RH10/RH11

MASSBUS DIAGNOSTIC

MD-11-DZRHB-C

EP-DZRHB-C-DL-B

FICHE 1 OF 2

DEC 1976

digital

MADE IN USA

RH10/RH11

MASSBUS DIAGNOSTIC

MD-11-DZRHB-C

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FICHE 2 OF 2

DEC 1976

digital

MADE IN USA

.REM *

IDENTIFICATION

PRODUCT CODE:	MAINDEC-11-DZRHB-C-D
PRODUCT NAME:	MASSBUS I/O AND CONTROLLER DIAGNOSTIC
DATE:	DECEMBER,1976
MAINTAINER:	DIAGNOSTIC GROUP
AUTHOR:	DIAGNOSTIC ENGINEERING

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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 DATA.

2.0 REQUIREMENTS

2.1 HARDWARE

THIS PROGRAM ASSUMES THE FOLLOWING IS IN PROPER WORKING
CONDITION:

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

2.2 SOFTWARE

AFTER LOADING PROGRAM THE STARTING ADDRESS IS 200
IF THE RH'S ARE JUMPERED FOR THE TESTER
SO THAT REGISTER ADDRESSES MAY BE CONFIGURED FOR TESTING
THE RH'S
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 (A MAXIMUM OF 36).

3.0 PROGRAM DESCRIPTION

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

3.1 SWITCH OPTIONS

SWITCH	USE
15	HALT ON ERROR
14	LOOP ON TEST
13	INHIBIT ERROR TYPEOUTS
11	INHIBIT ITERATIONS
10	BELL ON ERROR
9	LOOP ON ERROR
8	LOOP ON TEST IN SWR<7:0>
1	TO BE USED IF DUAL PORT NOT USED
0	INHIBITS THE PRINTING OF WATBIT
13,8,AND 0	INHIBIT WATBIT PRINTOUT

3.2 SYSMAC ROUTINES (USED)

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

THESE ARE THE SYSMAC ROUTINES INCORPORATED IN THIS PRO-

GRAM.

4.0 TEST DESCRIPTIONS

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

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

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

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

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

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

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

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

TEST 11 - RHCS3 TEST. THIS TEST CHECKS THE READ/WRITE BITS IN THE RHCS3 REGISTER CAN BE CLEARED AND SET.

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

                        ←

                .TITLE  MASSBUS RH70 AND RH11 DIAGNOSTIC
                ;*COPYRIGHT (C) 1976
                ;*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-C2), SEPT 14, 1976.
                ;*
                .SBTTL  OPERATIONAL SWITCH SETTINGS
                ;*
                ;*      SWITCH                  USE
                ;*      ------          --------------------
                ;*        15            HALT ON ERROR
                ;*        14            LOOP ON TEST
                ;*        13            INHIBIT ERROR TYPEOUTS
                ;*        11            INHIBIT ITERATIONS
```

```
                                ;*        10            BELL ON ERROR
                                ;*         9            LOOP ON ERROR
                                ;*         8            LOOP ON TEST IN SWR<7:0>
                                .SBTTL  BASIC DEFINITIONS

