071046  020040  020040  020040          .ASCIZ/         NO.     NUMBER/
 8426  071054  020040  047516  020056
 8427  071062  020040  020040  052516
 8428  071070  041115  051105     000
 8429  071075     120  020103  020040  DH72:   .ASCII/PC      TEST    CONTENTS OF/<15><12>
 8430  071102  020040  052040  051505
 8431  071110  020124  020040  041440
 8432  071116  047117  042524  052116
 8433  071124  020123  043117  005015
 8434  071132  020040  020040  C20040          .ASCIZ/         NO.      REGISTER/
 8435  071140  020040  047516  020056
 8436  071146  020040  020040  051040
 8437  071154  043505  051511  042524
 8438  071162  000122
 8439  071164  041520  020040  020040  DH76:   .ASCIZ/PC      TEST NO.  RHBAE   RHBA/
 8440  071172  052040  051505  020124
 8441  071200  047516  020056  051040
 8442  071206  041110  042501  020040
 8443  071214  051040  041110  000101
 8444  071222  041520  020040  020040  DH105:  .ASCIZ/PC      TEST NO. RHBAE    RHBA     RHWC/
 8445  071230  052040  051505  020124
 8446  071236  047516  020056  044122
 8447  071244  040502  020105  020040
 8448  071252  044122  040502  020040
 8449  071260  020040  044122  041527
 8450  071266     000
 8451  071267     120  020103  020040  DH111:  .ASCIZ/PC      TEST NO. RHCS1    RHBA     RHWC/
 8452  071274  020040  042524  052123
 8453  071302  047040  027117  051040
 8454  071310  041510  030523  020040
 8455  071316  051040  041110  020101
 8456  071324  020040  051040  053510
 8457  071332  000103
 8458  071334  041520  020040  020040  DH121:  .ASCIZ/PC      TEST NO. RHCS1    RHCS2/
 8459  071342  052040  051505  020124
 8460  071350  047516  020056  044122
 8461  071356  051503  020061  020040
 8462  071364  044122  051503  000062
 8463  071372  041520  020040  020040  DH130:  .ASCIZ/PC      TEST NO. RHCS1/
 8464  071400  052040  051505  020124
 8465  071406  047516  020056  044122
 8466  071414  051503  000061
 8467  071420  041520  020040  020040  DH132:  .ASCIZ/PC      TEST NO. RHBAE    RHBA     RHCS2    RHCS3/
 8468  071426  052040  051505  020124
 8469  071434  047516  020056  044122
 8470  071442  040502  020105  020040
 8471  071450  044122  040502  020040
 8472  071456  020040  044122  051503
 8473  071464  020062  020040  044122
 8474  071472  051503  000063
 8475  071476  041520  020040  020040  DH142:  .ASCIZ/PC      TEST NO. EVENAD   RHTDB/
 8476  071504  052040  051505  020124
```

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 8477  071512  047516  020056  053105
 8478  071520  047105  042101  020040
 8479  071526  044122  042124  000102
 8480  071534  041520  020040  020040  DH146:  .ASCIZ/PC      TEST NO. RHCS1   RHCS2   RHWC/
 8481  071542  052040  051505  020124
 8482  071550  047516  020056  044122
 8483  071556  051503  020061  020040
 8484  071564  044122  051503  020062
 8485  071572  020040  044122  041527
 8486  071600     000
 8487  071601     120  020103  020040  DH147:  .ASCIZ/PC      TEST NO. RBUF    RHTDB/
 8488  071606  020040  042524  052123
 8489  071614  047040  027117  051040
 8490  071622  052502  020106  020040
 8491  071630  051040  052110  041104
 8492  071636     000
 8493  071637     122  041110  042501  DH170:  .ASCIZ/RHBAE   RHBA    RHCS3/
 8494  071644  020040  051040  041110
 8495  071652  020101  020040  051040
 8496  071660  041510  031523     000
 8497  071665     120  020103  020040  DH171:  .ASCIZ/PC      TEST NO. RHCS3/
 8498  071672  020040  042524  052123
 8499  071700  047040  027117  051040
 8500  071706  041510  031523     000
 8501  071713     120  020103  020040  DH172:  .ASCII/PC      TEST    DEVICE  RHCS2/<15><12>
 8502  071720  020040  052040  051505
 8503  071726  020124  020040  042040
 8504  071734  053105  041511  020105
 8505  071742  051040  041510  031123
 8506  071750  005015
 8507  071752  020040  020040  020040          .ASCIZ/        NO.     NUMBER  /
 8508  071760  020040  047516  020056
 8509  071766  020040  020040  052516
 8510  071774  041115  051105  020040
 8511  072002     000
 8512           072004                  .EVEN
 8513  072004  001116  003454  003444  DT1:    .WORD   $ERRPC,TSTNM,WC,$REG0,0
 8514  072012  001162  000000
 8515  072016  001116  003454  003416  DT2:    .WORD   $ERRPC,TSTNM,BAE,$REG0,0
 8516  072024  001162  000000
 8517  072030  001116  003454  003414  DT3:    .WORD   $ERRPC,TSTNM,BA,$REG0,0
 8518  072036  001162  000000
 8519  072042  001116  003454  003426  DT4:    .WORD   $ERRPC,TSTNM,DB,$REG0,0
 8520  072050  001162  000000
 8521  072054  001116  003454  003422  DT5:    .WORD   $ERRPC,TSTNM,CS2,$REG0,0
 8522  072062  001162  000000
 8523  072066  001116  003454  003422  DT11:   .WORD   $ERRPC,TSTNM,CS2,0
 8524  072074  000000
 8525  072076  001116  003454  003434  DT34:   .WORD   $ERRPC,TSTNM,DT,0
 8526  072104  000000
 8527  072106  001116  000000          DT35:   .WORD   $ERRPC,0
 8528  072112  001116  003454  003330  DT36:   .WORD   $ERRPC,TSTNM,RHCS1,0
 8529  072120  000000
 8530  072122  001116  003454  000000  DT41:   .WORD   $ERRPC,TSTNM,0
 8531  072130  001116  003454  003416  DT52:   .WORD   $ERRPC,TSTNM,BAE,$REG0,AS,0
 8532  072136  001162  003412  000000
```

```
 8533  072144  001116  003454  004100  DT71:   .WORD   $ERRPC,TSTNM,RBUF,0
 8534  072152  000000
 8535  072154  001116  003454  003416  DT76:   .WORD   $ERRPC,TSTNM,BAE,BA,0
 8536  072162  003414  000000
 8537  072166  001116  003454  003416  DT105:  .WORD   $ERRPC,TSTNM,BAE,BA,WC,0
 8538  072174  003414  003444  000000
 8539  072202  001116  003454  003420  DT111:  .WORD   $ERRPC,TSTNM,CS1,BA,WC,0
 8540  072210  003414  003444  000000
 8541  072216  001116  003454  003420  DT121:  .WORD   $ERRPC,TSTNM,CS1,CS2,0
 8542  072224  003422  000000
 8543  072230  001116  003454  003420  DT130:  .WORD   $ERRPC,TSTNM,CS1,0
 8544  072236  000000
 8545  072240  001116  003454  003416  DT132:  .WORD   $ERRPC,TSTNM,BAE,BA,CS2,CS3,0
 8546  072246  003414  003422  003424
 8547  072254  000000
 8548  072256  001116  003454  004000  DT142:  .WORD   $ERRPC,TSTNM,EVENAD,$REG0,0
 8549  072264  001162  000000
 8550  072270  001116  003454  003420  DT146:  .WORD   $ERRPC,TSTNM,CS1,CS2,WC,0
 8551  072276  003422  003444  000000
 8552  072304  001116  003454  004100  DT147:  .WORD   $ERRPC,TSTNM,RBUF,$REG0,0
 8553  072312  001162  000000
 8554  072316  003416  003414  003424  DT170:  .WORD   BAE,BA,CS3,0
 8555  072324  000000
 8556  072326  001116  003454  003424  DT171:.WORD     $ERRPC,TSTNM,CS3,0
 8557  072334  000000
 8558  072336  001116  003454  004100  DT172:  .WORD   $ERRPC,TSTNM,RBUF,CS2,0
 8559  072344  003422  000000
 8560                                  .EVEN
 8561  072350      000     000     000  DF1:    .BYTE   0,0,0,0
 8562  072353      000
 8563  072354      000     000     000  DF2:    .BYTE   0,0,0,0
 8564  072357      000
 8565  072360      000     000     000  DF3:    .BYTE   0,0,0,0
 8566  072363      000
 8567  072364      000     000     000  DF4:    .BYTE   0,0,0,0
 8568  072367      000
 8569  072370      000     000     000  DF5:    .BYTE   0,0,0,0
 8570  072373      000
 8571  072374      000     000     000  DF11:   .BYTE   0,0,0
 8572  072377      000     000     000  DF34:   .BYTE   0,0,0
 8573  072402      000                  DF35:   .BYTE   0
 8574  072403      000     000     000  DF36:   .BYTE   0,0,0
 8575  072406      000     000          DF41:   .BYTE   0,0
 8576  072410      000     000     000  DF52:   .BYTE   0,0,0,0,0
 8577  072413      000     000
 8578  072415      000     000     000  DF71:   .BYTE   0,0,0
 8579  072420      000     000     000  DF76:   .BYTE   0,0,0,0
 8580  072423      000
 8581  072424      000     000     000  DF105:  .BYTE   0,0,0,0,0
 8582  072427      000     000
 8583  072431      000     000     000  DF132:  .BYTE   0,0,0,0,0,0
 8584  072434      000     000     000
 8585  072437      000     000     000  DF170:  .BYTE   0,0,0
 8586  072442      000     000     000  DF172:  .BYTE   0,0,0,0
 8587  072445      000
 8588                                  .EVEN
```

```
 8589
 8590  072446  000000
 8591  072450  050376
 8592  072452  050436
 8593  072454  050463
 8594  072456  050522
 8595  072460  050561
 8596  072462  050612
 8597  072464  050644
 8598  072466  050675
 8599  072470  050741
 8600  072472  050772
 8601  072474  051022
 8602  072476  051053
 8603  072500  051103
 8604  072502  051133
 8605  072504  051173
 8606  072506  051233
 8607  072510  051275
 8608  072512  051337
 8609  072514  051402
 8610  072516  051456
 8611  072520  051520
 8612  072522  051562
 8613  072524  051624
 8614  072526  051666
 8615  072530  051730
 8616  072532  051775
 8617  072534  052055
 8618  072536  052132
 8619  072540  052207
 8620  072542  052265
 8621  072544  052341
 8622  072546  052433
 8623  072550  052520
 8624  072552  052564
 8625  072554  052635
 8626  072556  052713
 8627  072560  053002
 8628  072562  053045
 8629  072564  053132
 8630  072566  053211
 8631  072570  053276
 8632  072572  053355
 8633  072574  053434
 8634  072576  053500
 8635  072600  053544
 8636  072602  053603
 8637  072604  053657
 8638  072606  053726
 8639  072610  054001
 8640  072612  054047
 8641  072614  054122
 8642  072616  054171
 8643  072620  054244
 8644  072622  054312

;;*****************************************************************
HEADER: 0
        HED1
        HED2
        HED3
        HED4
        HED5
        HED6
        HED7
        HED10
        HED11
        HED12
        HED13
        HED14
        HED15
        HED16
        HED17
        HED20
        HED21
        HED22
        HED23
        HED24
        HED25
        HED26
        HED27
        HED30
        HED31
        HED32
        HED33
        HED34
        HED35
        HED36
        HED37
        HED40
        HED41
        HED42
        HED43
        HED44
        HED45
        HED46
        HED47
        HED50
        HED51
        HED52
        HED53
        HED54
        HED55
        HED56
        HED57
        HED60
        HED61
        HED62
        HED63
        HED64
        HED65
        HED66
```

```
 8645  072624  054366                HED67
 8646  072626  054435                HED70
 8647  072630  054511                HED71
 8648  072632  054557                HED72
 8649  072634  054633                HED73
 8650  072636  054702                HED74
 8651  072640  054756                HED75
 8652  072642  055024                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

072644                          $SCOPE:
072644  104407                         CKSWR                   ;;TEST  FOR CHANGE IN SOFT-SWR
072646  032777  040000  106264  1$:     BIT     #BIT14,@SWR     ;;LOOP ON PRESENT TEST?
072654  001111                         BNE     $OVER           ;;YES IF SW14=1
                                ;#####START OF CODE FOR THE XOR TESTER#####
072656  000416                  $XTSTR: BR      6$              ;;IF RUNNING ON THE ''XOR'' TESTER CHANGE
                                                                ;;THIS INSTRUCTION TO A ''NOP'' (NOP-240)
072660  013746  000004                 MOV     @#ERRVEC,-(SP)  ;;SAVE THE CONTENTS OF THE ERROR VECTOR
072664  012737  072704  000004         MOV     #5$,@#ERRVEC    ;;SET FOR TIMEOUT
072672  005737  177060                 TST     @#177060        ;;TIME OUT ON XOR?
072676  012637  000004                 MOV     (SP)+,@#ERRVEC  ;;RESTORE THE ERROR VECTOR
072702  000463                         BR      $SVLAD          ;;GO TO THE NEXT TEST
072704  022626                  5$:     CMP     (SP)+,(SP)+     ;;CLEAR THE STACK AFTER A TIME OUT
072706  012637  000004                 MOV     (SP)+,@#ERRVEC  ;;RESTORE THE ERROR VECTOR
072712  000423                         BR      7$              ;;LOOP ON THE PRESENT TEST
072714                          6$:;#####END OF CODE FOR THE XOR TESTER#####
072714  032777  000400  106216         BIT     #BIT08,@SWR     ;;LOOP ON SPEC. TEST?
072722  001404                         BEQ     2$              ;;BR IF NO
072724  127737  106210  001102         CMPB    @SWR,$TSTNM     ;;ON THE RIGHT TEST?    SWR<7:0>
072732  001462                         BEQ     $OVER           ;;BR IF YES
072734  105737  001103          2$:    TSTB    $ERFLG          ;;HAS AN ERROR OCCURRED?
072740  001421                         BEQ     3$              ;;BR IF NO
072742  123737  001115  001103         CMPB    $ERMAX,$ERFLG   ;;MAX. ERRORS FOR THIS TEST OCCURRED?
072750  101015                         BHI     3$              ;;BR IF NO
072752  032777  001000  106160         BIT     #BIT09,@SWR     ;;LOOP ON ERROR?
072760  001404                         BEQ     4$              ;;BR IF NO
072762  013737  001110  001106  7$:     MOV     $LPERR,$LPADR   ;;SET LOOP ADDRESS TO LAST SCOPE
072770  000443                         BR      $OVER
072772  105037  001103          4$:    CLRB    $ERFLG          ;;ZERO THE ERROR FLAG
072776  005037  001212                 CLR     $TIMES          ;;CLEAR THE NUMBER OF ITERATIONS TO MAKE
073002  000415                         BR      1$              ;;ESCAPE TO THE NEXT TEST
073004  032777  004000  106126  3$:     BIT     #BIT11,@SWR     ;;INHIBIT ITERATIONS?
073012  001011                         BNE     1$              ;;BR IF YES
073014  005737  001100                 TST     $PASS           ;;IF FIRST PASS OF PROGRAM
073020  001406                         BEQ     1$              ;;      INHIBIT ITERATIONS
073022  005237  001104                 INC     $ICNT           ;;INCREMENT ITERATION COUNT
073026  023737  001212  001104         CMP     $TIMES,$ICNT    ;;CHECK THE NUMBER OF ITERATIONS MADE
073034  002021                         BGE     $OVER           ;;BR IF MORE ITERATION REQUIRED
073036  012737  000001  001104  1$:     MOV     #1,$ICNT        ;;REINITIALIZE THE ITERATION COUNTER
073044  013737  073114  001212         MOV     $MXCNT,$TIMES   ;;SET NUMBER OF ITERATIONS TO DO
073052  105237  001102          $SVLAD: INCB    $TSTNM          ;;COUNT TEST NUMBERS
073056  011637  001106                 MOV     (SP),$LPADR     ;;SAVE SCOPE LOOP ADDRESS
```

```
 8709  073062  011637  001110                 MOV     (SP),$LPERR     ;;SAVE ERROR LOOP ADDRESS
 8710  073066  005037  001214                 CLR     $ESCAPE         ;;CLEAR THE ESCAPE FROM ERROR ADDRESS
 8711  073072  112737  000001  001115         MOVB    #1,$ERMAX       ;;ONLY ALLOW ONE(1) ERROR ON NEXT TEST
 8712  073100  013777  001102  106034 $OVER:  MOV     $TSTNM,@DISPLAY ;;DISPLAY TEST NUMBER
 8713  073106  013716  001106                 MOV     $LPADR,(SP)     ;;FUDGE RETURN ADDRESS
 8714  073112  000002                         RTI                     ;;FIXES PS
 8715  073114  000100                 $MXCNT: 100                     ;;MAX. NUMBER OF ITERATIONS
 8716                                  .SBTTL  POWER DOWN AND UP ROUTINES
 8717
 8718                                  ;;**********************************************************************
 8719                                  ;POWER DOWN ROUTINE
 8720  073116  012737  073256  000024 $PWRDN: MOV     #$ILLUP,@#PWRVEC ;;SET FOR FAST UP
 8721  073124  012737  000340  000026         MOV     #340,@#PWRVEC+2 ;;PRIO:7
 8722  073132  010046                         MOV     R0,-(SP)        ;;PUSH R0 ON STACK
 8723  073134  010146                         MOV     R1,-(SP)        ;;PUSH R1 ON STACK
 8724  073136  010246                         MOV     R2,-(SP)        ;;PUSH R2 ON STACK
 8725  073140  010346                         MOV     R3,-(SP)        ;;PUSH R3 ON STACK
 8726  073142  010446                         MOV     R4,-(SP)        ;;PUSH R4 ON STACK
 8727  073144  010546                         MOV     R5,-(SP)        ;;PUSH R5 ON STACK
 8728  073146  017746  105766                 MOV     @SWR,-(SP)      ;;PUSH @SWR ON STACK
 8729  073152  010637  073262                 MOV     SP,$SAVR6       ;;SAVE SP
 8730  073156  012737  073170  000024         MOV     #$PWRUP,@#PWRVEC ;;SET UP VECTOR
 8731  073164  000000                         HALT
 8732  073166  000776                         BR      .-2             ;;HANG UP
 8733
 8734                                  ;;**********************************************************************
 8735                                  ;POWER UP ROUTINE
 8736  073170  012737  073256  000024 $PWRUP: MOV     #$ILLUP,@#PWRVEC ;;SET FOR FAST DOWN
 8737  073176  013706  073262                 MOV     $SAVR6,SP       ;;GET SP
 8738  073202  005037  073262                 CLR     $SAVR6          ;;WAIT LOOP FOR THE TTY
 8739  073206  005237  073262         1$:     INC     $SAVR6          ;;WAIT FOR THE INC
 8740  073212  001375                         BNE     1$              ;;OF  WORD
 8741  073214  012677  105720                 MOV     (SP)+,@SWR      ;;POP STACK INTO @SWR
 8742  073220  012605                         MOV     (SP)+,R5        ;;POP STACK INTO R5
 8743  073222  012604                         MOV     (SP)+,R4        ;;POP STACK INTO R4
 8744  073224  012603                         MOV     (SP)+,R3        ;;POP STACK INTO R3
 8745  073226  012602                         MOV     (SP)+,R2        ;;POP STACK INTO R2
 8746  073230  012601                         MOV     (SP)+,R1        ;;POP STACK INTO R1
 8747  073232  012600                         MOV     (SP)+,R0        ;;POP STACK INTO R0
 8748  073234  012737  073116  000024         MOV     #$PWRDN,@#PWRVEC ;;SET UP THE POWER DOWN VECTOR
 8749  073242  012737  000340  000026         MOV     #340,@#PWRVEC+2 ;;PRIO:7
 8750  073250  104401                         TYPE                    ;REPORT THE POWER FAILURE
 8751  073252  073264                 $PWRMG: .WORD   $POWER          ;;POWER FAIL MESSAGE POINTER
 8752  073254  000002                         RTI
 8753  073256  000000                 $ILLUP: HALT                    ;;THE POWER UP SEQUENCE WAS STARTED
 8754  073260  000776                         BR      .-2             ;; BEFORE THE POWER DOWN WAS COMPLETE
 8755  073262  000000                 $SAVR6: 0                       ;;PUT THE SP HERE
 8756  073264  005015  047520  042527 $POWER: .ASCIZ   <15><12>'POWER'
 8757  073272  000122
 8758                                          .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
                                ;*

073274  105737  001157          $TYPE:  TSTB    $TPFLG          ;;IS THERE A TERMINAL?
073300  100002                          BPL     1$              ;;BR IF YES
073302  000000                          HALT                    ;;HALT HERE IF NO TERMINAL
073304  000407                          BR      3$              ;;LEAVE
073306  010046                  1$:     MOV     R0,-(SP)        ;;SAVE R0
073310  017600  000002                  MOV     @2(SP),R0       ;;GET ADDRESS OF ASCIZ STRING
073314  112046                  2$:     MOVB    (R0)+,-(SP)     ;;PUSH CHARACTER TO BE TYPED ONTO STACK
073316  001005                          BNE     4$              ;;BR IF IT ISN'T THE TERMINATOR
073320  005726                          TST     (SP)+           ;;IF TERMINATOR POP IT OFF THE STACK
073322  012600                  60$:    MOV     (SP)+,R0        ;;RESTORE R0
073324  062716  000002          3$:     ADD     #2,(SP)         ;;ADJUST RETURN PC
073330  000002                          RTI                     ;;RETURN
073332  122716  000011          4$:     CMPB    #HT,(SP)        ;;BRANCH IF <HT>
073336  001430                          BEQ     8$
073340  122716  000200                  CMPB    #CRLF,(SP)      ;;BRANCH IF NOT <CRLF>
073344  001006                          BNE     5$
073346  005726                          TST     (SP)+           ;;POP  <CR><LF> EQUIV
073350  104401                          TYPE                    ;;TYPE A CR AND LF
073352  001223                          $CRLF
073354  105037  073510                  CLRB    $CHARCNT        ;;CLEAR CHARACTER COUNT
073360  000755                          BR      2$              ;;GET NEXT CHARACTER
073362  004737  073444          5$:     JSR     PC,$TYPEC       ;;GO TYPE THIS CHARACTER
073366  123726  001156          6$:     CMPB    $FILLC,(SP)+    ;;IS IT TIME FOR FILLER CHARS.?
073372  001350                          BNE     2$              ;;IF NO GO GET NEXT CHAR.
073374  013746  001154                  MOV     $NULL,-(SP)     ;;GET # OF FILLER CHARS. NEEDED
                                                                ;;AND THE NULL CHAR.
073400  105366  000001          7$:     DECB    1(SP)           ;;DOES A NULL NEED TO BE TYPED?
073404  002770                          BLT     6$              ;;BR IF NO--GO POP THE NULL OFF OF STACK
073406  004737  073444                  JSR     PC,$TYPEC       ;;GO TYPE A NULL
073412  105337  073510                  DECB    $CHARCNT        ;;DO NOT COUNT AS A COUNT
073416  000770                          BR      7$              ;;LOOP

                                ;HORIZONTAL TAB PROCESSOR

073420  112716  000040          8$:     MOVB    #' ,(SP)        ;;REPLACE TAB WITH SPACE
073424  004737  073444          9$:     JSR     PC,$TYPEC       ;;TYPE A SPACE
073430  132737  000007  073510          BITB    #7,$CHARCNT     ;;BRANCH IF NOT AT
073436  001372                          BNE     9$              ;;TAB STOP
073440  005726                          TST     (SP)+           ;;POP SPACE OFF STACK
```

```
 8815  073442  000724                          BR      2$              ;;GET NEXT CHARACTER
 8816  073444  105777  105500          $TYPEC: TSTB    @$TPS           ;;WAIT UNTIL PRINTER IS READY
 8817  073450  100375                          BPL     $TYPEC
 8818  073452  116677  000002  105472          MOVB    2(SP),@$TPB     ;;LOAD CHAR TO BE TYPED INTO DATA REG.
 8819  073460  122766  000015  000002          CMPB    #CR,2(SP)       ;;IS CHARACTER A CARRIAGE RETURN?
 8820  073466  001003                          BNE     1$              ;;BRANCH IF NO
 8821  073470  105037  073510                  CLRB    $CHARCNT        ;;YES--CLEAR CHARACTER COUNT
 8822  073474  000406                          BR      $TYPEX          ;;EXIT
 8823  073476  122766  000012  000002  1$:     CMPB    #LF,2(SP)       ;;IS CHARACTER A LINE FEED?
 8824  073504  001402                          BEQ     $TYPEX          ;;BRANCH IF YES
 8825  073506  105227                          INCB    (PC)+           ;;COUNT THE CHARACTER
 8826  073510  000000          $CHARCNT:.WORD  0               ;;CHARACTER COUNT STORAGE
 8827  073512  000207          $TYPEX: RTS     PC
 8828
```

```
                                .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

073514  017646  000000         $TYPOS: MOV     @(SP),-(SP)     ;;PICKUP THE MODE
073520  116637  000001  073737         MOVB    1(SP),$OFILL    ;;LOAD ZERO FILL SWITCH
073526  112637  073741                 MOVB    (SP)+,$OMODE+1  ;;NUMBER OF DIGITS TO TYPE
073532  062716  000002                 ADD     #2,(SP)         ;;ADJUST RETURN ADDRESS
073536  000406                         BR      $TYPON
073540  112737  000001  073737 $TYPOC: MOVB    #1,$OFILL       ;;SET THE ZERO FILL SWITCH
073546  112737  000006  073741         MOVB    #6,$OMODE+1     ;;SET FOR SIX(6) DIGITS
073554  112737  000005  073736 $TYPON: MOVB    #5,$OCNT        ;;SET THE ITERATION COUNT
073562  010346                         MOV     R3,-(SP)        ;;SAVE R3
073564  010446                         MOV     R4,-(SP)        ;;SAVE R4
073566  010546                         MOV     R5,-(SP)        ;;SAVE R5
073570  113704  073741                 MOVB    $OMODE+1,R4     ;;GET THE NUMBER OF DIGITS TO TYPE
073574  005404                         NEG     R4
073576  062704  000006                 ADD     #6,R4           ;;SUBTRACT IT FOR MAX. ALLOWED
073602  110437  073740                 MOVB    R4,$OMODE       ;;SAVE IT FOR USE
073606  113704  073737                 MOVB    $OFILL,R4       ;;GET THE ZERO FILL SWITCH
073612  016605  000012                 MOV     12(SP),R5       ;;PICKUP THE INPUT NUMBER
073616  005003                         CLR     R3              ;;CLEAR THE OUTPUT WORD
073620  006105                 1$:     ROL     R5              ;;ROTATE MSB INTO "C"
073622  000404                         BR      3$              ;;GO DO MSB
073624  006105                 2$:     ROL     R5              ;;FORM THIS DIGIT
073626  006105                         ROL     R5
073630  006105                         ROL     R5
073632  010503                         MOV     R5,R3
073634  006103                 3$:     ROL     R3              ;;GET LSB OF THIS DIGIT
073636  105337  073740                 DECB    $OMODE          ;;TYPE THIS DIGIT?
073642  100016                         BPL     7$              ;;BR IF NO
073644  042703  177770                 BIC     #177770,R3      ;;GET RID OF JUNK
073650  001002                         BNE     4$              ;;TEST FOR 0
073652  005704                         TST     R4              ;;SUPPRESS THIS 0?
073654  001403                         BEQ     5$              ;;BR IF YES
```

```
 8885  073656  005204                  4$:     INC     R4              ;;DON'T SUPPRESS ANYMORE 0'S
 8886  073660  052703  000060          5$:     BIS     #'0,R3          ;;MAKE THIS DIGIT ASCII
 8887  073664  052703  000040                  BIS     #' ,R3          ;;MAKE ASCII IF NOT ALREADY
 8888  073670  110337  073734                  MOVB    R3,8$           ;;SAVE FOR TYPING
 8889  073674  104401  073734                  TYPE    ,8$             ;;GO TYPE THIS DIGIT
 8890  073700  105337  073736          7$:     DECB    $OCNT           ;;COUNT BY 1
 8891  073704  003347                          BGT     2$              ;;BR IF MORE TO DO
 8892  073706  002402                          BLT     6$              ;;BR IF DONE
 8893  073710  005204                          INC     R4              ;;INSURE LAST DIGIT ISN'T A BLANK
 8894  073712  000744                          BR      2$              ;;GO DO THE LAST DIGIT
 8895  073714  012605                  6$:     MOV     (SP)+,R5        ;;RESTORE R5
 8896  073716  012604                          MOV     (SP)+,R4        ;;RESTORE R4
 8897  073720  012603                          MOV     (SP)+,R3        ;;RESTORE R3
 8898  073722  016666  000002  000004          MOV     2(SP),4(SP)     ;;SET THE STACK FOR RETURNING
 8899  073730  012616                          MOV     (SP)+,(SP)
 8900  073732  000002                          RTI                     ;;RETURN
 8901  073734     000          8$:     .BYTE   0               ;;STORAGE FOR ASCII DIGIT
 8902  073735     000                  .BYTE   0               ;;TERMINATOR FOR TYPE ROUTINE
 8903  073736     000          $OCNT:  .BYTE   0               ;;OCTAL DIGIT COUNTER
 8904  073737     000          $OFILL: .BYTE   0               ;;ZERO FILL SWITCH
 8905  073740  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

073742                          $TYPDS:
073742  010046                          MOV     R0,-(SP)        ;;PUSH R0 ON STACK
073744  010146                          MOV     R1,-(SP)        ;;PUSH R1 ON STACK
073746  010246                          MOV     R2,-(SP)        ;;PUSH R2 ON STACK
073750  010346                          MOV     R3,-(SP)        ;;PUSH R3 ON STACK
073752  010546                          MOV     R5,-(SP)        ;;PUSH R5 ON STACK
073754  012746  020200                  MOV     #20200,-(SP)    ;;SET BLANK SWITCH AND SIGN
073760  016605  000020                  MOV     20(SP),R5       ;;GET THE INPUT NUMBER
073764  100004                          BPL     1$              ;;BR IF INPUT IS POS.
073766  005405                          NEG     R5              ;;MAKE THE BINARY NUMBER POS.
073770  112766  000055  000001          MOVB    #'-,1(SP)       ;;MAKE THE ASCII NUMBER NEG.
073776  005000                  1$:     CLR     R0              ;;ZERO THE CONSTANTS INDEX
074000  012703  074156                  MOV     #$DBLK,R3       ;;SETUP THE OUTPUT POINTER
074004  112723  000040                  MOVB    #' ,(R3)+       ;;SET THE FIRST CHARACTER TO A BLANK
074010  005002                  2$:     CLR     R2              ;;CLEAR THE BCD NUMBER
074012  016001  074146                  MOV     $DTBL(R0),R1    ;;GET THE CONSTANT
074016  160105                  3$:     SUB     R1,R5           ;;FORM THIS BCD DIGIT
074020  002402                          BLT     4$              ;;BR IF DONE
074022  005202                          INC     R2              ;;INCREASE THE BCD DIGIT BY 1
074024  000774                          BR      3$
074026  060105                  4$:     ADD     R1,R5           ;;ADD BACK THE CONSTANT
074030  005702                          TST     R2              ;;CHECK IF BCD DIGIT=0
074032  001002                          BNE     5$              ;;FALL THROUGH IF 0
074034  105716                          TSTB    (SP)            ;;STILL DOING LEADING 0'S?
074036  100407                          BMI     7$              ;;BR IF YES
074040  106316                  5$:     ASLB    (SP)            ;;MSD?
074042  103003                          BCC     6$              ;;BR IF NO
074044  116663  000001  177777          MOVB    1(SP),-1(R3)    ;;YES--SET THE SIGN
074052  052702  000060          6$:     BIS     #'0,R2          ;;MAKE THE BCD DIGIT ASCII
074056  052702  000040          7$:     BIS     #' ,R2          ;;MAKE IT A SPACE IF NOT ALREADY A DIGIT
074062  110223                          MOVB    R2,(R3)+        ;;PUT THIS CHARACTER IN THE OUTPUT BUFFER
074064  005720                          TST     (R0)+           ;;JUST INCREMENTING
074066  020027  000010                  CMP     R0,#10          ;;CHECK THE TABLE INDEX
074072  002746                          BLT     2$              ;;GO DO THE NEXT DIGIT
074074  003002                          BGT     8$              ;;GO TO EXIT
074076  010502                          MOV     R5,R2           ;;GET THE LSD
074100  000764                          BR      6$              ;;GO CHANGE TO ASCII
074102  105726                  8$:     TSTB    (SP)+           ;;WAS THE LSD THE FIRST NON-ZERO?
074104  100003                          BPL     9$              ;;BR IF NO
074106  116663  177777  177776          MOVB    -1(SP),-2(R3)   ;;YES--SET THE SIGN FOR TYPING
074114  105013                  9$:     CLRB    (R3)            ;;SET THE TERMINATOR
074116  012605                          MOV     (SP)+,R5        ;;POP STACK INTO R5
074120  012603                          MOV     (SP)+,R3        ;;POP STACK INTO R3
074122  012602                          MOV     (SP)+,R2        ;;POP STACK INTO R2
```