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

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

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

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

```
                        SW04=   20
                        SW03=   10
                        SW02=   4
                        SW01=   2
                        SW00=   1
                        .EQUIV  SW09,SW9
                        .EQUIV  SW08,SW8
                        .EQUIV  SW07,SW7
                        .EQUIV  SW06,SW6
                        .EQUIV  SW05,SW5
                        .EQUIV  SW04,SW4
                        .EQUIV  SW03,SW3
                        .EQUIV  SW02,SW2
                        .EQUIV  SW01,SW1
                        .EQUIV  SW00,SW0

                        ;*DATA BIT DEFINITIONS (BIT00 TO BIT15)
                        BIT15=  100000
                        BIT14=  40000
                        BIT13=  20000
                        BIT12=  10000
                        BIT11=  4000
                        BIT10=  2000
                        BIT09=  1000
                        BIT08=  400
                        BIT07=  200
                        BIT06=  100
                        BIT05=  40
                        BIT04=  20
                        BIT03=  10
                        BIT02=  4
                        BIT01=  2
                        BIT00=  1
                        .EQUIV  BIT09,BIT9
                        .EQUIV  BIT08,BIT8
                        .EQUIV  BIT07,BIT7
                        .EQUIV  BIT06,BIT6
                        .EQUIV  BIT05,BIT5
                        .EQUIV  BIT04,BIT4
                        .EQUIV  BIT03,BIT3
                        .EQUIV  BIT02,BIT2
                        .EQUIV  BIT01,BIT1
                        .EQUIV  BIT00,BIT0

                        ;*BASIC "CPU" TRAP VECTOR ADDRESSES
000004                  ERRVEC= 4               ;;TIME OUT AND OTHER ERRORS
000010                  RESVEC= 10              ;;RESERVED AND ILLEGAL INSTRUCTIONS
000014                  TBITVEC=14              ;;"T" BIT
000014                  TRTVEC= 14              ;;TRACE TRAP
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
000210  000137  004152                          JMP     @#BEGIN3
                                                ;;*************************************************************
                                                .SBTTL  MEMORY MANAGEMENT DEFINITIONS

                                                ;*KT11 VECTOR ADDRESS

                        000250                  MMVEC=  250

                                                ;*KT11 STATUS REGISTER ADDRESSES

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

                                                ;*KERNEL "I" PAGE DESCRIPTOR REGISTERS

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

                                                ;*KERNEL "I" PAGE ADDRESS REGISTERS

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

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

                                                ;;*************************************************************
```

```
                                ;HOOKS REQUIRED BY ACT11
000214                          $SVPC=.                 ;SAVE PC
000046                          .=46
000046  046262                  $ENDAD                  ;;1)SET LOC.46 TO ADDRESS OF $ENDAD IN .$ECP
000052                          .=52
000052  000000                  .WORD   0               ;;2)SET LOC.52 TO ZERO
000214                          .=$SVPC                 ;; RESTORE PC
```

```
                                .SBTTL  COMMON TAGS

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

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

```
   557  001224  000012                $LF:    .ASCIZ  <12>            ;;LINE FEED
   558                                ;;*****************************************************************
```

```
                                .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  054760                          EM1                             ;CORRECT BIT DID NOT SET
                                                                        ;IN RH WORD COUNT REGISTER
001230  067522                          DH1
001232  071670                          DT1
001234  072234                          DF1
                                ;ITEM 2
001236  055020                          EM2                             ;CORRECT BIT DID NOT SET
                                                                        ;IN BUS ADDRESS EXTENTION
                                                                        ;REGISTER
001240  067642                          DH2
001242  071702                          DT2
001244  072240                          DF2
                                ;ITEM 3
001246  055060                          EM3                             ;CORRECT BIT DID NOT SET
                                                                        ;IN BUS ADDRESS REGISTER
001250  067763                          DH3
001252  071714                          DT3
001254  072244                          DF3
                                ;ITEM 4
001256  055134                          EM4                             ;CORRECT BIT DID NOT SET
                                                                        ;IN RHDB REGISTER
001260  070103                          DH4
001262  071726                          DT4
001264  072250                          DF4
                                ;ITEM   5
001266  055174                          EM5                             ;NED DID NOT SET IN
                                                                        ;RHCS2 REGISTER
001270  070223                          DH5
001272  071740                          DT5
001274  072254                          DF5
                                ;ITEM 6
001276  055245                          EM6                             ;NEM LOGIC TO SET TRE
                                                                        ;AND SC BITS IN RHCS1
                                                                        ;IS NOT WORKING
001300  070223                          DH5
001302  071740                          DT5
001304  072254                          DF5
                                ;ITEM 7
001306  055461                          EM7                             ;NEM BIT DOES NOT READ AS SET
```