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 8962  074124  012601                        MOV     (SP)+,R1        ;;POP STACK INTO R1
 8963  074126  012600                        MOV     (SP)+,R0        ;;POP STACK INTO R0
 8964  074130  104401  074156                TYPE    ,$DBLK          ;;NOW TYPE THE NUMBER
 8965  074134  016666  000002  000004        MOV     2(SP),4(SP)     ;;ADJUST THE STACK
 8966  074142  012616                        MOV     (SP)+,(SP)
 8967  074144  000002                        RTI                     ;;RETURN TO USER
 8968  074146  023420                $DTBL:  10000.
 8969  074150  001750                        1000.
 8970  074152  000144                        100.
 8971  074154  000012                        10.
 8972  074156  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.

074166                  $ERRTYP:
074166  104401  001223          TYPE    ,$CRLF          ;;''CARRIAGE RETURN'' & 'LINE FEED''
074172  010046                  MOV     R0,-(SP)        ;;SAVE R0
074174  005000                  CLR     R0              ;;PICKUP THE ITEM INDEX
074176  153700  001114          BISB    @#$ITEMB,R0
074202  001004                  BNE     1$              ;;IF ITEM NUMBER IS ZERO, JUST
                                                        ;;TYPE THE PC OF THE ERROR
074204  013746  001116          MOV     $ERRPC,-(SP)    ;;SAVE $ERRPC FOR TYPEOUT
                                                        ;;ERROR ADDRESS
074210  104402                  TYPOC                   ;;GO TYPE--OCTAL ASCII(ALL DIGITS)
074212  000426                  BR      6$              ;;GET OUT
074214  005300          1$:     DEC     R0              ;;ADJUST THE INDEX SO THAT IT WILL
074216  006300                  ASL     R0              ;;      WORK FOR THE ERROR TABLE
074220  006300                  ASL     R0
074222  006300                  ASL     R0
074224  062700  001226          ADD     #$ERRTB,R0      ;;FORM TABLE POINTER
074230  012037  074240          MOV     (R0)+,2$        ;;PICKUP 'ERROR MESSAGE'' POINTER
074234  001404                  BEQ     3$              ;;SKIP TYPEOUT IF NO POINTER
074236  104401                  TYPE                    ;;TYPE THE 'ERROR MESSAGE''
074240  000000          2$:     .WORD   0               ;;'ERROR MESSAGE'' POINTER GOES HERE
074242  104401  001223          TYPE    ,$CRLF          ;;''CARRIAGE RETURN'' & 'LINE FEED''
074246  012037  074256  3$:     MOV     (R0)+,4$        ;;PICKUP 'DATA HEADER'' POINTER
074252  001404                  BEQ     5$              ;;SKIP TYPEOUT IF 0
074254  104401                  TYPE                    ;;TYPE THE 'DATA HEADER''
074256  000000          4$:     .WORD   0               ;;'DATA HEADER'' POINTER GOES HERE
074260  104401  001223          TYPE    ,$CRLF          ;;''CARRIAGE RETURN'' & 'LINE FEED''
074264  011000          5$:     MOV     (R0),R0         ;;PICKUP 'DATA TABLE'' POINTER
074266  001004                  BNE     7$              ;;GO TYPE THE DATA
074270  012600          6$:     MOV     (SP)+,R0        ;;RESTORE R0
074272  104401  001223          TYPE    ,$CRLF          ;;''CARRIAGE RETURN'' & 'LINE FEED''
074276  000207                  RTS     PC              ;;RETURN
074300                  7$:
074300  013046                  MOV     @(R0)+,-(SP)    ;;SAVE @(R0)+ FOR TYPEOUT
074302  104402                  TYPOC                   ;;GO TYPE--OCTAL ASCII(ALL DIGITS)
074304  005710                  TST     (R0)            ;;IS THERE ANOTHER NUMBER?
074306  001770                  BEQ     6$              ;;BR IF NO
074310  104401  074316          TYPE    ,8$             ;;TYPE TWO(2) SPACES
074314  000771                  BR      7$              ;;LOOP
074316  020040      000 8$:     .ASCIZ  /  /            ;;TWO(2) SPACES
074322                          .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

074322                  $ERROR:
074322  104407                    CKSWR                   ;;TEST FOR CHANGE IN SOFT-SWR
074324  105237  001103    7$:     INCB    $ERFLG          ;;SET THE ERROR FLAG
074330  001775                    BEQ     7$              ;;DON'T LET THE FLAG GO TO ZERO
074332  013777  001102  104602    MOV     $TSTNM,@DISPLAY ;;DISPLAY TEST NUMBER AND ERROR FLAG
074340  032777  002000  104572    BIT     #BIT10,@SWR     ;;BELL ON ERROR?
074346  001402                    BEQ     1$              ;;NO - SKIP
074350  104401  001216            TYPE    ,$BELL          ;;RING BELL
074354  005237  001112    1$:     INC     $ERTTL          ;;COUNT THE NUMBER OF ERRORS
074360  011637  001116            MOV     (SP),$ERRPC     ;;GET ADDRESS OF ERROR INSTRUCTION
074364  162737  000002  001116    SUB     #2,$ERRPC
074372  117737  104520  001114    MOVB    @$ERRPC,$ITEMB  ;;STRIP AND SAVE THE ERROR ITEM CODE
074400  032777  020000  104532    BIT     #BIT13,@SWR     ;;SKIP TYPEOUT IF SET
074406  001004                    BNE     20$             ;;SKIP TYPEOUTS
074410  004737  050140            JSR     PC,TSTNMB       ;;GO TO USER ERROR ROUTINE
074414  104401  001223            TYPE    ,$CRLF
074420                  20$:
074420  005777  104514    2$:     TST     @SWR            ;;HALT ON ERROR
074424  100002                    BPL     3$              ;;SKIP IF CONTINUE
074426  000000                    HALT                    ;;HALT ON ERROR!
074430  104407                    CKSWR                   ;;TEST FOR CHANGE IN SOFT-SWR
074432  032777  001000  104500    BIT     #BIT09,@SWR     ;;LOOP ON ERROR SWITCH SET?
074440  001402                    BEQ     4$              ;;BR IF NO
074442  013716  001110            MOV     $LPERR,(SP)     ;;FUDGE RETURN FOR LOOPING
074446  005737  001214    4$:     TST     $ESCAPE         ;;CHECK FOR AN ESCAPE ADDRESS
074452  001402                    BEQ     5$              ;;BR IF NONE
074454  013716  001214            MOV     $ESCAPE,(SP)    ;;FUDGE RETURN ADDRESS FOR ESCAPE
074460                  5$:
074460  000002                    RTI                     ;;RETURN
```

```
                                .SBTTL  TTY INPUT ROUTINE

                                ;;**********************************************************************
                                .ENABL  LSB
074462  000000                  $TKCNT: .WORD   0               ;;NUMBER OF ITEMS IN QUEUE
074464  000000                  $TKQIN: .WORD   0               ;;INPUT POINTER
074466  000000                  $TKQOUT: .WORD  0               ;;OUTPUT POINTER
074470  000010                  $TKQSRT: .BLKB  8.              ;;TTY KEYBOARD QUEUE
        074500                  $TKQEND=.