```
615  001310  070223                  DH5
616  001312  071740                  DT5
617  001314  072254                  DF5
618                          ;ITEM 10
619  001316  055527          EM10                    ;TRE BIT SET BUT NEM
620                                                  ;AND SC ARE NOT?
621  001320  070223                  DH5
622  001322  071740                  DT5
623  001324  072254                  DF5
624                          ;ITEM   11
625  001326  055563          EM11                ;SC BIT SET BY ATTN OR MCPE
626                                              ;ERROR OR SC IS SHORTED
627                                              ;SHOULD HAVE BEEN SET BY NEM AND TRE
628  001330  070330                  DH11
629  001332  071752                  DT11
630  001334  072260                  DF11
631                          ;ITEM   12
632  001336  055624          EM12                ;TRE BIT SET BY NEM BUT SC
633                                              ;DID NOT SET, LOGIC BETWEEN
634                                              ;TRE AND SC NOT WORKING
635  001340  070223                  DH5
636  001342  071740                  DT5
637  001344  072254                  DF5
638
639                          ;ITEM   13
640  001346  055644          EM13                ;TRE BIT IS SET BUT SC
641                                              ;READS AS CLEARED. SC
642                                              ;LOGIC ASSOCIATED WITH TRE
643                                              ;BIT IS NOT WORKING OR SC
644                                              ;HAS AN OPEN GOING TO THE BUS
645  001350  070223                  DH5
646  001352  071740                  DT5
647  001354  072254                  DF5
648
649                          ;ITEM   14
650  001356  055713          EM14                ;WCE BIT DID NOT SET, BIT 14 IN
651                                              ;RHCS2
652
653  001360  070223                  DH5
654  001362  071740                  DT5
655  001364  072254                  DF5
656
657                          ;ITEM   15
658  001366  055737          EM15                ;WCE BIT DID NOT SET BUT
659                                              ;TRE AND SC IN RHCS1 ARE
660                                              ;SET.
661
662  001370  070223                  DH5
663  001372  071740                  DT5
664  001374  072254                  DF5
665
666                          ;ITEM   16
667  001376  055763          EM16                ;WCE AND SC ERROR BITS ARE
668                                              ;SET TRE ERROR BIT SHOULD ALSO
669                                              ;BE SET BUT IT READS AS CLEARED
670                                              ;THERE MIGHT BE AN OPEN BETWEEN
```

C02


```
                                                        ;TRE AND THE BUS

001400  070223                      DHS
001402  071740                      DTS
001404  072254                      DFS
                          ;ITEM     17
001406  056003                      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  070223                      DHS
001412  071740                      DTS
001414  072254                      DFS

                          ;ITEM     20
001416  056052                      EM20                ;UPE DID NOT SET IN RHCS2

001420  070223                      DHS
001422  071740                      DTS
001424  072254                      DFS

                          ;ITEM     21
001426  056103                      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  070223                      DHS
001432  071740                      DTS
001434  072254                      DFS

                          ;ITEM     22
001436  056132                      EM22                ;TRE BIT IS SET. UPE AND SC
                                                        ;SHOULD ALSO BE SET BUT THEY
                                                        ;READ AS CLEARED

001440  070223                      DHS
001442  071740                      DTS
001444  072254                      DFS

                          ;ITEM     23
001446  056165                      EM23                ;UPE AND TRE ARE SET BUT
                                                        ;SC DID NOT SET, LOGIC TO
                                                        ;SET SC DOES NOT SEEM TO
                                                        ;BE WORKING

001450  070223                      DHS
001452  071740                      DTS
001454  072254                      DFS

                          ;ITEM     24
001456  056204                      EM24                ;NED DID NOT SET IN RHCS2
```

```
                                
001460  070223                  DH5
001462  071740                  DT5
001464  072254                  DF5
                                
                        ;ITEM   25
001466  056235          EM25                    ;TRE AND SC ARE SET
                                                ;BUT THEY SHOULD HAVE BEEN
                                                ;SET BY NED WHICH READS
                                                ;AS CLEARED
                                
001470  070223                  DH5
001472  071740                  DT5
001474  072254                  DF5
                                
                        ;ITEM   26
001476  056267          EM26                    ;TRE BIT SET BUT NED
                                                ;AND SC BITS READ AS
                                                ;CLEARED. NED SHOULD
                                                ;HAVE SET CAUSING TRE
                                                ;TO SET WHICH IN TURN
                                                ;SET SC.  LOGIC NOT WORK
                                                ;ING CORRECTLY
                                
001500  070223                  DH5
001502  071740                  DT5
001504  072254                  DF5
                                
                        ;ITEM   27
001506  056315          EM27                    ;TRE BIT WAS NOT SET
                                                ;BY NED. TRE SET LOGIC
001510  070223                  DH5             ;NOT WORKING
001512  071740                  DT5
001514  072254                  DF5
                                
                        ;ITEM   30
001516  056350          EM30                    ;MXF BIT DID NOT SET
                                                ;IN RHCS2
                                
001520  070223                  DH5
001522  071740                  DT5
001524  072254                  DF5
                                
                        ;ITEM   31
001526  056405          EM31                    ;MXF BIT SHOULD BE SET
                                                ;IN RHCS2 BUT IT READS AS
                                                ;CLEARED. TRE AND SC ARE SET
                                                ;IN RHCS1.
                                
001530  070223                  DH5
001532  071740                  DT5
001534  072254                  DF5
                                
                        ;ITEM   32
001536  056444          EM32                    ;TRE BIT IS SET BUT MXF
                                                ;AND SC READ AS CLEARED
```

```
                                                        ;MXF AND SC BITS ARE INCORRECT
001540  070223                      DH5
001542  071740                      DT5
001544  072254                      DF5

                        ;ITEM   33
001546  056473                      EM33                ;TRE LOGIC ASSOCIATED WITH
                                                        ;MXF IS NOT WORKING
                                                        ;TRE READS AS CLEARED
                                                        ;OR TRE HAS AN OPEN GOING
                                                        ;TO THE BUS

001550  070223                      DH5
001552  071740                      DT5
001554  072254                      DF5

                        ;ITEM   34
001556  056543                      EM34                ;TESTER IS NOT CONNECT
                                                        ;TO THE MASSBUS DEVICE
                                                        ;CODE SHOULD BE A 40
001560  070416                      DH34                 PC TEST NO. DEVICE CODE

001562  071762                      DT34                ;$ERRPC,$TSTNM,DT,0

001564  072263                      DF34                ;0,0,0

                        ;ITEM   35
001566  056613                      EM35                ;BIT IN RHCS3 WILL NOT ET

001570  071551                      DH171
001572  072212                      DT171
001574  072260                      DF11

                        ;ITEM   36
001576  056645                      EM36

001600  070476                      DH36                ;PC TEST NO. FAILING ADDRESS

001602  071776                      DT36                ;$ERRPC,$TSTNM,RHCS1.0

001604  072267                      DF36                ;0,0,0

                        ;ITEM   37
001606  056703                      EM37                ;DLT DID NOT SET IN RHCS2

001610  070473                      DH35

001612  071772                      DT35

001614  072266                      DF35

                        ;ITEM   40
001616  056734                      EM40                ;DLT IS NOT SET IN RHCS2 BUT
                                                        ;TRE AND SC READ AS SET.TRE
                                                        ;AND SC MUST HAVE BEEN SET BY A DIFFERENT ERROR
```

```
                                ;ITEM   41
001626  057074                          EM41                    ;OUTPUT READY IN RHCS2
                                                                ;DID NOT SET

001630  070557                          DH41                    ;PC TEST NO.