                                ;*TK INITIALIZE ROUTINE
                                ;*THIS ROUTINE WILL INITIALIZE THE TTY KEYBOARD INPUT QUEUE
                                ;*SETUP THE INTERRUPT VECTOR AND TURN ON THE KEYBOARD INTERRUPT
                                ;
                                ;*CALL:
                                ;*      JSR     PC,$TKINT
                                ;*      RETURN
                                ;
074500  005037  074462          $TKINT: CLR     $TKCNT          ;;CLEAR COUNT OF ITEMS IN QUEUE
074504  012737  074470  074464          MOV     #$TKQSRT,$TKQIN ;;MOVE THE STARTING ADDRESS OF THE
074512  013737  074464  074466          MOV     $TKQIN,$TKQOUT  ;;QUEUE INTO THE INPUT & OUTPUT POINTERS.
074520  012737  074550  000060          MOV     #$TKSRV,@#TKVEC ;;INITIALIZE THE KEYBOARD VECTOR
074526  012737  000200  000062          MOV     #200,@#TKVEC+2  ;;'BR' LEVEL 4
074534  005777  104406                  TST     @$TKB           ;;CLEAR DONE FLAG
074540  012777  000100  104376          MOV     #100,@$TKS      ;;ENABLE TTY KEYBOARD INTERRUPT
074546  000207                          RTS     PC              ;;RETURN TO CALLER

                                ;*TK SERVICE ROUTINE
                                ;*THIS ROUTINE WILL SERVICE THE TTY KEYBOARD INTERRUPT
                                ;*BY READING THE CHARACTER FROM THE INPUT BUFFER AND PUTTING
                                ;*IT IN THE QUEUE.
                                ;*IF THE CHARACTER IS A ''CONTROL-C'' (^C) $TKINT IS CALLED AND
                                ;*UPON RETURN EXIT IS MADE TO THE ''CONTROL-C'' RESTART ADDRESS (200)
                                ;
074550  117746  104372          $TKSRV: MOVB    @$TKB,-(SP)     ;;PICKUP THE CHARACTER
074554  042716  177600                  BIC     #^C177,(SP)     ;;STRIP THE JUNK
074560  021627  000003                  CMP     (SP),#3         ;;IS IT A CONTROL C?
074564  001007                          BNE     1$              ;;BRANCH IF NO
074566  104401  075664                  TYPE    ,$CNTLC         ;;TYPE A CONTROL-C (^C)
074572  004737  074500                  JSR     PC,$TKINT       ;;INIT THE KEYBOARD
074576  005726                          TST     (SP)+           ;;CLEAN UP STACK
074600  000137  000200                  JMP     200             ;;CONTROL C RESTART
074604  021627  000007          1$:     CMP     (SP),#7         ;;IS IT A CONTROL G?
074610  001004                          BNE     2$              ;;BRANCH IF NO
074612  022737  000176  001140          CMP     #SWREG,SWR      ;;IS SOFT-SWR SELECTED?
074620  001500                          BEQ     6$              ;;GO TO SWR CHANGE

074622                          2$:
074622  022737  000010  074462          CMP     #8.,$TKCNT      ;;IS THE QUEUE FULL?
074630  001004                          BNE     3$              ;;BRANCH IF NO
074632  104401  001216                  TYPE    ,$BELL          ;;RING THE TTY BELL
074636  005726                          TST     (SP)+           ;;CLEAN CHARACTER OFF OF STACK
074640  000451                          BR      5$              ;;EXIT
074642  021627  000023          3$:     CMP     (SP),#23        ;;IS IT A CONTROL-S?
074646  001021                          BNE     32$             ;;BRANCH IF NO
074650  005077  104270                  CLR     @$TKS           ;;DISABLE TTY KEYBOARD INTERRUPTS
```

```
 9119  074654  005726                          TST     (SP)+           ;;CLEAN CHAR OFF STACK
 9120  074656  105777  104262          31$:    TSTB    @$TKS           ;;WAIT FOR A CHAR
 9121  074662  100375                          BPL     31$             ;;LOOP UNTIL ITS THERE
 9122  074664  117746  104256                  MOVB    @$TKB,-(SP)     ;;GET THE CHARACTER
 9123  074670  042716  177600                  BIC     #^C177,(SP)     ;;MAKE IT 7-BIT ASCII
 9124  074674  022627  000021                  CMP     (SP)+,#21       ;;IS IT A CONTROL-Q?
 9125  074700  001366                          BNE     31$             ;;BRANCH IF NO
 9126  074702  012777  000100  104234          MOV     #100,@$TKS      ;;REENABLE TTY KEYBOARD INTERRUPTS
 9127  074710  000002                          RTI                     ;;RETURN
 9128  074712  005237  074462          32$:    INC     $TKCNT          ;;COUNT THIS CHARACTER
 9129  074716  021627  000140                  CMP     (SP),#140       ;;IS IT UPPER CASE?
 9130  074722  002405                          BLT     4$              ;;BRANCH IF YES
 9131  074724  021627  000175                  CMP     (SP),#175       ;;IS IT A SPECIAL CHAR?
 9132  074730  003002                          BGT     4$              ;;BRANCH IF YES
 9133  074732  042716  000040                  BIC     #40,(SP)        ;;MAKE IT UPPER CASE
 9134  074736  112677  177522          4$:     MOVB    (SP)+,@$TKQIN   ;;AND PUT IT IN QUEUE
 9135  074742  005237  074464                  INC     $TKQIN          ;;UPDATE THE POINTER
 9136  074746  023727  074464  074500          CMP     $TKQIN,#$TKQEND ;;GO OFF THE END?
 9137  074754  001003                          BNE     5$              ;;BRANCH IF NO
 9138  074756  012737  074470  074464          MOV     #$TKQSRT,$TKQIN ;;RESET THE POINTER
 9139  074764  000002                  5$:     RTI                     ;;RETURN
 9140
 9141                                  ;;**********************************************************************
 9142                                  ;*SOFTWARE SWITCH REGISTER CHANGE ROUTINE.
 9143                                  ;*ROUTINE IS ENTERED  FROM THE TRAP HANDLER, AND WILL
 9144                                  ;*SERVICE THE TEST FOR CHANGE IN SOFTWARE SWITCH REGISTER TRAP
 9145                                  ;*CALL WHEN OPERATING IN TTY INTERRUPT MODE.
 9146  074766  022737  000176  001140  $CKSWR: CMP     #SWREG,SWR      ;;IS THE SOFT-SWR SELECTED
 9147  074774  001124                          BNE     15$             ;;EXIT IF NOT
 9148  074776  105777  104142                  TSTB    @$TKS           ;;IS A CHAR WAITING?
 9149  075002  100121                          BPL     15$             ;;IF NOT, EXIT
 9150  075004  117746  104136                  MOVB    @$TKB,-(SP)     ;;YES
 9151  075010  042716  177600                  BIC     #^C177,(SP)     ;;MAKE IT  7-BIT ASCII
 9152  075014  021627  000007                  CMP     (SP),#7         ;;IS IT A CONTROL-G?
 9153  075020  001300                          BNE     2$              ;;IF NOT, PUT IT IN THE TTY QUEUE
 9154                                                                  ;;AND EXIT
 9155
 9156                                  ;;**********************************************************************
 9157                                  ;*CONTROL IS PASSED TO THIS POINT FROM EITHER THE TTY INTERRUPT SERVICE
 9158                                  ;*ROUTINE OR FROM THE SOFTWARE SWITCH REGISTER TRAP CALL, AS A RESULT OF A
 9159                                  ;*CONTROL-G BEING TYPED, AND THE SOFTWARE SWITCH REGISTER BEING SELECTED.
 9160  075022  123727  001134  000001  6$:     CMPB    $AUTOB,#1       ;;ARE WE RUNNING IN AUTO-MODE?
 9161  075030  001674                          BEQ     2$              ;;BRANCH IF YES
 9162  075032  005726                          TST     (SP)+           ;;CLEAR CONTROL-G OFF STACK
 9163  075034  004737  074500                  JSR     PC,$TKINT       ;;FLUSH THE TTY INPUT QUEUE
 9164  075040  005077  104100                  CLR     @$TKS           ;;DISABLE TTY KEYBOARD INTERRUPTS
 9165  075044  112737  000001  001135          MOVB    #1,$INTAG       ;;SET INTERRUPT MODE INDICATOR
 9166
 9167  075052  104401  075676                  TYPE    ,$CNTLG         ;;ECHO THE CONTROL-G (^G)
 9168  075056  104401  075703  $GTSWR: TYPE    ,$MSWR          ;;TYPE CURRENT CONTENTS
 9169  075062  013746  000176                  MOV     SWREG,-(SP)     ;;SAVE SWREG FOR TYPEOUT
 9170  075066  104402                          TYPOC                   ;;GO TYPE--OCTAL ASCII(ALL DIGITS)
 9171  075070  104401  075714                  TYPE    ,$MNEW          ;;PROMPT FOR NEW SWR
 9172  075074  005046                  19$:    CLR     -(SP)           ;;CLEAR COUNTER
 9173  075076  005046                          CLR     -(SP)           ;;THE NEW SWR
 9174  075100  105777  104040          7$:     TSTB    @$TKS           ;;CHAR THERE?
```

```
9175  075104  100375                        BPL     7$              ;;IF NOT TRY AGAIN
9176
9177  075106  117746  104034                MOVB    @$TKB,-(SP)     ;;PICK UP CHAR
9178  075112  042716  177600                BIC     #^C177,(SP)     ;;MAKE IT 7-BIT ASCII
9179
9180  075116  021627  000003                CMP     (SP),#3         ;;IS IT A CONTROL-C?
9181  075122  001015                        BNE     9$              ;;BRANCH IF NOT
9182  075124  104401  075664                TYPE    ,$CNTLC         ;;YES, ECHO CONTROL-C (^C)
9183  075130  062706  000006                ADD     #6,SP           ;;CLEAN UP STACK
9184  075134  123727  001135  000001        CMPB    $INTAG,#1       ;;REENABLE TTY KEYBOARD INTERRUPTS?
9185  075142  001003                        BNE     8$              ;;BRANCH IF NO
9186  075144  012777  000100  103772        MOV     #100,@$TKS      ;;ALLOW TTY KEYBOARD INTERRUPTS
9187  075152  000137  000200        8$:     JMP     200             ;;CONTROL-C RESTART
9188
9189
9190  075156  021627  000025        9$:     CMP     (SP),#25        ;;IS IT A CONTROL-U?
9191  075162  001005                        BNE     10$             ;;BRANCH IF NOT
9192  075164  104401  075671                TYPE    ,$CNTLU         ;;YES, ECHO CONTROL-U (^U)
9193  075170  062706  000006        20$:    ADD     #6,SP           ;;IGNORE PREVIOUS INPUT
9194  075174  000737                        BR      19$             ;;LET'S TRY IT AGAIN
9195
9196
9197  075176  021627  000015        10$:    CMP     (SP),#15        ;;IS IT A <CR>?
9198  075202  001022                        BNE     16$             ;;BRANCH IF NO
9199  075204  005766  000004                TST     4(SP)           ;;YES, IS IT THE FIRST CHAR?
9200  075210  001403                        BEQ     11$             ;;BRANCH IF YES
9201  075212  016677  000002  103720        MOV     2(SP),@SWR      ;;SAVE NEW SWR
9202  075220  062706  000006        11$:    ADD     #6,SP           ;;CLEAR UP STACK
9203  075224  104401  001223        14$:    TYPE    ,$CRLF          ;;ECHO <CR> AND <LF>
9204  075230  123727  001135  000001        CMPB    $INTAG,#1       ;;RE-ENABLE TTY KBD INTERRUPTS?
9205  075236  001003                        BNE     15$             ;;BRANCH IF NOT
9206  075240  012777  000100  103676        MOV     #100,@$TKS      ;;RE-ENABLE TTY KBD INTERRUPTS
9207  075246  000002        15$:    RTI                             ;;RETURN
9208  075250  004737  073444        16$:    JSR     PC,$TYPEC       ;;ECHO CHAR
9209  075254  021627  000060                CMP     (SP),#60        ;;CHAR < 0?
9210  075260  002420                        BLT     18$             ;;BRANCH IF YES
9211  075262  021627  000067                CMP     (SP),#67        ;;CHAR > 7?
9212  075266  003015                        BGT     18$             ;;BRANCH IF YES
9213  075270  042726  000060                BIC     #60,(SP)+       ;;STRIP-OFF ASCII
9214  075274  005766  000002                TST     2(SP)           ;;IS THIS THE FIRST CHAR
9215  075300  001403                        BEQ     17$             ;;BRANCH IF YES
9216  075302  006316                        ASL     (SP)            ;;NO, SHIFT PRESENT
9217  075304  006316                        ASL     (SP)            ;;    CHAR OVER TO MAKE
9218  075306  006316                        ASL     (SP)            ;;    ROOM FOR NEW ONE.
9219  075310  005266  000002        17$:    INC     2(SP)           ;;KEEP COUNT OF CHAR
9220  075314  056616  177776                BIS     -2(SP),(SP)     ;;SET IN NEW CHAR
9221  075320  000667                        BR      7$              ;;GET THE NEXT ONE
9222  075322  104401  001222        18$:    TYPE    ,$QUES          ;;TYPE ?<CR><LF>
9223  075326  000720                        BR      20$             ;;SIMULATE CONTROL-U
9224                                .DSABL  LSB
9225
9226
9227                                ;;**********************************************************************
9228                                ;*THIS ROUTINE WILL INPUT A SINGLE CHARACTER FROM THE TTY
9229                                ;*CALL:
9230                                ;*      RDCHR                   ;;GET A CHARACTER FROM THE QUEUE
```

```
                                        ;*      RETURN HERE             ;;CHARACTER IS ON THE STACK
                                        ;*                              ;;WITH PARITY BIT STRIPPED OFF
                                        ;
075330  011646                  $RDCHR: MOV     (SP),-(SP)              ;;PUSH DOWN THE PC AND
075332  016666  000004  000002          MOV     4(SP),2(SP)             ;;THE PS
075340  005066  000004                  CLR     4(SP)                   ;;GET READY FOR A CHARACTER
075344  005046                          CLR     -(SP)                   ;;PUT NEW PS ON STACK
075346  012746  075354                  MOV     #64$,-(SP)              ;;PUT NEW PC ON  STACK
075352  000002                          RTI                             ;;POP NEW PC AND PS
075354                          64$:
075354  005737  074462          1$:     TST     $TKCNT                  ;;WAIT ON A CHARACTER
075360  001775                          BEQ     1$
075362  005337  074462                  DEC     $TKCNT                  ;;DECREMENT THE COUNTER
075366  117766  177074  000004          MOVB    @$TKQOUT,4(SP)          ;;GET ONE CHARACTER
075374  005237  074466                  INC     $TKQOUT                 ;;UPDATE THE POINTER
075400  023727  074466  074500          CMP     $TKQOUT,#$TKQEND        ;;DID IT GO OFF OF THE END?
075406  001003                          BNE     2$                      ;;BRANCH IF NO
075410  012737  074470  074466          MOV     #$TKQSRT,$TKQOUT        ;;RESET THE POINTER
075416  000002                  2$:     RTI                             ;;RETURN
                                        ;;**************************************************************
                                        ;*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
075420  010346                  $RDLIN: MOV     R3,-(SP)                ;;SAVE R3
075422  005046                          CLR     -(SP)                   ;;CLEAR THE RUBOUT KEY
075424  012703  075654          1$:     MOV     #$TTYIN,R3              ;;GET ADDRESS
075430  022703  075664          2$:     CMP     #$TTYIN+8.,R3           ;;BUFFER FULL?
075434  101456                          BLOS    4$                      ;;BR IF YES
075436  104410                          RDCHR                           ;;GO READ ONE CHARACTER FROM THE TTY
075440  112613                          MOVB    (SP)+,(R3)              ;;GET CHARACTER
075442  122713  000177          10$:    CMPB    #177,(R3)               ;;IS IT A RUBOUT
075446  001022                          BNE     5$                      ;;BR IF NO
075450  005716                          TST     (SP)                    ;;IS THIS THE FIRST RUBOUT?
075452  001007                          BNE     6$                      ;;BR IF NO
075454  112737  000134  075652          MOVB    #'\,9$                  ;;TYPE A BACK SLASH
075462  104401  075652                  TYPE    ,9$
075466  012716  177777                  MOV     #-1,(SP)                ;;SET THE RUBOUT KEY
075472  005303                  6$:     DEC     R3                      ;;BACKUP BY ONE
075474  020327  075654                  CMP     R3,#$TTYIN              ;;STACK EMPTY?
075500  103434                          BLO     4$                      ;;BR IF YES
075502  111337  075652                  MOVB    (R3),9$                 ;;SETUP TO TYPEOUT THE DELETED CHAR.
075506  104401  075652                  TYPE    ,9$                     ;;GO TYPE
075512  000746                          BR      2$                      ;;GO READ ANOTHER CHAR.
075514  005716                  5$:     TST     (SP)                    ;;RUBOUT KEY SET?
075516  001406                          BEQ     7$                      ;;BR IF NO
075520  112737  000134  075652          MOVB    #'\,9$                  ;;TYPE A BACK SLASH
075526  104401  075652                  TYPE    ,9$
075532  005016                          CLR     (SP)                    ;;CLEAR THE RUBOUT KEY
075534  122713  000025          7$:     CMPB    #25,(R3)                ;;IS CHARACTER A CTRL U?
075540  001003                          BNE     8$                      ;;BR IF NO
075542  104401  075671                  TYPE    ,$CNTLU                 ;;TYPE A CONTROL 'U''
075546  000726                          BR      1$                      ;;GO START OVER
```