001632  072006                          DT41                    ;$ERRPC,$TSTNM,0

001634  072272                          DF41                    ;

                                ;ITEM   42

001636  057177                          EM42                    ;ALL BITS DID NOT LOAD INTO RHWC
                                                                ; (177777)

001640  000000                          0
001642  000000                          0
001644  000000                          0

                                ;ITEM   43
001646  057250                          EM43                    ;RHWC DID NOT LOAD ANY BITS (177777)
001650  000000                          0
001652  000000                          0
001654  000000                          0

                                ;ITEM   44                      ;RHWC
001656  057314                          EM44                    ;SOME BITS CLEARED AFTER CLEAR
                                                                ;WAS LOADED INTO RHCS2

001660  000000                          0
001662  000000                          0
001664  000000                          0

                                ;ITEM   45
001666  057406                          EM45                    ;NON-EXISTANT MEMORY BIT
                                                                ;SET IN RHCS2
001670  000000                          0
001672  000000                          0
001674  000000                          0

                                ;ITEM   46
001676  057461                          EM46                    ;RHBA DID NOT CLEAR AFTER CLR
                                                                ;WAS LOADED INTO RHCS2
001700  000000                          0
001702  000000                          0
001704  000000                          0

                                ;ITEM   47
001706  057542                          EM47                    ;ALL BITS DID NOT LOAD INTO
                                                                ;RHBA REGISTER (177776)
001710  000000                          0
```

```
001712  000000                  0
001714  000000                  0

                        ;ITEM   50
001716  057613                  EM50            ;LOADING TRE AFER ITS SET DOES NCT
                                                ;CLEAR ERRORS
001720  000000                  0
001722  000000                  0
001724  000000                  0

                        ;ITEM   51
001726  057672                  EM51            ;PGE DID NOT SET IN RHCS2
001730  000000                  0
001732  000000                  0
001734  000000                  0

                        ;ITEM   52
001736  057723                  EM52            ;THE PROM WHILE ACCESSING A
                                                ;REGISTER WHICH YOUR TESTER
                                                ;CANNOT SUPPLY INFORMATION FOR
                                                ;SAYS INFORMATION IS PRESENT

001740  070603                  DH52            ;PC TEST NO. ADDRESS CONT

001742  072014                  DT52            ;$ERRPC,$TSTNM,BAE,$REGO

001744  072274                  DF52            ;

                        ;ITEM   53
001746  060076                  EM53            ;RHCS1
001750  000000                  0
001752  000000                  0
001754  000000                  0

                        ;ITEM   54
001756  060104                  EM54            ;RHWC
001760  000000                  0
001762  000000                  0
001764  000000                  0

                        ;ITEM   55
001766  060111                  EM55            ;RHBA
001770  000000                  0
001772  000000                  0
001774  000000                  0

                        ;ITEM   56
001776  060116                  EM56            ;RHMR2
002000  000000                  0
002002  000000                  0
002004  000000                  0

                        ;ITEM   57
002006  060124                  EM57            ;RHCS2
002010  000000                  0
002012  000000                  0
```

```
951  002014  000000                    0
952
953                                 ;ITEM   60
954  002016  060132                    EM60                    ;RHST
955  002020  000000                    0
956  002022  000000                    0
957  002024  000000                    0
958
959                                 ;ITEM   61
960  002026  060137                    EM61                    ;RHER
961  002030  000000                    0
962  002032  000000                    0
963  002034  000000                    0
964
965                                 ;ITEM   62
966  002036  060144                    EM62                    ;RHAS
967  002040  000000                    0
968  002042  000000                    0
969  002044  000000                    0
970
971                                 ;ITEM   63
972  002046  060151                    EM63                    ;RHTDB
973  002050  000000                    0
974  002052  000000                    0
975  002054  000000                    0
976
977                                 ;ITEM   64
978  002056  060157                    EM64                    ;RHDB
979  002060  000000                    0
980  002062  000000                    0
981  002064  000000                    0
982
983                                 ;ITEM   65
984  002066  060164                    EM65                    ;RHMR1
985  002070  000000                    0
986  002072  000000                    0
987  002074  000000                    0
988
989                                 ;ITEM   66
990  002076  060172                    EM66                    ;RHDT
991  002100  000000                    0
992  002102  000000                    0
993  002104  000000                    0
994
995                                 ;ITEM   67
996  002106  060177                    EM67                    ;RHBAE
997  002110  000000                    0
998  002112  000000                    0
999  002114  000000                    0
1000
1001                                ;ITEM   70
1002 002116  060205                    EM70                    ;RHCS3
1003 002120  000000                    0
1004 002122  000000                    0
1005 002124  000000                    0
1006
```