```
9287  075550  122713  000022          8$:     CMPB    #22,(R3)        ;;IS CHARACTER A ''^R''?
9288  075554  001011                          BNE     3$              ;;BRANCH IF NO
9289  075556  105013                          CLRB    (R3)            ;;CLEAR THE CHARACTER
9290  075560  104401  001223                  TYPE    ,$CRLF          ;;TYPE A ''CR'' & ''LF''
9291  075564  104401  075654                  TYPE    ,$TTYIN         ;;TYPE THE INPUT STRING
9292  075570  000717                          BR      2$              ;;GO PICKUP ANOTHER CHACTER
9293  075572  104401  001222          4$:     TYPE    ,$QUES          ;;TYPE A '?'
9294  075576  000712                          BR      1$              ;;CLEAR THE BUFFER AND LOOP
9295  075600  111337  075652          3$:     MOVB    (R3),9$         ;;ECHO THE CHARACTER
9296  075604  104401  075652                  TYPE    ,9$
9297  075610  122723  000015                  CMPB    #15,(R3)+       ;;CHECK FOR RETURN
9298  075614  001305                          BNE     2$              ;;LOOP IF NOT RETURN
9299  075616  105063  177777                  CLRB    -1(R3)          ;;CLEAR RETURN (THE 15)
9300   75622  104401  001224                  TYPE    ,$LF            ;;TYPE A LINE FEED
9301  075626  005726                          TST     (SP)+           ;;CLEAN RUBOUT KEY FROM THE STACK
9302  075630  012603                          MOV     (SP)+,R3        ;;RESTORE R3
9303  075632  011646                          MOV     (SP),-(SP)      ;;ADJUST THE STACK AND PUT ADDRESS OF THE
9304  075634  016666  000004  000002          MOV     4(SP),2(SP)     ;;      FIRST ASCII CHARACTER ON IT
9305  075642  012766  075654  000004          MOV     #$TTYIN,4(SP)
9306  075650  000002                          RTI                     ;;RETURN
9307  075652     000          9$:     .BYTE   0                       ;;STORAGE FOR ASCII CHAR. TO TYPE
9308  075653     000                  .BYTE   0                       ;;TERMINATOR
9309  075654  000010          $TTYIN: .BLKB   8.                      ;;RESERVE 8 BYTES FOR TTY INPUT
9310  075664  041536  005015     000  $CNTLC: .ASCIZ  /^C/<15><12>    ;;CONTROL ''C''
9311  075671     136  006525  000012  $CNTLU: .ASCIZ  /^U/<15><12>    ;;CONTROL ''U''
9312  075676  043536  005015     000  $CNTLG: .ASCIZ  /^G/<15><12>    ;;CONTROL ''G''
9313  075703     015  051412  051127  $MSWR:  .ASCIZ  <15><12>/SWR = /
9314  075710  036440  000040
9315  075714  020040  042516  020127  $MNEW:  .ASCIZ  /  NEW = /
9316  075722  020075     000
9317          075726                  .EVEN
```

```
                        .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

075726  011646          $RDOCT: MOV     (SP),-(SP)      ;;PROVIDE SPACE FOR THE
075730  016666  000004  000002  MOV     4(SP),2(SP)     ;;INPUT NUMBER
075736  010046                  MOV     R0,-(SP)        ;;PUSH R0 ON STACK
075740  010146                  MOV     R1,-(SP)        ;;PUSH R1 ON STACK
075742  010246                  MOV     R2,-(SP)        ;;PUSH R2 ON STACK
075744  104411          1$:     RDLIN                   ;;READ AN ASCIZ LINE
075746  012600                  MOV     (SP)+,R0        ;;GET ADDRESS OF 1ST CHARACTER
075750  005001                  CLR     R1              ;;CLEAR DATA WORD
075752  005002                  CLR     R2
075754  112046          2$:     MOVB    (R0)+,-(SP)     ;;PICKUP THIS CHARACTER
075756  001412                  BEQ     3$              ;;IF ZERO GET OUT
075760  006301                  ASL     R1              ;;*2
075762  006102                  ROL     R2
075764  006301                  ASL     R1              ;;*4
075766  006102                  ROL     R2
075770  006301                  ASL     R1              ;;*8
075772  006102                  ROL     R2
075774  042716  177770          BIC     #^C7,(SP)       ;;STRIP THE ASCII JUNK
076000  062601                  ADD     (SP)+,R1        ;;ADD IN THIS DIGIT
076002  000764                  BR      2$              ;;LOOP
076004  005726          3$:     TST     (SP)+           ;;CLEAN TERMINATOR FROM STACK
076006  010166  000012          MOV     R1,12(SP)       ;;SAVE THE RESULT
076012  010237  076026          MOV     R2,$HIOCT
076016  012602                  MOV     (SP)+,R2        ;;POP STACK INTO R2
0,6020  012601                  MOV     (SP)+,R1        ;;POP STACK INTO R1
076022  012600                  MOV     (SP)+,R0        ;;POP STACK INTO R0
076024  000002                  RTI                     ;;RETURN
076026  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.

076030  010046                  $TRAP:  MOV     R0,-(SP)        ;;SAVE R0
076032  016600  000002                  MOV     2(SP),R0        ;;GET TRAP ADDRESS
076036  005740                          TST     -(R0)           ;;BACKUP BY 2
076040  111000                          MOVB    (R0),R0         ;;GET RIGHT BYTE OF TRAP
076042  006300                          ASL     R0              ;;POSITION FOR INDEXING
076044  016000  076064                  MOV     $TRPAD(R0),R0   ;;INDEX TO TABLE
076050  000200                          RTS     R0              ;;GO TO ROUTINE


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

076052  011646                  $TRAP2: MOV     (SP),-(SP)      ;;MOVE THE PC DOWN
076054  016666  000004  000002          MOV     4(SP),2(SP)     ;;MOVE THE PSW DOWN
076062  000002                          RTI                     ;;RESTORE THE PSW


                                .SBTTL  TRAP TABLE

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

                                ;       ROUTINE
                                ;       -------
076064  076052                  $TRPAD: .WORD   $TRAP2
076066  073274                          $TYPE   ;;CALL=TYPE     TRAP+1(104401)  TTY TYPEOUT ROUTINE
076070  073540                          $TYPOC  ;;CALL=TYPOC    TRAP+2(104402)  TYPE OCTAL NUMBER (WITH LEADING ZEROS)
076072  073514                          $TYPOS  ;;CALL=TYPOS    TRAP+3(104403)  TYPE OCTAL NUMBER (NO LEADING ZEROS)
076074  073554                          $TYPON  ;;CALL=TYPON    TRAP+4(104404)  TYPE OCTAL NUMBER (AS PER LAST CALL)
076076  073742                          $TYPDS  ;;CALL=TYPDS    TRAP+5(104405)  TYPE DECIMAL NUMBER (WITH SIGN)

076100  075056                          $GTSWR  ;;CALL=GTSWR    TRAP+6(104406)  GET SOFT-SWR SETTING

076102  074766                          $CKSWR  ;;CALL=CKSWR    TRAP+7(104407)  TEST FOR CHANGE IN SOFT-SWR
076104  075330                          $RDCHR  ;;CALL=RDCHR    TRAP+10(104410) TTY TYPEIN CHARACTER ROUTINE
076106  075420                          $RDLIN  ;;CALL=RDLIN    TRAP+11(104411) TTY TYPEIN STRING ROUTINE
076110  075726                          $RDOCT  ;;CALL=RDOCT    TRAP+12(104412) READ AN OCTAL NUMBER FROM TTY
        000001                  .END
```

```
AB      = 052525        1698#   2556    2697    2829    3203    5477    5759    6041    6323
ABLE      013470        2777    2782    2784    2786#
ADDERR    006372        2046    2052    2056    2059#
ADD1      003320        1637#   1914
ADD2      003322        1638#   1916    1917
ADD3      003324        1639#   1919    1920
ADD4      003326        1640#   1922    1923
AD1ERR    005122        1892    1914#
AD2ERR    005222        1915    1926#
AD3ERR    005242        1918    1930#
AD4ERR    005262        1921    1934#
AHEAD     046106        6565    6568#
ALRIGT    012274        2613    2615#
APE     = 100000        1555#   2127    3149    3291    3396    3593    3698
AROUND    004602        1858    1867#
AS        003412        1679#   2427*   8531
ATA     = 100000        1584#   2151    6450
AT0     = 000001        1614#
AT1     = 000002        1615#
AT2     = 000004        1616#
AT3     = 000010        1617#
AT4     = 000020        1618#
AT5     = 000040        1619#
AT6     = 000100        1620#
AT7     = 000200        1621#
A16     = 000400        1568#   3005    3063    3099    3114    3256    3361    3451    3558    3663    3766    3867    3968
                        6790
A17     = 001000        1569#   3038    3099    3114    3256    3361    3451    3558    3663    3766    3867    3968    6790
BA        003414        1680#   2229*   2278*   2318*   2365*   2503*   2538*   2565*   2589*   2638*   2672*   2675    2678*
                        2700*   2703    2706*   2723*   2726    2730*   2789*   2845*   2884*   2939*   3023*   3118*   3260*
                        3365*   3455*   3562*   3667*   3770*   3871*   3972*   4068*   4133*   4182*   4232*   4282*   4337*
                        4390*   4443*   4496*   4549*   4602*   4655*   4708*   4761*   4814*   4867*   4920*   4973*   5031*
                        5066*   5128*   5168*   5233*   5292*   5368*   5433*   5509*   5574*   5650*   5715*   5791*   5856*
                        5932*   5997*   6073*   6138*   6214*   6279*   6355*   6437*   8517    8535    8537    8539    8545
                        8554
BAE       003416        1681#   2232*   2235*   2281*   2284*   2321*   2324*   2368*   2371*   2425*   2506*   2509*   2541*
                        2544*   2568*   2571*   2592*   2595*   2631*   2634    2641*   2644*   2681*   2684*   2709*   2712*
                        2733*   2736*   2792*   2795*   2848*   2851*   2887*   2890*   2942*   2945*   3026*   3029*   3121*
                        3124*   3263*   3266*   3368*   3371*   3458*   3461*   3565*   3568*   3670*   3673*   3773*   3776*
                        3874*   3877*   3975*   3978*   4071*   4074*   4136*   4139*   4185*   4188*   4235*   4238*   4285*
                        4288*   4340*   4343*   4393*   4396*   4446*   4449*   4499*   4502*   4552*   4555*   4605*   4608*
                        4658*   4661*   4711*   4714*   4764*   4767*   4817*   4820*   4870*   4873*   4923*   4926*   4976*
                        4979*   5034*   5037*   5069*   5072*   5131*   5134*   5171*   5174*   5236*   5239*   5295*   5298*
                        5371*   5374*   5436*   5439*   5512*   5515*   5577*   5580*   5653*   5656*   5718*   5721*   5794*
                        5797*   5859*   5862*   5935*   5938*   6000*   6003*   6076*   6079*   6141*   6144*   6217*   6220*
                        6282*   6285*   6358*   6361*   6440*   6443*   8515    8531    8535    8537    8545    8554
BAETST    012326        2630#   2655
BAI     = 000010        1529#   4374    4427    6795    6810
BAKER     021454        3652    3657    3659    3661#
BATST     012540        2671#   2696
BATSTA    012730        2694    2697#
BEAU      033642        5142    5145#
BEFORE    004122        1782#   2122    2131    2138    2146    2153    3152*   3154*   3294*   3296*   3399*   3401*   3489*
                        3491*   3596*   3598*   3701*   3703*   3804*   3806*   3905*   3907*   4006*   4008*   4091*   4093*
BEGIN     004144         495    1794#
BEGIN1    004176         493    1804#
```

```
BEGIN2  004166          1801#  6627
BEGIN3  004152           497   1797#
BEHIND  046062          6563#  6567
BITCNT  003446          1750#  2351*  2354*  2356*  2359*  2382*  2385*  2387*  2390*  2395*  2398*  2775*  2778*
                        2780*  2783*  2831*  2834*  2836*  2839*  2869*  2872*  2874*  2877*  2925*  2928*  2930*
                        2933*  3009*  3012*  3014*  3017*  3100*  3103*  3105*  3108*  3205*  3208*  3210*  3213*
                        3218*  3219*  3222*  3225*  3227*  3230*  3242*  3245*  3247*  3250*  3348*  3351*  3353*
                        3356*  3545*  3548*  3550*  3553*  3650*  3653*  3655*  3658*  3753*  3756*  3758*  3761*
                        3854*  3857*  3859*  3862*  3955*  3958*  3960*  3963*  4054*  4057*  4059*  4062*  4119*
                        4122*  4124*  4127*  4168*  4171*  4173*  4176*  4218*  4221*  4223*  4226*  4268*  4271*
                        4273*  4276*  4323*  4326*  4328*  4331*  4376*  4379*  4381*  4384*  4429*  4432*  4434*
                        4437*  4482*  4485*  4487*  4490*  4535*  4538*  4540*  4543*  4588*  4591*  4593*  4596*
                        4641*  4644*  4646*  4649*  4694*  4697*  4699*  4702*  4747*  4750*  4752*  4755*  4800*
                        4803*  4805*  4808*  4853*  4856*  4858*  4861*  4906*  4909*  4911*  4914*  4959*  4962*
                        4964*  4967*  5017*  5020*  5022*  5025*  5052*  5055*  5057*  5060*  5114*  5117*  5119*
                        5122*  5146*  5147*  5154*  5157*  5159*  5162*  5219*  5222*  5224*  5227*  5278*  5281*
                        5283*  5286*  5345*  5346*  5347   5354*  5357*  5359*  5362*  5419*  5422*  5424*  5427*
                        5486*  5487*  5488   5495*  5498*  5500*  5503*  5560*  5563*  5565*  5568*  5627*  5628*
                        5629   5636*  5639*  5641*  5644*  5701*  5704*  5706*  5709*  5768*  5769*  5770   5777*
                        5780*  5782*  5785*  5842*  5845*  5847*  5850*  5909*  5910*  5911   5918*  5921*  5923*
                        5926*  5983*  5986*  5988*  5991*  6050*  6051*  6052   6059*  6062*  6064*  6067*  6124*
                        6127*  6129*  6132*  6191*  6192*  6193   6200*  6203*  6205*  6208*  6265*  6268*  6270*
                        6273*  6332*  6333*  6334   6341*  6344*  6346*  6349*  6418*  6421*  6423*  6426*  6645*
                        6658   6660*  6662*  6673   6675*  6680   6684   6768*  6771*  6773*  6776*
BIT0   = 000001          468#   6642
BIT00  = 000001          458#   468
BIT01  = 000002          457#   467
BIT02  = 000004          456#   466
BIT03  = 000010          455#   465
BIT04  = 000020          454#   464
BIT05  = 000040          453#   463
BIT06  = 000100          452#   462
BIT07  = 000200          451#   461
BIT08  = 000400          450#   460    8683
BIT09  = 001000          449#   459    8691   9055
BIT1   = 000002          467#   6412
BIT10  = 002000          448#   9039
BIT11  = 004000          447#   8698
BIT12  = 010000          446#
BIT13  = 020000          445#   9046
BIT14  = 040000          444#   8669
BIT15  = 100000          443#
BIT2   = 000004          466#
BIT3   = 000010          465#
BIT4   = 000020          464#
BIT5   = 000040          463#
BIT6   = 000100          462#
BIT7   = 000200          461#
BIT8   = 000400          460#   6638
BIT9   = 001000          459#
BLIP    044602          6409   6411   6416#
BLITZ   044512          6400#  6481
BLKTST  050370          6406   6868#
BL0    = 000040         1631#
BL1    = 000100         1632#
BL2    = 000200         1633#
```

```
BMD18 = 010000  1610#
BOTTOM  045156  6413  6479  6482#
BPTVEC= 000014  475#
BULL    047734  6770  6775  6777  6779#
BUSH    034142  5186  5191#
CHARLE  022220  3755  3760  3762  3764#
CHGE1   032642  5013#
CHGE2   046426  6638#
CHGE3   046436  6642#
CKSWR = 104407  8668  9035  9054  9395#
CLEER   006626  2111#  2262  2302  2342  2405  2473  2519  2617  2656  2757  2906  2985  3079
                3187  3329  3434  3524  3631  3736  3839  3940  4041  4102  4154  4203  4253
                4303  4358  4411  4464  4517  4570  4623  4676  4729  4782  4835  4888  4941
                4994  5095  5197  5258  5324  5399  5465  5540  5606  5681  5747  5822  5888
                5963  6029  6104  6170  6245  6311  6386  6483
CLEVER  045534  6495  6528#
CLR   = 000040  1531#  2111  2207  2226  2275  2315  2394  2481  6795  6810
CORREG  046050  6516  6527  6538  6549  6560  6561#
CPE   = 000010  1589#  2158  3151  3904
CR    = 000015  383#  8819  8829
CRLF  = 000200  384#  8790  8829
CS1     003420  1682#  2227*  2276*  2316*  2363*  2430*  2431  2433  2435*  2501*  2536*  2563*  2587*
                2636*  2676*  2704*  2728*  2787*  2843*  2882*  2937*  3021*  3116*  3258*  3363*  3453*
                3560*  3665*  3768*  3869*  3970*  4066*  4131*  4180*  4230*  4280*  4335*  4388*  4441*
                4494*  4547*  4600*  4653*  4706*  4759*  4812*  4865*  4918*  4971*  5029*  5064*  5126*
                5166*  5231*  5290*  5366*  5431*  5507*  5572*  5648*  5713*  5789*  5854*  5930*  5995*
                6071*  6136*  6212*  6277*  6353*  6435*  8539  8541  8543  8550
CS2     003422  1683#  2237*  2286*  2326*  2373*  2511*  2546*  2573*  2597*  2646*  2686*  2714*  2738*
                2797*  2853*  2892*  2947*  3031*  3112*  3126*  3254*  3268*  3347*  3373*  3463*  3570*
                3675*  3778*  3879*  3980*  4076*  4141*  4190*  4240*  4290*  4345*  4398*  4451*  4504*
                4557*  4610*  4663*  4716*  4769*  4822*  4875*  4928*  4981*  5039*  5074*  5136*  5176*
                5241*  5300*  5376*  5441*  5517*  5582*  5658*  5723*  5799*  5864*  5940*  6005*  6081*
                6146*  6222*  6287*  6363*  6445*  8521  8523  8541  8545  8550  8558
CS3     003424  1684#  2233*  2236*  2282*  2285*  2322*  2325*  2369*  2372*  2488*  2489  2497*  2507*
                2510*  2542*  2545*  2569*  2572*  2593*  2596*  2642*  2645*  2682*  2685*  2710*  2713*
                2734*  2737*  2793*  2796*  2849*  2852*  2888*  2891*  2943*  2946*  3027*  3030*  3122*
                3125*  3264*  3267*  3369*  3372*  3459*  3462*  3566*  3569*  3671*  3674*  3774*  3777*
                3875*  3878*  3976*  3979*  4072*  4075*  4137*  4140*  4186*  4189*  4236*  4239*  4286*
                4289*  4341*  4344*  4394*  4397*  4447*  4450*  4500*  4503*  4553*  4556*  4606*  4609*
                4659*  4662*  4712*  4715*  4765*  4768*  4818*  4821*  4871*  4874*  4924*  4927*  4977*
                4980*  5035*  5038*  5070*  5073*  5132*  5135*  5172*  5175*  5237*  5240*  5296*  5299*
                5372*  5375*  5437*  5440*  5513*  5516*  5578*  5581*  5654*  5657*  5719*  5722*  5795*
                5798*  5860*  5863*  5936*  5939*  6001*  6004*  6077*  6080*  6142*  6145*  6218*  6221*
                6283*  6286*  6359*  6362*  6441*  6444*  8545  8554  8556
CS3ERR  050114  2192  6813#
CUTE    047746  6781  6783#
DAYAMS  025770  4296  4299#
DB      003426  1685#  2808*  2810*  2811  2813  2863*  2864  2900*  2901  2903  8519
DBL   = 002000  1550#  4150  4199  4249  4299  4354  4407  4460  4513  4566  4619  4672  4725
                4778  4831  4884  4937  4990
DBLED   025636  4270  4275  4277  4279#
DBLWDS  025102  4170  4175  4177  4179#
DBMG    010370  2353  2358  2360  2362#
DBMSG   010572  2384  2389  2391  2393#
DBOUT   014036  2833  2838  2840  2842#
DBTST   013414  2774#  2821  2824  2828
```

```
DBTSTA  013734            2817    2825#
DDISP = 177570             390#    573    1836
DELTA   015650            3102    3107    3109    3111#
DEVCNT  003376            1662#   6493*   6494    6496    6499    6502    6517*   6578
DEVIC1  003366            1657#   1899*   1914*   1941    1950*   1953    1956    1959    2023    2029    2413    6512    6514
                          6519    6524
DEVIC2  003370            1658#   1917*   1926*   1971*   1974    1977    1980    6528    6530    6536
DEVIC3  003372            1659#   1920*   1930*   1992*   1995    1998    2001    6539    6541    6547
DEVIC4  003374            1660#   1923*   1934*   2013*   2016    2020    6550    6552    6558
DEVIC5  003400            1663#   1959*   1980*   2001*   2020*   2023*   2031    2038    6514*   6519*   6530*   6541*   6552*
                          6561    6568
DF1     072350             624    1106    1129    8561#
DF105   072424            1144    1149    1165    1170    1176    1324    8581#
DF11    072374             674     859    1204    8571#
DF132   072431            1261    1267    1273    1278    1283    1288    8583#
DF170   072437            1428    8585#
DF172   072442            1059    8586#
DF2     072354             631    1112    1117    8563#
DF3     072360             637    8565#
DF34    072377             851    8572#
DF35    072402             877     886    8573#
DF36    072403             868    1251    8574#
DF4     072364             643    8567#
DF41    072406             896    1472    1477    1482    1487    1492    1497    1502    8575#
DF5     072370             649     656     661     667     681     691     699     708     719     731     738     748     757
                           767     774     784     797     804     812     822     830     841    8569#
DF52    072410             965    8576#
DF71    072415            1069    1078    1086    1094    8578#
DF76    072420            1100    1198    1210    1215    1303    1318    1330    1335    1340    1346    1462    1467    8579#
DH1     067636             622    1104    1127    8307#
DH105   071222            1142    1147    8444#
DH11    070444             672    1202    8376#
DH111   071267            1163    1168    1174    8451#
DH121   071334            1208    1213    1460    1465    8458#
DH130   071372            1249    1254    8463#
DH132   071420            1259    1265    1271    1276    1281    1286    8467#
DH142   071476            1301    1316    8475#
DH146   071534            1322    8480#
DH147   071601            1196    1328    1333    1338    1344    8487#
DH170   071637            1426    8493#
DH171   071665             857    8497#
DH172   071713            1055    8501#
DH2     067756             629    1110    1115    8321#
DH3     070077             635    8335#
DH34    070532             847    8386#
DH35    070607             873     884    8394#
DH36    070612             864    1256    8395#
DH4     070217             641    8349#
DH41    070673             892    1470    1475    1480    1485    1490    1495    1500    8405#
DH5     070337             647     654     659     665     679     689     697     706     717     729     736     746     755
                           765     772     782     795     802     810     820     828     839    8363#
DH52    070717             961    8409#
DH71    071016            8421#
DH72    071075            1065    1075    1084    1092    8429#
DH76    071164            1098    8439#
DISPLA  001142             573#   1836*   1844*   8712*   9038*
```

```
DISPRE  000174          490#  1844
DLT   = 100000         1541#  2143  3148  3290  3395  3485  3592  3697  3800  3901  4002  4090  6810
DMD   = 000001         1598#  5337  5344  5349  5350  5351  5352  5478  5485  5490  5491  5492  5493
                       5619   5626  5631  5632  5633  5634  5760  5767  5772  5773  5774  5775  5901
                       5908   5913  5914  5915  5916  6042  6049  6054  6055  6056  6057  6183  6190
                       6195   6196  6197  6198  6324  6331  6336  6337  6338  6339
DNO   = 000001         1625#
DN1   = 000002         1626#
DN2   = 000004         1627#
DOCC  = 000400         1606#
DOIT    007632         2244  2256  2262#
DPCA  = 000040         1603#
DPE   = 000020         1590#  2158  3151  3803  3904
DPEHI = 040000         1554#  2127  3149  3291  3396  3698
DPELO = 020000         1553#  2127  3149  3291  3396  3593  3698
DPR   = 000400         1580#  6805
DR      003430         1686#
DRCLR = 000011         1739#
DRY   = 000200         1579#  6805
DSWR  = 177570          389#   572  1835
DS1     003432         1587#  2238* 2287* 2327* 2374* 2512* 2547* 2574* 2598* 2647* 2687* 2715* 2739*
                       2798*  2854* 2893* 2948* 3032* 3127* 3269* 3374* 3464* 3571* 3676* 3791* 3880*
                       3981*  4077* 4142* 4191* 4241* 4291* 4346* 4399* 4452* 4505* 4558* 4611* 4664*
                       4717*  4770* 4823* 4876* 4929* 4982* 5040* 5075* 5137* 5177* 5242* 5301* 5377*
                       5442*  5518* 5583* 5659* 5724* 5800* 5865* 5941* 6006* 6082* 6147* 6223* 6288*
                       6364*  6446*
DT      003434         1682#  8525
DTE   = 010000         1593#  2158  3151  3803  3904
DTRM  = 000200         1605#
DT1     072004          623   1105  1128  8513#
DT105   072166         1143   1148  8537#
DT11    072066          673   1203  8523#
DT111   072202         1164   1169  1175  8539#
DT121   072216         1209   1214  1461  1466  8541#
DT130   072230         1250   1255  8543#
DT132   072240         1260   1266  1272  1277  1282  1287  8545#
DT142   072256         1302   1317  8548#
DT146   072270         1323   8550#
DT147   072304         1197   1329  1334  1339  1345  8552#
DT170   072316         1427   8554#
DT171   072326          858   8556#
DT172   072336         1057   8558#
DT2     072016          630   1111  1116  8515#
DT3     072030          636   8517#
DT34    072076          849   8525#
DT35    072106          875    885  8527#
DT36    072112          866   8528#
DT4     072042          642   8519#
DT41    072122          894   1471  1476  1481  1486  1491  1496  1501  8530#
DT5     072054          648    655   660   666   680   690   698   707   718   730   737   747   756
                        766    773   783   796   803   811   821   829   840  8521#
DT52    072130          963   8531#
DT71    072144         1067   1077  1085  1093  8533#
DT76    072154         1099   8535#
DUPORT  047660         6414   6767#
DVA   = 004000         1571#  3114  3256  3361  3451  3558  3663  3766  3867  3968  6790
```

```
DYNO    020704   3547   3552   3554   3556#
EMTVEC= 000030    478#  1820*  1821*
EM1     055074    620   7307#
EM10    055643    663   7372#
EM100   060777   1108   7670#
EM101   061064   1114   7680#
EM102   061131   1119   7688#
EM103   061162   1124   7693#
EM104   061340   1131   7712#
EM105   061531   1139   7733#
EM106   061576   1146   7740#
EM107   061624   1151   7744#
EM11    055677    669   7377#
EM110   061733   1156   7756#
EM111   062025   1162   7766#
EM112   062100   1167   7774#
EM113   062125   1172   7778#
EM114   062222   1178   7789#
EM115   062320   1184   7800#
EM116   062432   1189   7813#
EM117   062464   1194   7818#
EM12    055740    676   7383#
EM120   062562   1200   7829#
EM121   062623   1206   7835#
EM122   062706   1212   7845#
EM123   062740   1217   7850#
EM124   063013   1224   7858#
EM125   063106   1230   7869#
EM126   063202   1236   7880#
EM127   063273   1242   7890#
EM13    055760    684   7386#
EM130   063371   1248   7901#
EM131   063443   1253   7909#
EM132   063475   1258   7914#
EM133   063531   1263   7919#
EM134   063632   1269   7931#
EM135   063713   1275   7940#
EM136   063747   1280   7945#
EM137   064030   1285   7954#
EM14    056027    694   7393#
EM140   064131   1290   7966#
EM141   064206   1295   7974#
EM142   064262   1300   7982#
EM143   064334   1305   7989#
EM144   064410   1310   7997#
EM145   064476   1315   8007#
EM146   064543   1320   8014#
EM147   064614   1326   8021#
EM15    056053    702   7397#
EM150   064705   1332   8031#
EM151   065037   1337   8047#
EM152   065141   1342   8059#
EM153   065211   1348   8066#
EM154   065275   1354   8076#
EM155   065366   1360   8086#
EM156   065454   1366   8096#
```

EM157	065545	1372	8107#
EM16	056077	711	7401#
EM160	065641	1378	8118#
EM161	065730	1384	8128#
EM162	066017	1390	8138#
EM163	066106	1395	8149#
EM164	066164	1401	8158#
EM165	066253	1407	8168#
EM166	066351	1413	8180#
EM167	066430	1419	8189#
EM17	056117	721	7404#
EM171	066527	1430	8200#
EM172	066601	1437	8208#
EM173	066622	1443	8211#
EM174	066706	1449	8220#
EM175	066737	1454	8225#
EM176	066777	1459	8231#
EM177	067032	1464	8236#
EM2	055134	626	7313#
EM20	056166	734	7411#
EM200	067077	1469	8243#
EM201	067161	1474	8252#
EM202	067243	1479	8261#
EM203	067325	1484	8270#
EM204	067405	1489	8279#
EM205	067472	1494	8288#
EM206	067556	1499	8297#
EM207	067602	1504	8302#
EM21	056217	741	7416#
EM22	056246	751	7420#
EM23	056301	760	7425#
EM24	056320	770	7428#
EM25	056351	777	7433#
EM26	056403	787	7438#
EM27	056431	800	7442#
EM3	055174	633	7319#
EM30	056464	807	7447#
EM31	056521	815	7452#
EM32	056560	825	7458#
EM33	056607	833	7462#
EM34	056657	844	7469#
EM35	056727	854	7476#
EM36	056761	862	7481#
EM37	057017	871	7487#
EM4	055250	639	7327#
EM40	057050	880	7492#
EM41	057210	889	7508#
EM42	057313	900	7520#
EM43	057364	908	7527#
EM44	057430	914	7533#
EM45	057522	922	7543#
EM46	057575	929	7551#
EM47	057656	936	7560#
EM5	055310	645	7333#
EM50	057727	943	7567#
EM51	060006	950	7575#

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EM52    060037              956    7580#
EM53    060212              968    7600#
EM54    060220              974    7601#
EM55    060225              980    7602#
EM56    060232              986    7603#
EM57    060240              992    7604#
EM6     055361              651    7340#
EM60    060246              998    7605#
EM61    060253             1004    7606#
EM62    060260             1010    7607#
EM63    060265             1016    7608#
EM64    060273             1022    7610#
EM65    060300             1028    7611#
EM66    060306             1034    7612#
EM67    060313             1040    7613#
EM7     055575              658    7365#
EM70    060321             1046    7615#
EM71    060327             1052    7617#
EM72    060416             1062    7627#
EM73    060453             1072    7632#
EM74    060502             1081    7636#
EM75    060530             1089    7640#
EM76    060560             1096    7644#
EM77    060665             1102    7656#
ENDPAS  045174             6493#
ENPS  = 004000             1609#
ERPIP   025530             4250    4253#
ERR   = 040000             1583#   2151    6450
ERRIP   025512             4246    4249#
ERRTST  050244             2094    2200    2213    2263    2303    2343    2406    2472    2518    2615    2657    2758    2907
                           2986    3080    3188    3330    3435    3525    3632    3737    3840    3941    4042    4103    4155
                           4204    4254    4304    4359    4412    4465    4518    4571    4624    4677    4730    4783    4836
                           4889    4942    4995    5096    5198    5259    5325    5400    5466    5541    5607    5682    5748
                           5823    5889    5964    6030    6105    6171    6246    6312    6387    6484    6845#
ERRVEC= 000004              471#   1833    1834*   1845*   1882*   1883*   1915*   1918*   1921*   1924*   1927*   1931*   1935*
                           2045    2046*   2060*   2063*   2066    2067*   2070*   2078    2079*   2084*   2093*   8674    8675*
                           8677*   8680*
ERR1    006602             2091    2094#
ERR10   013302             2725    2745#
ERR11   014460             2902    2906#
ERR2    007266             2164    2186    2200#
ERR29   026006             4300    4303#
ERR3    011152             2418    2422    2434    2472#
ERR30   024502             4094    4099    4102#
ERR4    007330             2211    2213#
ERR5    011440             2499    2518#
ERR6    012206             2583    2603#
ERR7    012520             2653    2656#
ERTIP   034116             5182    5185#
ER1     003436             1689#   2239*   2288*   2328*   2375*   2513*   2548*   2575*   2599*   2648*   2688*   2716*   2740*
                           2799*   2855*   2894*   2949*   3033*   3128*   3270*   3375*   3465*   3572*   3677*   3780*   3881*
                           3982*   4078*   4143*   4192*   4242*   4292*   4347*   4400*   4453*   4506*   4559*   4612*   4665*
                           4718*   4771*   4824*   4877*   4930*   4983*   5041*   5076*   5138*   5178*   5243*   5302*   5378*
                           5443*   5519*   5584*   5660*   5725*   5801*   5866*   5942*   6007*   6083*   6148*   6224*   6289*
                           6365*   6447*
ER1R    025252             4200    4203#
```

```
EVENAD  004000          1765#   3848    4115    4166    4216    4266    4319    4372    4425    4531    4690    4796    4902
                        4955    5011    5013    5048*   5049    5111    5112*   5151    5207    5336*   5342    5391    5483
                        5532    5618*   5624    5673    5765    5814    5900*   5906    5955    6047    6096    6182*   6188
                        6234    6237    6329    6375    6378    8548
FAKE70  006530          2079    2083#
FANG    033372          5008    5097#
FANGIE  021342          3539    3634#
FANGY   034176          5108    5199#
FAST    033160          5054    5059    5061    5063#
FERR  = 000004          1600#
FIND    050044          2187    6803#
FINDIT  047750          2170    6788#
FIT     020560          3448    3527#
FITIT   020114          3447    3449#
FOOEY   025234          4196    4199#
FOUND   050070          2165    6808#
FROG    024160          3952    4043#
GAP   = 000020          1630#
GIGO    005302          1938#   1960    2024    6515    6526
GIGO1   005456          1957    1962#   1981    6531
GIGO2   005616          1978    1983#   2002    6542
GIGO3   005756          1999    2004#   2021    6553
GIGO4   006202          1961    1982    2003    2022    2031#
GIG1    005314          1939    1941#   1955    1958
GIG2    005470          1963    1965#
GIG3    005630          1984    1986#
GIG4    005770          2005    2007#
GI1     005436          1913    1954    1959#
GI2     005576          1975    1980#
GI3     005736          1996    2001#
GI4     006070          2017    2020#
GNS   = ****** U          489    1861    1865    1896    1902    1908    1947    1968    1989    2010    2027    2074    2089
                        2442    6506    6510    6522    6534    6545    6556    6604    6611    6653    6668    6694    6698
                        6706    6721    6725    6733    6742    6749    6756    6853    6859    9387    9388    9389    9390
                        9391    9393    9395    9396    9397    9398
GO    = 000001          1565#   3114    3256    3361    3451    3558    3663    3766    3867    3968    6790
GOOF    012070          2586#
GOOFED  013160          2727#
GO1     005424          1952    1956#
GO2     005564          1973    1977#
GO3     005724          1994    1998#
GO4     006064          2015    2019#
GTSWR = 104406          1852    9393#
HEADER  072446          6831    8590#
HEDADD  050234          6833*   6836#
HEDDAD  003460          1760#   6831*   6832*   6833
HED1    050376          6874#   8591
HED10   050675          6911#   8598
HED11   050741          6918#   8599
HED12   050772          6923#   8600
HED13   051022          6927#   8601
HED14   051053          6932#   8602
HED15   051103          6937#   8603
HED16   051133          6942#   8604
HED17   051173          6948#   8605
HED2    050436          6880#   8592
```

HED20	051233	6954#	8606	
HED21	051275	6960#	8607	
HED22	051337	6966#	8608	
HED23	051402	6972#	8609	
HED24	051456	6980#	8610	
HED25	051520	6986#	8611	
HED26	051562	6992#	8612	
HED27	051624	6998#	8613	
HED3	050463	6884#	8593	
HED30	051666	7004#	8614	
HED31	051730	7010#	8615	
HED32	051775	7017#	8616	
HED33	052055	7026#	8617	
HED34	052132	7034#	8618	
HED35	052207	7042#	8619	
HED36	052265	7050#	8620	
HED37	052341	7058#	8621	
HED4	050522	6890#	8594	
HED40	052433	7068#	8622	
HED41	052520	7077#	8623	
HED42	052564	7083#	8624	
HED43	052635	7090#	8625	
HED44	052713	7098#	8626	
HED45	053002	7108#	8627	
HED46	053045	7114#	8628	
HED47	053132	7123#	8629	
HED5	050561	6896#	8595	
HED50	053211	7131#	8630	
HED51	053276	7140#	8631	
HED52	053355	7148#	8632	
HED53	053434	7156#	8633	
HED54	053500	7162#	8634	
HED55	053544	7168#	8635	
HED56	053603	7174#	8636	
HED57	053657	7182#	8637	
HED6	050612	6901#	8596	
HED60	053726	7189#	8638	
HED61	054001	7197#	8639	
HED62	054047	7204#	8640	
HED63	054122	7212#	8641	
HED64	054171	7219#	8642	
HED65	054244	7227#	8643	
HED66	054312	7234#	8644	
HED67	054366	7242#	8645	
HED7	050644	6906#	8597	
HED70	054435	7249#	8646	
HED71	054511	7257#	8647	
HED72	054557	7264#	8648	
HED73	054633	7272#	8649	
HED74	054702	7279#	8650	
HED75	054756	7287#	8651	
HED76	055024	7294#	8652	
HERADD=	177742	1669#	6744	
HERE	007362	2226#	2252	
HIBYTE	012242	2607	2609#	
HT -	000011	381#	8788	8829

```
HURTS    010516            2379    2381#
ICPA   = 000010            1601#   4051
IDPA   = 000020            1602#
IE     = 000100            1566#   3114    3256    3361    3451    3558    3663    3766    3867    3968    5214    5215    6416
                           6767    6790
IETST    034510            5211    5254#
IE3    = 000100            1549#   2068    2080    2495    3593    3698    6815
ILF    = 000001            1587#   2158    3151    3803    3904
IN       044516            6401#   6476
IOTVEC = 000020             476#   1818*   1819*
IPCK0  = 000001            1545#   2068    2080    6815
IPCK1  = 000002            1546#   2068    2080    6815
IPCK2  = 000004            1547#   2068    2080    3540    6815
IPCK3  = 000010            1548#   2068    2080    6815
IR     = 000100            1532#   6795    6810
IS       045744            6501    6550#
ISLK   = 002000            1608#   5901    5908    5913    5914    5915    5916    6042    6049    6054    6055    6056    6057
ITDO     007644            2272#
JUMP     022706            3850    3852#
KIPAR0 = 172340             525#
KIPAR1 = 172342             526#
KIPAR2 = 172344             527#
KIPAR3 = 172346             528#
KIPAR4 = 172350             529#
KIPAR5 = 172352             530#
KIPAR6 = 172354             531#
KIPAR7 = 172356             532#
KIPDR0 = 172300             514#
KIPDR1 = 172302             515#
KIPDR2 = 172304             516#
KIPDR3 = 172306             517#
KIPDR4 = 172310             518#
KIPDR5 = 172312             519#
KIPDR6 = 172314             520#
KIPDR7 = 172316             521#
KONG     004700            1891    1893#   1943
LEAGUE   034166            5190    5192    5195    5197#
LEAP     023440            3951    3953#
LEAVE    007264            2162    2185    2199#
LEFOUT   034154            5194#
LERADD = 177740            1668#   6751
LF     = 000012             382#   8823    8829
LOOCNT   003450            1751#   2485*   2493*   2772*   2818    2820*   2822*   2825    2827*   6400*   6471    6473*   6477*
LOOKED   050020            2180    6798#
LOOKFO   047774            2175    6793#
MCLK   = 000002            1599#   5337    5349    5351    5478    5490    5492    5619    5631    5633    5760    5772    5774
                           5901    5913    5915    6042    6054    6056    6183    6195    6197    6324    6336    6338
MCPE   = 020000            1572#   2136    3114    3147    3256    3289    3361    3451    3558    3663    3766    3799    3867
                           3968    4085
MCPET    024260            4056    4061    4063    4065#
MEMERR = 177744            1670#   6758
MINUS    004120            1781#   2605    2611    2747    2753
MITE     032732            5019    5024    5026    5028#
MIXIT    023522            3957    3962    3964    3966#
MMVEC  = 000250             503#
MOAR     046566            6655#   6661
```

```
MOL    = 010000  1581# 6805
MOOR     046576  6657# 6686
MORE     046732  6672# 6682
MORE2    046722  6670# 6676
MPE    = 000400  1534# 2143  3148  3290  3382  3431  3485  3592  3697  3800  3901  4002  4090
                 6810
MPETST   024412  4082  4085#
MXF    = 001000  1535# 2143  3148  3290  3395  3485  3592  3697  3787  3836  3901  3954  3956
                 3961  3989  4038  4090  6810
MYSTIC   014300  2881#
NEBL   = 000100  1604#
NED    = 010000  1538# 2143  3148  3290  3395  3485  3592  3684  3733  3800  3901  4002  4090
                 6810
NEDERR   021364  3645  3647#
NEM    = 004000  1537# 2143  3135  3184  3290  3395  3485  3592  3697  3800  3901  4002  4090
                 6810
NEXTST   046620  6650  6659  6662#
NOOP   = 000001  1707#
OAB    = 125252  1699# 2579  2721  2867  3240  5273  5336  5414  5555  5618  5696  5836  5900
                 5977  6118  6182  6259
OABTST   014300  2871  2876  2878  2880#
ODDAD    004002  1766# 4478  4584  4637  4743  4849  5013* 5112  5150* 5388  5529  5670  5811
                 5952  6093
OFFSET   003456  1759# 6829* 6830* 6832
OFF11    003402  1667# 2031* 2033  2034* 2038* 2039* 2040  2041* 2042  6561* 6563  6566* 6568*
                 6569* 6570  6571* 6572
ONE    = 000001  1701# 2530  2698  2773  2818  2825  6655  6670
OPI    = 020000  1594# 2158  3151  3803  3904
OR     = 000200  1533# 2352  2357  2378  2383  2388  2396  2400  2806  2832  2837  2858  2870
                 2875  2897  6795  6810
ORSET    013642  2807  2810#
OUTOF    050366  6846  6848  6861#
PARITY   047234  1879  6718#
PASS     003452  1752# 6399* 6410  6478  6480*
PAT    = 000020  1530# 3346  3748  6795  6810
PGE    = 002000  1536# 2143  3148  3290  3395  3485  3592  3697  3800  3888  3937  4002  4090
                 6810
PGETST   022770  3856  3861  3863  3865#
PIP    = 020000  1582# 6805
PIRQ   = 177772   388#
PIRQVE = 000240   482#
PLACE    020600  3538  3540#
PRIBIT   046772  6656  6683#
PRTBIT   046762  6671  6679#
PR0    = 000000   405#
PR1    = 000040   406#
PR2    = 000100   407#
PR3    = 000140   408#
PR4    = 000200   409#
PR5    = 000240   410#
PR6    = 000300   411#
PR7    = 000340   412#
PS     = 177776   385#   386  5212*
PSEL   = 002000  1570# 3114  3256  3361  3451  3558  3663  3766  3867  3968  6466  6767  6790
PSW    = 177776   386# 6398*
PWRVEC = 000024   477# 1824* 1825* 8720* 8721* 8730* 8736* 8748* 8749*
```

```
RBUF     004100  1768#  2166*  2171*  2176*  2181*  2188*  2193*  3344   3750   5271   5272*  5310   5312
                 5412   5413*  5451   5453   5553   5554*  5592   5594   5694   5695*  5733   5735   5835
                 5836*  5874   5976   5977*  6015   6117   6118*  6156   6258   6259*  6297   6727*  6728*
                 6729   6735*  6736   6744*  6745   6751*  6752   6758*  6759   8533   8552   8558
RBUF1    004102  1769#
RBUF2    004104  1770#
RBUF3    004106  1771#
RBUF4    004110  1772#
RBUF5    004112  1773#
RBUF6    004114  1774#
RBUF7    004116  1775#
RDCHR  = 104410  9263   9396#
RDLIN  = 104411  9333   9397#
RDOCT  = 104412  1898   1904   1910   1949   1970   1991   2012   9398#
RDY    = 000200  1567#  2776   2781   2802   2926   2931   2952   3010   3015   3101   3106   3114   3131
                 3206   3211   3223   3228   3234   3243   3248   3256   3273   3349   3354   3361   3378
                 3451   3468   3546   3551   3558   3575   3651   3656   3663   3680   3754   3759   3766
                 3783   3855   3860   3867   3884   3968   3985   4055   4060   4081   4120   4125   4146
                 4169   4174   4195   4219   4224   4245   4269   4274   4295   4324   4329   4350   4377
                 4382   4403   4430   4435   4456   4483   4488   4509   4536   4541   4562   4589   4594
                 4615   4642   4647   4668   4695   4700   4721   4748   4753   4774   4801   4806   4827
                 4854   4859   4880   4907   4912   4933   4960   4965   4986   5018   5023   5044   5053
                 5058   5079   5115   5120   5141   5155   5160   5181   5220   5225   5246   5279   5284
                 5306   5355   5360   5382   5420   5425   5447   5496   5501   5523   5561   5566   5588
                 5637   5642   5664   5702   5707   5729   5778   5783   5805   5843   5848   5870   5919
                 5924   5946   5984   5989   6011   6060   6065   6087   6125   6130   6152   6201   6206
                 6228   6266   6271   6293   6342   6347   6369   6419   6424   6430   6452   6769   6774
                 6780   6790
RDYSET   013622  2803   2806#
READY    034226  5209   5211#
READ0  = 000071  1719#  3099   3345   4322   4693   4746   4905   5277   5484
READ1  = 000072  1720#
READ2  = 000073  1721#  5418   5766
READ3  = 000074  1722#
READ4  = 000075  1723#  5559   6048
READ5  = 000076  1724#
READ6  = 000077  1725#  3114   3256   3361   3451   3558   3663   3766   3867   3968   4799   4852   4958
                 5700   6330   6790
REGEND   003404  1671#  1804*  1911*  1912*  2039   6569
RESTAR   006110  1925   1929   1933   1937   1979   2000   2019   2023#
RESTAT   045430  1976   1997   2018   6503   6517#  6529   6540   6551
RESVEC=  000010   472#
RETAIN   003410  1673#  1960*  1981*  2002*  2021*  2024*  2062   6515*  6526*  6531*  6542*  6553*
RETURN   046754  6665   6674   6677#
RFAIL  = 000100  1592#  2158   3151   3803   3904
RHAS     003346  1648#  2427
RHBA     003334  1643#  2229   2272*  2273   2278   2291   2294   2299   2318   2365   2503   2538   2565
                 2589   2638   2671*  2672   2673   2678   2699*  2700   2701   2706   2722*  2723   2724
                 2730   2745   2746*  2748   2752*  2754   2789   2845   2884   2923*  2939   3001*  3023
                 3050   3068   3090*  3093*  3118   3202*  3239*  3260   3344*  3365   3455   3543*  3562
                 3648*  3667   3750*  3770   3848*  3871   3972   4068   4115*  4133   4166*  4182   4216*
                 4232   4266*  4282   4319*  4337   4372*  4390   4425*  4443   4478*  4496   4531*  4549
                 4584*  4602   4637*  4655   4690*  4708   4743*  4761   4796*  4814   4849*  4867   4902*
                 4920   4955*  4973   5011*  5031   5049*  5066   5111*  5128   5151*  5168   5207*  5233
                 5271*  5292   5342*  5368   5388   5412*  5433   5483*  5509   5529   5553*  5574   5624*
                 5650   5670   5694*  5715   5765*  5791   5811   5835*  5856   5906*  5932   5952   5976*
```

		5997	6047*	6073	6093	6117*	6138	6188*	6214	6234	6258*	6279	6329*	6355
		6375	6404*	6437	6455									
RHBAE	003360	1653#	2035	2040*	2235	2284	2312*	2313	2324	2331	2334	2339	2371	2417
		2421	2509	2544	2571	2595	2630*	2631	2632	2644	2684	2712	2736	2795
		2851	2890	2922*	2945	3000*	3029	3041	3043	3045	3096*	3124	3201*	3266
		3343*	3371	3461	3542*	3568	3646*	3673	3776	3851*	3877	3978	4074	4116*
		4139	4188	4238	4288	4320*	4343	4373*	4396	4426*	4449	4479*	4502	4532*
		4555	4585*	4608	4638*	4661	4691*	4714	4744*	4767	4797*	4820	4850*	4873
		4903*	4926	4956*	4979	5010*	5037	5072	5134	5174	5210*	5239	5276*	5298
		5341*	5374	5417*	5439	5482*	5515	5558*	5580	5623*	5656	5699*	5721	5764*
		5797	5840*	5862	5905*	5938	5981*	6003	6046*	6079	6122*	6144	6187*	6220
		6263*	6285	6328*	6361	6403*	6443	6564	6570*					
RHCS1	003330	1641#	2032	2043	2048	2133	2136	2171	2227	2276	2316	2363	2430	2501
		2536	2563	2587	2636	2676	2704	2728	2776	2781	2787	2802	2843	2882
		2924*	2926	2931	2937	2952	3005*	3007*	3010	3015	3021	3038	3063	3099*
		3101	3106	3113	3116	3131	3204*	3206	3211	3223	3228	3234	3241*	3243
		3248	3255	3258	3273	3345*	3349	3354	3360	3363	3378	3450	3453	3468
		3544*	3546	3551	3557	3560	3575	3649*	3651	3656	3662	3665	3680	3752*
		3754	3759	3765	3768	3783	3852*	3853*	3855	3860	3866	3869	3884	3967
		3970	3985	4055	4060	4066	4081	4085	4087	4118*	4120	4125	4131	4146
		4167*	4169	4174	4180	4195	4217*	4219	4224	4230	4245	4267*	4269	4274
		4280	4295	4322*	4324	4329	4335	4350	4375*	4377	4382	4388	4403	4428*
		4430	4435	4441	4456	4481*	4483	4488	4494	4509	4534*	4536	4541	4547
		4562	4587*	4589	4594	4600	4615	4640*	4642	4647	4653	4668	4693*	4695
		4700	4706	4721	4746*	4748	4753	4759	4774	4799*	4801	4806	4812	4827
		4852*	4854	4859	4865	4880	4905*	4907	4912	4918	4933	4958*	4960	4965
		4971	4986	5016*	5018	5023	5029	5044	5051*	5053	5058	5064	5079	5113*
		5115	5120	5126	5141	5153*	5155	5160	5166	5181	5214*	5215	5220	5225
		5231	5246	5277*	5279	5284	5290	5306	5343*	5355	5360	5366	5382	5418*
		5420	5425	5431	5447	5484*	5496	5501	5507	5523	5559*	5561	5566	5572
		5588	5625*	5637	5642	5648	5664	5700*	5702	5707	5713	5729	5766*	5778
		5783	5789	5805	5841*	5843	5848	5854	5870	5907*	5919	5924	5930	5946
		5982*	5984	5989	5995	6011	6048*	6060	6065	6071	6087	6123*	6125	6130
		6136	6152	6189*	6201	6206	6212	6228	6264*	6266	6271	6277	6293	6330*
		6342	6347	6353	6369	6416*	6419	6424	6430	6435	6452	6466	6562	6573
		6767*	6769	6774	6780	6789	8528							
RHCS1B	003364	1655#	2043*	2044*	3183*	3325*	3430*	3520*	3627*	3732*	3835*	3936*	4037*	6573*
		6574*												
RHCS2	003340	1645#	2047*	2111*	2112*	2140	2143	2166	2176	2207*	2208*	2226*	2237	2275*
		2286	2315*	2326	2352	2357	2373	2378	2383	2388	2394*	2396	2400	2481*
		2482*	2511	2546	2573	2597	2646	2686	2714	2738	2797	2806	2832	2837
		2853	2858	2870	2875	2892	2897	2919*	2947	3031	3098*	3112	3126	3135
		3184	3198*	3217*	3221*	3254	3268	3277	3326	3339*	3346*	3347	3373	3382
		3431	3445*	3449*	3463	3472	3521	3536*	3570	3579	3628	3643*	3675	3684
		3733	3748*	3778	3787	3836	3847*	3879	3888	3937	3953*	3954*	3956	3961
		3980	3989	4038	4050*	4076	4117*	4141	4190	4240	4290	4321*	4345	4374*
		4398	4427*	4451	4480*	4504	4533*	4557	4586*	4610	4639*	4663	4692*	4716
		4745*	4769	4798*	4822	4851*	4875	4904*	4928	4957*	4981	5009*	5039	5074
		5092	5109*	5136	5145*	5149*	5176	5194	5206*	5241	5269*	5300	5335*	5376
		5410*	5441	5476*	5517	5551*	5582	5617*	5658	5692*	5723	5758*	5799	5833*
		5864	5899*	5940	5974*	6005	6040*	6081	6115*	6146	6181*	6222	6256*	6287
		6322*	6363	6397*	6445	6794	6809							
RHCS3	003362	1654#	2042*	2068*	2080*	2124	2127	2193	2236	2285	2325	2372	2487*	2488
		2490	2496*	2497	2498	2510	2545	2572	2596	2645	2685	2713	2737	2796
		2852	2891	2946	3030	3090	3125	3267	3372	3462	3540*	3569	3674	3777
		3878	3979	4075	4140	4150	4189	4199	4239	4249	4289	4299	4344	4354

		4397	4407	4450	4460	4503	4513	4556	4566	4609	4619	4662	4672	4715
		4725	4768	4778	4821	4831	4874	4884	4927	4937	4980	4990	5038	5073
		5083	5089	5135	5175	5185	5191	5240	5299	5375	5440	5516	5581	5657
		5722	5798	5863	5939	6004	6080	6145	6221	6286	6362	6444	6572*	6814
RHDB	003352	1650#	2350*	2381	2774*	2808	2810	2830*	2861	2863	2868*	2900		
RHDT	003356	1652#	2049	2209	2415	2433								
RHER	003344	1647#	2155	2158	2181	2239	2288	2328	2375	2513	2548	2575	2599	2648
		2688	2716	2740	2799	2855	2894	2949	3033	3128	3270	3375	3465	3572
		3677	3780	3881	3982	4078	4143	4192	4242	4292	4347	4400	4453	4506
		4559	4612	4665	4718	4771	4824	4877	4930	4983	5041	5076	5138	5178
		5243	5302	5378	5443	5519	5584	5660	5725	5801	5866	5942	6007	6083
		6148	6224	6289	6365	6447	6799							
RHMR1	003354	1651#	4051*	5337*	5344*	5349*	5350*	5351*	5352*	5353*	5478*	5485*	5490*	5491*
		5492*	5493*	5494*	5619*	5626*	5631*	5632*	5633*	5634*	5635*	5760*	5767*	5772*
		5773*	5774*	5775*	5776*	5901*	5908*	5913*	5914*	5915*	5916*	5917*	6042*	6049*
		6054*	6055*	6056*	6057*	6058*	6183*	6190*	6195*	6196*	6197*	6198*	6199*	6324*
		6331*	6336*	6337*	6338*	6339*	6340*							
RHMR2	003336	1644#	2053	2113	2241	2290	2330	2377	2515	2550	2577	2601	2650	2690
		2718	2742	2801	2857	2896	2951	3035	3130	3272	3377	3467	3574	3679
		3782	3883	3984	4080	4145	4194	4244	4294	4349	4402	4455	4508	4561
		4614	4667	4720	4773	4826	4879	4932	4985	5043	5078	5140	5180	5245
		5304	5380	5445	5521	5586	5662	5727	5803	5868	5944	6009	6085	6150
		6226	6291	6367	6449	6474*								
RHNINT	044672	6415	6434#	6868										
RHST	003342	1646#	2148	2151	2188	2238	2287	2327	2374	2512	2547	2574	2598	2647
		2687	2715	2739	2798	2854	2893	2948	3032	3127	3269	3374	3464	3571
		3676	3779	3880	3981	4077	4142	4191	4241	4291	4346	4399	4452	4505
		4558	4611	4664	4717	4770	4823	4876	4929	4982	5040	5075	5137	5177
		5242	5301	5377	5442	5518	5583	5659	5724	5800	5865	5941	6006	6082
		6147	6223	6288	6364	6446	6450	6804						
RHTDB	003350	1649#	2240	2289	2329	2376	2514	2549	2576	2600	2649	2689	2717	2741
		2800	2856	2895	2950	2963	2968	3034	3129	3271	3376	3466	3573	3678
		3751*	3781	3882	3983	4052*	4053*	4079	4144	4193	4243	4293	4348	4401
		4454	4507	4560	4613	4666	4719	4772	4825	4878	4931	4984	5042	5077
		5139	5179	5244	5273*	5303	5305	5310	5379	5381	5391	5414*	5444	5446
		5451	5477*	5520	5522	5532	5555*	5585	5587	5592	5661	5663	5673	5696*
		5726	5728	5733	5759*	5802	5804	5814	5837*	5867	5869	5874	5876	5943
		5945	5955	5978*	6008	6010	6015	6017	6041*	6084	6086	6096	6119*	6149
		6151	6156	6158	6225	6227	6237	6260*	6290	6292	6297	6299	6323*	6366
		6368	6378	6448	6458									
RHTEST	006406	2058	2063#											
RHVEC	003316	1512#												
RHWC	003332	1642#	2223*	2224	2228	2242	2245	2248	2254	2258	2277	2317	2364	2502
		2531*	2532	2537	2557*	2558	2559	2564	2580*	2581	2582	2588	2603	2604*
		2606	2610*	2612	2616*	2637	2677	2705	2729	2788	2844	2883	2918*	2938
		2954	2956	2958	3002*	3022	3097*	3117	3197*	3238*	3259	3340*	3364	3454
		3541*	3561	3647*	3666	3749*	3769	3870	3971	,067	4114*	4132	4165*	4181
		4215*	4231	4265*	4281	4318*	4336	4371*	4389	4424*	4442	4477*	4495	4530*
		4548	4583*	4601	4636*	4654	4689*	4707	4742*	4760	4795*	4813	4848*	4866
		4901*	4919	4954*	4972	5015*	5030	5050*	5065	5110*	5127	5152*	5167	5213*
		5232	5270*	5291	5338*	5367	5385	5411*	5432	5479*	5508	5526	5552*	5573
		5620*	5649	5667	5693*	5714	5761*	5790	5808	5834*	5855	5902*	5931	5949
		5975*	5996	6043*	6072	6090	6116*	6137	6184*	6213	6231	6257*	6278	6325*
		6354	6372	6405*	6436	6461								
RHWCA	011642	2553	2556#											
RHWCT	011460	2531#	2555											

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RH11    006574          2067    2077    2082    2092#
RH11BA  006442          2071#
RH70BA  006536          2085#
RH70TT  006504          2065    2078#
RITEON  033336          5084    5089#
RITURN  046760          6636    6640    6644    6678#
RMBEX = 000040          1591#   2158    3151    3803    3904
RMR   = 000004          1588#   2158    3151    3803    3904
ROTEEN  045640          6498    6539#
SA200   005330          1942    1944#
SC    = 100000          1575#   2136    3137    3141    5145    3158    3279    3283    3287    3300    3384    5388    3392
                        3405    3474    3478    3482    3495    3581    3585    3589    3602    3686    3690    3694    3707
                        3789    3793    3797    3810    3890    3894    3898    3911    3991    3995    3999    4012    4087
SCLK  = 000010          1628#   6474
SEARCH= 000031          1743#
SKIPIN  004660          1885    1888#
SLEUTH  004674          1890    1892#
SLKM  = 001000          1607#   5619    5626    5631    5632    5633    5634    5760    5767    5772    5773    5774    5775
                        5901    5908    5913    5914    5915    5916    6042    6049    6054    6055    6056    6057
SNAFOO  010622          2397    2400#
SPLIT   034522          5249    5251    5253    5256    5258#
SR0   = 177572           507#
SR1   = 177574           508#
SR2   = 177576           509#
SR3   = 172516           510#
STACK = 000750           376#   1816    1880
START   004214          1796    1800    1809#
STKLMT= 177774           387#
SUPER   033312          5080    5083#
SWR     001140           572#   1814    1835*   1837    1843*   1850    8669    8683    8685    8691    8698    8728    8741*
                        9039    9046    9051    9055    9107    9146    9201*
SWREG   000176           491#   1843    1850    9107    9146    9169
SW0   = 000001           440#
SW00  = 000001           430#    440
SW01  = 000002           429#    439
SW02  = 000004           428#    438
SW03  = 000010           427#    437
SW04  = 000020           426#    436
SW05  = 000040           425#    435
SW06  = 000100           424#    434
SW07  = 000200           423#    433
SW08  = 000400           422#    432
SW09  = 001000           421#    431
SW1   = 000002           439#
SW10  = 002000           420#
SW11  = 004000           419#
SW12  = 010000           418#
SW13  = 020000           417#   2438    6635    6825    6847
SW14  = 040000           416#   3179    3321    3426    3516    3623    3728    3831    3932    4033
SW15  = 100000           415#
SW2   = 000004           438#
SW3   = 000010           437#
SW4   = 000020           436#
SW5   = 000040           435#
SW6   = 000100           434#
SW7   - 000200           433#
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SW8    = 000400          432#  3179  3321  3426  3516  3623  3728  3831  3932  4033
SW9    = 001000          431#  3179  3321  3426  3516  3623  3728  3831  3932  4033
TBITVE= 000014           473#
TC      003440          1690#  2241* 2290* 2330* 2377* 2515* 2550* 2577* 2601* 2650* 2690* 2718* 2742*
                        2801*  2857* 2896* 2951* 3035* 3130* 3272* 3377* 3467* 3574* 3679* 3782* 3883*
                        3984*  4080* 4145* 4194* 4244* 4294* 4349* 4402* 4455* 4508* 4561* 4614* 4667*
                        4720*  4773* 4826* 4879* 4932* 4985* 5043* 5078* 5140* 5180* 5245* 5304* 5380*
                        5445*  5521* 5586* 5662* 5727* 5803* 5868* 5944* 6009* 6085* 6150* 6226* 6291*
                        6367*  6449*
TDR     003442          1691#  2240* 2289* 2329* 2376* 2514* 2549* 2576* 2600* 2649* 2689* 2717* 2741*
                        2800*  2856* 2895* 2950* 3034* 3129* 3271* 3376* 3466* 3573* 3678* 3781* 3882*
                        3983*  4079* 4144* 4193* 4243* 4293* 4348* 4401* 4454* 4507* 4560* 4613* 4666*
                        4719*  4772* 4825* 4878* 4931* 4984* 5042* 5077* 5139* 5179* 5244* 5303* 5379*
                        5444*  5520* 5585* 5661* 5726* 5802* 5867* 5943* 6008* 6084* 6149* 6225* 6290*
                        6366*  6448*
THREE   025360          4220   4225  4227  4229#
TIEOUT  047002          1882   1924  1927  1931  1935  6691#
TKVEC  = 000060          480#  9084* 9085*
TOIT    010054          2292   2297  2301#
TPVEC  = 000064          481#
TRAPED  047652          6739   6761#
TRAPVE= 000034           479#  1822* 1823*
TRE    = 040000          1573#  2136  3137  3139  3145  3156  3279  3281  3287  3298  3384  3386  3392
                         3403   3474  3476  3482  3493  3581  3583  3589  3600  3686  3688  3694  3705
                         3789   3791  3797  3808  3890  3892  3898  3909  3991  3993  3999  4010  4089
TREB   = 000100          1574#  3183  3325  3430  3520  3627  3732  3835  3936  4037
TRTVEC= 000014           474#
TSTADD  006306          2045#  6580
TSTIE   034342          5221   5226  5228  5230#
TSTNM   003454          1758#  6823* 6824* 6829  6849* 6850* 6855  8513  8515  8517  8519  8521  8523
                        8525   8528  8530  8531  8533  8535  8537  8539  8541  8543  8545  8548  8550
                        8552   8556  8558
TSTNMA  050236          6826   6828  6837#
TSTNMB  050140          6823#  9048
TST1    004602          1803   1877#
TST10   010650          2412#
TST11   011162          2480#
TST12   011450          2484   2529#
TST13   012312          2626#
TST14   012530          2628   2668#
TST15   013400          2769#
TST16   014470          2917#
TST17   015054          2995#
TST2    006606          1887   2102#
TST20   015522          3087#
TST21   016314          3196#
TST22   017310          3338#
TST23   020074          3443#
TST24   020560          3534#
TST25   021342          3641#
TST26   022112          3746#
TST27   022656          3846#
TST3    007272          2206#
TST30   023426          3949#
TST31   024160          4049#
TST32   024512          4111#
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TST33   025004          4113    4162#
TST34   025262          4164    4212#
TST35   025540          4214    4262#
TST36   026016          4264    4315#
TST37   026310          4317    4368#
TST4    007334          2221#
TST40   026602          4370    4421#
TST41   027074          4423    4474#
TST42   027366          4476    4527#
TST43   027660          4529    4580#
TST44   030152          4582    4633#
TST45   030444          4635    4686#
TST46   030736          4688    4739#
TST47   031230          4741    4792#
TST5    007642          2271#
TST50   031522          4794    4845#
TST51   032014          4847    4898#
TST52   032306          4900    4951#
TST53   032600          4953    5004#
TST54   033372          5105#
TST55   034176          5205#
TST56   034532          5268#
TST57   035074          5334#
TST6    010064          2309#
TST60   035526          5409#
TST61   036070          5475#
TST62   036522          5550#
TST63   037064          5616#
TST64   037516          5691#
TST65   040060          5757#
TST66   040512          5832#
TST67   041054          5898#
TST7    010312          2311    2349#
TST70   041506          5973#
TST71   042050          6039#
TST72   042502          6114#
TST73   043044          6180#
TST74   043476          6255#
TST75   044040          6321#
TST76   044472          6394#
TST77   045172          6491#
TWANG   033350          5088    5092#
TWANGY  033362          5090    5093    5095#
TWO     = 000002        1702#   2034    2435    2670    6566    6701    6728
TYPDS   = 104405        6608    6615    6681    6685    9391#
TYPE    = 104401        1859    1863    1894    1900    1906    1945    1966    1987    2008    2025    2072    2087    2440
                        6504    6508    6520    6532    6543    6554    6602    6609    6616    6651    6666    6677    6692
                        6696    6704    6719    6723    6731    6740    6747    6754    6834    6835    6851    6857    8750
                        8793    8889    8964    8981    8998    9000    9003    9005    9009    9016    9041    9049    9101
                        9113    9167    9168    9171    9182    9192    9203    9222    9270    9276    9281    9285    9290
                        9291    9293    9296    9300    9387#
TYPOC   = 104402        2030    6513    6525    6537    6548    6559    6703    6710    6730    6737    6746    6753    6760
                        6856    8989    9013    9170    9388#
TYPUN   = 104404        9390#
TYPOS   = 104403        9389#
UPE     = 020000        1539#   2143    3148    3290    3395    3449    3472    3521    3579    3628    3697    3800    3901
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                    4002    4090    6810
UPETRE  017456      3350    3355    3357    3359#
US1     = 000001    1526#   6795
US2     = 000002    1527#   6795
US4     = 000004    1528#   6795
VECADD  003406      1672#   1805*   1905*   5211*   6406*
VOUS    033064      5045    5048#
WATBIT  046416      2168    2173    2178    2183    2190    2195    2251    2261    2296    2336    2517    2535    2562
                    2585    2635    2692    2720    2744    2815    2866    2905    6635#
WATFIV  010302      2332    2337    2341#
WATFOR  010072      2312#
WC      003444      1692#   2228*   2248*   2250    2254*   2258*   2259    2277*   2317*   2364*   2502*   2534    2537*
                    2558*   2561    2564*   2581*   2584    2588*   2637*   2677*   2705*   2729*   2788*   2844*   2883*
                    2938*   3022*   3117*   3259*   3364*   3454*   3561*   3666*   3769*   3870*   3971*   4067*   4132*
                    4181*   4231*   4281*   4336*   4389*   4442*   4495*   4548*   4601*   4654*   4707*   4760*   4813*
                    4866*   4919*   4972*   5030*   5065*   5127*   5167*   5232*   5291*   5367*   5432*   5508*   5573*
                    5649*   5714*   5790*   5855*   5931*   5996*   6072*   6137*   6213*   6278*   6354*   6436*   8513
                    8537    8539    8550
WCE     = 040000    1540#   2143    3148    3277    3326    3395    3485    3592    3697    3800    3901    4002    4090
                    5092    5194    6810
WCEFRR  033764      5156    5161    5163    5165#
WCEHI   = 010000    1552#   2127    3149    3396    3593    3698    5089    5185
WCELO   = 004000    1551#   2127    3149    3396    3593    3698    5083    5191
WCEOWT  033510      5116    5121    5123    5125#
WCERR1  007516      2225    2245#
WCERR2  007602      2243    2257#
WCETRE  016644      3244    3249    3251    3253#
WCETST  016434      3207    3212    3214    3216#
WCTST   016530      3224    3229    3231    3233#
WHYFO   007260      2198#   2404    2805    2962    2984    3048    3053    3056    3134    3153    3163    3167    3172
                    3176    3237    3276    3295    3305    3309    3314    3318    3381    3400    3410    3414    3419
                    3423    3471    3490    3500    3504    3509    3513    3578    3597    3607    3611    3616    3620
                    3683    3702    3712    3716    3721    3725    3786    3805    3815    3819    3824    3828    3887
                    3906    3916    3920    3925    3929    3988    4007    4017    4021    4026    4030    4084    4092
                    4101    4149    4153    4198    4202    4248    4252    4298    4302    4353    4357    4406    4410
                    4459    4463    4512    4516    4565    4569    4618    4622    4671    4675    4724    4728    4777
                    4781    4830    4834    4883    4887    4936    4940    4989    4993    5047    5082    5086    5144
                    5184    5188    5309    5319    5394    5450    5460    5535    5591    5601    5676    5732    5742
                    5817    5873    5883    5958    6014    6024    6099    6155    6165    6240    6296    6306    6381
                    6482
WRCH0   = 000051    1709#   3241    5051    5153
WRCH1   = 000052    1710#
WRCH2   = 000053    1711#
WRCH3   = 000054    1712#
WRCH4   = 000055    1713#
WRCH5   = 000056    1714#
WRCH6   = 000057    1715#
WRITE0= 000061      1729#   2924    3005    3007    3204    3544    3649    3752    3852    3853    4118    4167    4217
                    4267    4375    4481    5016    5113    5214    5343    5841    6416    6767
WRITE1= 000062      1730#
WRITE2= 000063      1731#   5625    5982
WRITE3= 000064      1732#
WRITE4= 000065      1733#   5907    6123
WRITE5= 000066      1734#
WRITE6= 000067      1735#   4428    4534    4587    4640    6189    6264
ZERO    = 000000    1700#   2604    2610    2616    2746    2752    2922    3201    3343    3542    3643    3646    3696
```

```
                        3751    3851    4116    4320    4373    4426    4479    4532    4585    4638    4691    4744    4797
                        4850    4903    4956    5010    5210    5272    5276    5341    5353    5413    5417    5482    5494
                        5554    5558    5623    5635    5695    5699    5764    5776    5837    5840    5905    5917    5978
                        5981    6046    6058    6119    6122    6187    6199    6260    6263    6328    6340    6403    6800
$AUTOB  001134           569#   1854*   9160    9317
$BDADR  001122           564#
$BDDAT  001126           566#
$BELL   001216           598#   9041    9063    9113    9310
$CHARC  073510          8795*   8805*   8812    8821*   8826#
$CKSWR  074766          9146#   9395
$CMTAG  001100           552#   1811    1812    1820    1826    1827
$CM1  =  000006          584#    585#    586#    587#    588#    589#    590#
$CM2  =  000014          584#    585#    586#    587#    588#    589#    590#
$CM3  =  000006          582#    584
$CM4  =  000006          590#    591#    592#    593#    594#    595#    596#
$CNTLC  075664          9101    9182    9310#
$CNTLG  075676          9167    9312#
$CNTLU  075671          9192    9285    9311#
$CRLF   001223           600#   6616    6677    6834    8794    8829    8981    9000    9005    9009    9049    9063    9203
                        9290    9310
$CS1    004124          1784#   2133    3147*   3289*   3394*   3484*   3591*   3696*   3799*   3900*   4001*   4089*
$CS2    004126          1785#   2140    3148*   3290*   3395*   3485*   3592*   3697*   3800*   3901*   4002*   4090*
$CS3    004130          1786#   2124    3149*   3291*   3396*   3486*   3593*   3698*   3801*   3902*   4003*
$DBLK   074156          8930    8964    8972#
$DOAGN  046406          6598    6619    6625#
$DTBL   074146          8933    8968#
$ENDAD  046376           541    6621#
$ENDCT  046242          6600#
$ENULL  046412          6628#
$EOP    046206          1940    1964    1985    2006    6579    6590#
$EOPCT  046234          6597#   6601
$ER     004134          1788#   2155    3151*   3293*   3398*   3488*   3595*   3700*   3803*   3904*   4005*
$ERFLG  001103           555#   1951    1972    1993    2014    3181    3323    3428    3518    3625    3730    3833    3934
                        4035    5087    5189    5250    5255    5320    5395    5461    5536    5602    5677    5743    5818
                        5884    5959    6025    6100    6166    6241    6307    6382    6464    6827    6845    8658    8687
                        8689    8695*   8716    9036*   9063
$ERMAX  001115           561#   1828*   8689    8711*   8716
$ERROR  074322          1820    9034#
$ERRPC  001116           562#   8513    8515    8517    8519    8521    8523    8525    8527    8528    8530    8531    8533
                        8535    8537    8539    8541    8543    8545    8548    8550    8552    8556    8558    8987    9043*
                        9044*   9045    9063
$ERRTB  001226           617#   8995
$ERRTY  074166          6837    8980#
$ERTTL  001112           559#   6613    6617*   9042*   9063
$ESCAP  001214           597#   1827*   8710*   9058    9060    9063
$FILLC  001156           580#   8798    8829
$FILLS  001155           579#   8829
$GDADR  001120           563#
$GDDAT  001124           565#
$GET42  046366          6618#
$GTSWP  075056          9168#   9393
$HD  =  000000           362
$HIOCT  076026          9350*   9355#
$ICNT   001104           556#   8702*   8703    8705*   8715
$ILLUP  073256          8720    8736    8753#
$INTAG  001135           570#   9165*   9184    9204    9317
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$ITEMB  001114            560#  8984  9045*  9063
$LF     001224            601#  8829  9063   9300  9310
$LPADR  001106            557#  1829* 6711   6761  8693* 8708* 8713  8715
$LPERR  001110            558#  1830* 8693   8709* 8715  9057
$MAIL = ****** U         1847   1850  8708   8782  9051
$MNFW   075714           9171   9315#
$MSWR   075703           9168   9313#
$MXCNT  073114           8706   8715#
$NULL   001154            578#  8800  8829
$NWTST= 000001           1869#  1871  2095#  2097  2201#  2203  2216#  2218  2264#  2266  2304#  2306  2344#
                         2346   2407# 2409   2475# 2477   2521# 2523   2620# 2622   2660# 2662   2761# 2763
                         2911#  2913  2988#  2990  3082#  3084  3191#  3193  3332#  3334  3437#  3439  3528#
                         3530   3636# 3638   3740# 3742   3841# 3843   3942# 3944   4044# 4046   4105# 4107
                         4156#  4158  4205#  4207  4255#  4257  4307#  4309  4360#  4362  4413#  4415  4466#
                         4468   4519# 4521   4572# 4574   4625# 4627   4678# 4680   4731# 4733   4784# 4786
                         4837#  4839  4890#  4892  4943#  4945  4996#  4998  5098#  5100  5200#  5202  5260#
                         5262   5326# 5328   5401# 5403   5467# 5469   5542# 5544   5608# 5610   5683# 5685
                         5749#  5751  5824#  5826  5890#  5892  5965#  5967  6031#  6033  6106#  6108  6172#
                         6174   6247# 6249   6313# 6315   6388# 6390   6486# 6488
$OCNT   073736           8861*  8890* 8903#
$OMODE  073740           8856*  8860* 8865   8868* 8379*  8905#
$OVER   073100           8670   8686  8694   8704  8712#
$PASS   001100            553#  6594* 6595*  6606  6628   8700  8716
$POWER  073264           8751   8756#
$PWRDN  073116           1824   8720# 8748
$PWRMG  073252           8751#
$PWRUP  073170           8730   8736#
$QUES   001222            599#  8829  9063   9222  9293   9310
$RDCHR  075330           9235#  9396
$RDDEC= ****** U         9399
$RDLIN  075420           9258#  9397
$RDOCT  075726           9328#  9398
$RDSZ = 000010           9251#
$REGAD  001160            582#
$REG0   001162            584#  2247* 2253* 2257* 2293* 2298* 2333* 2338* 2426* 2431  2486* 2487  2490
                         2492*  2495* 2496   2498  2530*  2531  2532   2552  2554*  2556* 2557   2559  2579*
                         2580   2582  2629*  2630  2632   2652  2654*  2670* 2671   2673  2693   2695* 2697*
                         2698*  2699  2701   2721* 2722   2724  2773*  2774  2811   2816  2823*  2829* 2830
                         2861   2867* 2868   2901  2960*  2965* 2973*  3113* 3114*  3137  3139   3141  3145
                         3156   3158  3255*  3256* 3279   3281  3283   3287  3298   3300  3360*  3361* 3384
                         3386   3388  3392   3403  3405   3450* 3451*  3474  3476   3478  3482   3493  3495
                         3543   3557* 3558*  3581  3583   3585  3589   3600  3602   3662* 3663*  3686  3688
                         3690   3694  3705   3707  3765*  3766* 3789   3791  3793   3797  3808   3810  3866*
                         3867*  3890  3892   3894  3898   3909  3911   3967* 3968*  3991  3993   3995  3999
                         4010   4012  4052   4053  5305*  5381* 5446*  5522* 5587*  5663* 5728*  5804* 5869*
                         5945*  6010* 6086*  6151* 6227*  6292* 6368*  6646  6648   6788* 6793*  6798* 6803*
                         6808*  6813* 8513   8515  8517   8519  8521   8531  8548   8552
$REG1   001164            585#
$REG2   001166            586#
$REG3   001170            587#
$REG4   001172            588#  2209* 2210   3202  3203*  3239  3240* 3648
$REG5   001174            589#  1798* 1799*  1889  1893*
$RHBA   004136           1789#  2745* 2747*  2751* 2753*
$RHDB   004140           1790#
$RHWC   004142           1791#  2603* 2605*  2609* 2611*
$RTNAD  046410           6627#
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$R2A   = ****** U        9399
$SAVRE= ****** U        9399
$SAVR6  073262           8729*  8737   8738*  8739*  8755#
$SCOPE  072644           1818   8667#
$SETUP= 000117           1810#  1817   1818   1820   1822   1824   1826   1827   1829   1847   6592   8668   9035
                         9054   9062   9105   9110   9111   9141   9317
$SS1   = 000000          1857#
$ST    = 004132          1787#  2148   3150*  3292*  3397*  3487*  3594*  3699*  3802*  3903*  4004*
$STUP  = 177777          1810#
$SVLAD  073052           8678   8707#
$SVPC  = 000214           539#   544
$SWR   = 167700           351#   362    366    367    368    369    370    371    372    596    597    598    1826
                         1827   1829   1830   1878   2103   2207   2222   2272   2310   2350   2413   2481   2530
                         2627   2669   2770   2918   2996   3088   3197   3339   3444   3535   3642   3747   3847
                         3950   4050   4112   4163   4213   4263   4316   4369   4422   4475   4528   4581   4634
                         4687   4740   4793   4846   4899   4952   5005   5106   5206   5269   5335   5410   5476
                         5551   5617   5692   5758   5833   5899   5974   6040   6115   6181   6256   6322   6395
                         6492   6587   6593   6620   6626   6628   8659   8660   8661   8662   8663   8669   8681
                         8683   8684   8687   8688   8689   8696   8697   8698   8709   8712   8715   8752   9026
                         9027   9028   9029   9030   9039   9046   9051   9055   9063
$SWRMK= 000000            372    373   8663   8664   8685
$TIMES  001212            596#  1826*  1878*  2103*  2222*  2996*  5005*  6577*  6593*  8696*  8703   8706*  8715
$TKB    001146            575#  9066   9086   9097   9122   9150   9177
$TKCNT  074462           9067#  9081*  9111   9128*  9242   9244*
$TKINT  074500           1856   9081#  9102   9163
$TKQEN= 074500           9071#  9136   9247
$TKQIN  074464           9068#  9082*  9083   9134*  9135*  9136   9138*
$TKQOU  074466           9069#  9083*  9245   9246*  9247   9249*
$TKQSR  074470           9070#  9082   9138   9249
$TKS    001144            574#  9066   9087*  9118*  9120   9126*  9148   9164*  9174   9186*  9206*
$TKSRV  074550           9084   9097#
$TMP0   001176            590#
$TMP1   001200            591#  2250*  2259*  2294*  2299*  2334*  2339*  2489*  2534*  2561*  2584*  2634*  2675*
                         2703*  2726*  2813*  2864*  2903*  6647   6663   6789*  6790*  6794*  6795*  6799*  6800*
                         6804*  6805*  6809*  6810*  6814*  6815*
$TMP2   001202            592#  6646*  6663*  6664   6670   6672*
$TMP3   001204            593#  2923   2963   2968   6647*  6648*  6649   6655   6657*
$TMP4   001206            594#  6700*  6701*  6702   6708*  6709
$TMP5   001210            595#  2104*  2105*  2161   2163*  2184
$TN    - 000100           351#   362   1869   1878#  2095   2103#  2201   2207#  2216   2222#  2264   2272#  2304
                         2310#  2311   2344   2350#  2407   2413#  2475   2481#  2484   2521   2530#  2620   2627#
                         2628   2660   2669#  2761   2770#  2911   2918#  2988   2996#  3082   3088#  3191   3197#
                         3332   3339#  3437   3444#  3528   3535#  3636   3642#  3740   3747#  3841   3847#  3942
                         3950#  4044   4050#  4105   4112#  4113   4156   4163#  4164   4205   4213#  4214   4255
                         4263#  4264   4307   4316#  4317   4360   4369#  4370   4413   4422#  4423   4466   4475#
                         4476   4519   4528#  4529   4572   4581#  4582   4625   4634#  4635   4678   4687#  4688
                         4731   4740#  4741   4784   4793#  4794   4837   4846#  4847   4890   4899#  4900   4943
                         4952#  4953   4996   5005#  5098   5106#  5200   5206#  5260   5269#  5326   5335#  5401
                         5410#  5467   5476#  5542   5551#  5608   5617#  5683   5692#  5749   5758#  5824   5833#
                         5890   5899#  5965   5974#  6031   6040#  6106   6115#  6172   6181#  6247   6256#  6313
                         6322#  6388   6395#  6486   6492#
$TPB    001152            577#  8818*  8829
$TPFLG  001157            581#  8776   8829
$TPS    001150            576#  8816   8829
$TRAP   076030           1822   9364#
$TRAP2  076052           9375#  9386
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$TRP   = 000013          9379#  9388#  9389#  9390#  9391#  9392#  9393   9394#  9395   9396#  9397#  9398#  9399#
$TRPAD  076064           9369   9386#
$TSTNM  001102            554#  6575*  6576*  6592*  6823   6849   8658   8685   8707*  8712   8716   9038   9063
$TTYIN  075654           9260   9261   9273   9291   9305   9309#
$TYPBN= ****** U         9392
$TYPDS  073742           8918#  9391
$TYPE   073274           8776#  9379   9387
$TYPEC  073444           8797   8804   8811   8816#  8817   9208
$TYPEX  073512           8822   8824   8827#
$TYPOC  073540           8859#  9388
$TYPON  073554           8858   8861#  9390
$TYPOS  073514           8854#  9389
$XTSTR  072656           8672#
$$GET4= 000000           6620#
$OFILL  073737           8855*  8859*  8869   8904#
$40CAT= ****** U         8669   9048
.       - 076112          485#   489#   494#   496#   539    540#   542#   544#   551#   602    1764#  1767#  1815
                         1829   1830   1862#  1866#  1909#  1948#  1969#  1990#  2011#  2028#  2198   2443#  6523#
                         6535#  6546#  6557#  6605#  6628   6629#  6654#  6669#  6743#  6860#  8512#  8715   8716
                         8732   8754   8829   8972#  9019#  9063   9066   9070#  9071   9072   9309#  9310   9317#
```

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CLEARS   2474#  6788  6793  6798  6803  6808  6813
COMMEN      1#   483#
DBLTST   4105#  4112  4316  4369  4422  4475  4528  4581  4634  4687  4740  4793  4846  4899  4952
ENDCOM      1#   483#
ERROR     377#  2051  2055  2061  2167  2172  2177  2182  2189  2194  2212  2249  2255  2260  2295
          2300  2335  2340  2380  2402  2428  2445  2447  2449  2451  2453  2455  2457  2459  2461
          2463  2465  2467  2469  2471  2516  2551  2578  2602  2608  2614  2651  2691  2719  2743
          2750  2756  2804  2809  2814  2860  2865  2899  2904  2961  2966  2970  2974  2980  3047
          3052  3055  3058  3061  3065  3070  3074  3077  3133  3143  3160  3162  3166  3171  3175
          3178  3186  3236  3275  3285  3302  3304  3308  3313  3317  3320  3328  3380  3390  3407
          3409  3413  3418  3422  3425  3433  3470  3480  3497  3499  3503  3508  3512  3515  3523
          3577  3587  3604  3606  3610  3615  3619  3622  3630  3682  3692  3709  3711  3715  3720
          3724  3727  3735  3785  3795  3812  3814  3818  3823  3827  3830  3838  3886  3896  3913
          3915  3919  3924  3928  3931  3939  3987  3997  4014  4016  4020  4025  4029  4032  4040
          4083  4095  4100  4148  4152  4197  4201  4247  4251  4297  4301  4352  4356  4405  4409
          4458  4462  4511  4515  4564  4568  4617  4621  4670  4674  4723  4727  4776  4780  4829
          4833  4882  4886  4935  4939  4988  4992  5046  5081  5085  5091  5094  5143  5183  5187
          5193  5196  5217  5248  5252  5257  5308  5314  5317  5322  5323  5384  5387  5390  5393
          5397  5398  5449  5455  5458  5463  5464  5525  5528  5531  5534  5538  5539  5590  5596
          5599  5604  5605  5666  5669  5672  5675  5679  5680  5731  5737  5740  5745  5746  5807
          5810  5813  5816  5820  5821  5872  5878  5881  5886  5887  5948  5951  5954  5957  5961
          5962  6013  6019  6022  6027  6028  6089  6092  6095  6098  6102  6103  6154  6160  6163
          6168  6169  6230  6233  6236  6239  6243  6244  6295  6301  6304  6309  6310  6371  6374
          6377  6380  6384  6385  6432  6433  6454  6457  6460  6463  6468  6469  6470  6782
ESCAPE      1#   483#
GETPRI      1#   483#
GETSWR      1#   483#  1847
MSG      1868#  1871  2095#  2097  2201#  2203  2215#  2218  2264#  2266  2304#  2306  2344#  2346  2407#
         2409  2474#  2477  2520#  2523  2619#  2622  2659#  2662  2760#  2763  2911#  2913  2988#  2990
         3082#  3084  3190#  3193  3332#  3334  3437#  3439  3530  3635#  3638  3739#  3742  3841#  3843
         3942#  3944  4044#  4046  4105#  4107  4156#  4158  4205#  4207  4255#  4257  4306#  4309  4362
         4415  4468  4521  4574  4627  4680  4733  4786  4839  4892  4945  4996#  4998  5098#  5100
         5200#  5202  5260#  5262  5328  5403  5469  5544  5610  5685  5751  5826  5892  5967  6033
         6108  6174  6249  6315  6388#  6390  6486#  6488
MULT        1#   483#
NEWTST      1#   483#  1869  2095  2201  2216  2264  2304  2344  2407  2475  2521  2620  2660  2761
         2911  2988  3082  3191  3332  3437  3528  3636  3740  3841  3942  4044  4105  4156  4205
         4255  4307  4360  4413  4466  4519  4572  4625  4678  4731  4784  4837  4890  4943  4996
         5098  5200  5260  5326  5401  5467  5542  5608  5683  5749  5824  5890  5965  6031  6106
         6172  6247  6313  6388  6486
POP         1#   483#  8741  8742  8959  9351
PUSH        1#   483#  8722  8728  8918  9330
REGCLR   1795#  2272  2312
REPORT      1#   483#
REWR     1795#  5269  5410  5551  5692  5833  5974  6115  6256
SAVE     1795#  2227  2276  2316  2363  2500  2536  2563  2586  2636  2676  2704  2727  2787  2843
         2881  2937  3021  3116  3258  3363  3453  3560  3665  3768  3869  3970  4066  4131  4180
         4230  4280  4335  4388  4441  4494  4547  4600  4653  4706  4759  4812  4865  4918  4971
         5029  5064  5126  5166  5231  5290  5366  5431  5507  5572  5648  5713  5789  5854  5930
         5995  6071  6136  6212  6277  6353  6434
SCOPE     378#  1877  2102  2206  2221  2271  2309  2349  2412  2480  2529  2626  2668  2769  2917
         2995  3087  3196  3338  3443  3534  3641  3746  3846  3949  4049  4111  4162  4212  4262
         4315  4368  4421  4474  4527  4580  4633  4686  4739  4792  4845  4898  4951  5004  5105
         5205  5268  5334  5409  5475  5550  5616  5691  5757  5832  5898  5973  6039  6114  6180
         6255  6321  6394  6491  6591
SETPRI      1#   483#  9238
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SETTRA  9379#  9388  9389  9390  9391  9393  9395  9396  9397  9398
SETUP     1#   483#  1810
SKIP      1#   483#  2311  2484  2628  4113  4164  4214  4264  4317  4370  4423  4476  4529  4582
          4635 4688  4741  4794  4847  4900  4953
SLASH     1#   483#
SPACE   483#
STARS     1#   483#   498   534   537   547   602  1513  1675  1677  1694  1696  1703  1706  1708
          1717 1727  1737  1741  1746  1748  1753  1756  1761  1763  1777  1779  1792  1807  1869
          1876 2095  2101  2106  2110  2115  2119  2201  2205  2216  2220  2264  2270  2304  2308
          2344 2348  2407  2411  2475  2479  2521  2528  2620  2625  2660  2667  2761  2768  2911
          2916 2988  2994  3082  3086  3191  3195  3332  3337  3437  3442  3528  3533  3636  3640
          3740 3745  3841  3845  3942  3948  4044  4048  4105  4110  4156  4161  4205  4211  4255
          4261 4307  4314  4360  4367  4413  4420  4466  4473  4519  4526  4572  4579  4625  4632
          4678 4685  4731  4738  4784  4791  4837  4844  4890  4897  4943  4950  4996  5003  5012
          5014 5098  5104  5200  5204  5260  5267  5326  5333  5401  5408  5467  5474  5542  5549
          5608 5615  5683  5690  5749  5756  5824  5831  5890  5897  5965  5972  6031  6038  6106
          6113 6172  6179  6247  6254  6313  6320  6388  6393  6486  6490  6583  6631  6633  6637
          6639 6641  6643  6687  6689  6714  6716  6764  6766  6784  6786  6819  6821  6840  6843
          6863 6866  6870  6872  7302  7304  8589  8655  8713  8734  8761  8831  8908  8975  9022
          9065 9141  9156  9227  9251  9320  9358
SWRSU     1#   483#  1831#
TIME   2095#  2351  2382  2775  2831  2869  2925  3009  3100  3205  3222  3242  3348  3545  3650
          3753 3854  3955  4054  4119  4168  4218  4268  4323  4376  4429  4482  4535  4588  4641
          4694 4747  4800  4853  4906  4959  5017  5052  5114  5154  5219  5278  5354  5419  5495
          5560 5636  5701  5777  5842  5918  5983  6059  6124  6200  6265  6341  6418  6768
TRESC  2910#  3113  3255  3360  3450  3557  3662  3765  3866  3967
TRMTRP 9379#
TYPBIN    1#   483#
TYPDEC    1#   483#  6606  6613  6679  6683
TYPNAM    1#   483#
TYPNUM    1#   483#
TYPOCS    1#   483#
TYPOCT    1#   483#  2029  6512  6524  6536  6547  6558  6702  6709  6729  6736  6745  6752  6759
          6855 8987  9011  9169
TYPTXT    1#   483#  1859  1863  1894  1900  1906  1944  1965  1986  2007  2025  2071  2087  2440
          6504 6508  6520  6532  6543  6554  6602  6609  6651  6666  6691  6696  6704  6718  6723
          6731 6740  6747  6754  6851  6857
XRCYSR 1795#  5335  5476  5617  5758  5899  6040  6181  6322
$$CMRE  545#   584   585   586   587   588   589
$$CMTM  545#   590   591   592   593   594   595
$$ESCA    1#   483#
$$NEWT    1#   483#  1869  2095  2201  2216  2264  2304  2344  2407  2475  2521  2620  2660  2761
          2911 2988  3082  3191  3332  3437  3528  3636  3740  3841  3942  4044  4105  4156  4205
          4255 4307  4360  4413  4466  4519  4572  4625  4678  4731  4784  4837  4890  4943  4996
          5098 5200  5260  5326  5401  5467  5542  5608  5683  5749  5824  5890  5965  6031  6106
          6172 6247  6313  6388  6486
$$SET  9379#  9388  9389  9390  9391  9393  9395  9396  9397  9398
$$SKIP    1#   483#  2311  2484  2628  4113  4164  4214  4264  4317  4370  4423  4476  4529  4582
          4635 4688  4741  4794  4847  4900  4953
.EQUAT    1#   351#   373
.HEADE    1#   351#   352
.KT11     1#   351#   499
.SETUP    1#   351#  1809
.SWRHI    1#   351#   362
.SWRLO  351#   375#
.$ACT1    1#   351#   535
```

```
.$APTB      1#
.$APTH      1#
.$APTY      1#
.$ASTA      1#
.$CATC      1#     351#     483
.$CMTA      1#     351#     545
.$DB2D      1#
.$DB2O      1#
.$DIV       1#
.$EOP       1#     351#    6581
.$ERRO      1#     351#    9020
.$ERRT      1#     351#    8973
.$MULT      1#
.$POWE      1#     351#    8716
.$RAND      1#
.$RDDE      1#
.$RDOC      1#     351#    9318
.$READ      1#     351#    9063
.$R2AZ      1#
.$SAVE      1#
.$SB2D      1#
.$SB2O      1#
.$SCOP      1#     351#    8653
.$SIZE      1#
.$SUPR      1#
.$TRAP      1#     351#    9356
.$TYPB      1#
.$TYPD      1#     351#    8906
.$TYPE      1#     351#    8759
.$TYPO      1#     351#    8829
.$40CA      1#
.1170       1#


. ABS.  076112      000


 ERRORS DETECTED:  0

 CZRHBF.BIN CZRHBF.LST/CRF/SOL/NL:TOC CZRHBF.SML,CZRHBF.P11
 RUN-TIME: /3 104 10 SECONDS
 RUN-TIME RATIO: 433/189-2.2
 CORE USED:  36K  (71 PAGES)
```