```
1007                                    ;ITEM   71
1008  002126  060213                            EM71                    ;DEVICE NO DOES NOT EQLAL
1009                                                                    ;A 7 IN RHMR2 AFTER A CLEAR
1010
1011  002130  071577                            DH172
1012
1013  002132  072222                            DT172
1014
1015  002134  072326                            DF172
1016
1017                                    ;ITEM   72
1018  002136  060302                            EM72                    ;RHCS1 HAS AN ERROR BIT
1019                                                                    ;SET AFTER CLEAR OPERATION
1020
1021  002140  070761                            DH72                    ;PC TEST NO. CONTENTS OF REGISTER
1022
1023  002142  072030                            DT71
1024
1025  002144  072301                            DF71
1026
1027                                    ;ITEM   73
1028  002146  060337                            EM73                    ;ERROR BIT SET IN RHCS2
1029                                                                    ;AFTER A CLEAR OPERATION
1030
1031  002150  070761                            DH72
1032
1033  002152  072030                            DT71
1034  002154  072301                            DF71
1035
1036                                    ;ITEM   74
1037  002156  060366                            EM74                    ;ERROR BIT SET IN RHER,
1038                                                                    ;TESTER ERROR REGISTER,AFTER
1039                                                                    ;A CLEAR OPERATION
1040  002160  070761                            DH72
1041  002162  072030                            DT71
1042  002164  072301                            DF71
1043
1044                                    ;ITEM   75
1045  002166  060414                            EM75                    ;ERROR BIT SET IN RHST
1046                                                                    ;AFTER A CLEAR OPERATION
1047
1048  002170  070761                            DH72
1049  002172  072030                            DT71
1050  002174  072301                            DF71
1051                                    ;ITEM   76
1052  002176  060444                            EM76                    ;RHBA INCREMENTED BUT DID NOT CARRY
1053                                                                    ;OVER TO THE RHBAE REGISTER
1054  002200  071050                            DH76
1055  002202  072040                            DT76
1056  002204  072304                            DF76
1057                                    ;ITEM   77
1058  002206  060551                            EM77                    ;READY DID NOT SET AND RHWC
1059                                                                    ;DID NOT INCREMENTM DOING A WRITE OPERATION
1060  002210  067522                            DH1
1061  002212  071670                            DT1
1062  002214  072234                            DF1
```

```
1063                                    ;ITEM   100
1064  002216  060663                            EM100                   ;RHBA DID NOT CLEAR AFTER CLR
1065                                                                    ;WAS LOADED INTO RHCS2
1066  002220  067642                            DH2
1067  002222  071702                            DT2
1068  002224  072240                            DF2
1069                                    ;ITEM   101
1070  002226  060750                            EM101
1071  002230  067642                            DH2
1072  002232  071702                            DT2
1073  002234  072240                            DF2
1074                                    ;ITEM   102
1075  002236  061015                            EM102                   ;READY DID NOT SET IN RHCS1
1076  002240  000000                            0
1077  002242  000000                            0
1078  002244  000000                            0
1079                                    ;ITEM   103
1080  002246  061046                            EM103                   ;DOING A WRITE OPERATION RDY
1081                                                                    ;DID NOT SET AND WC DID NOT INCREMENT
1082                                                                    ;BUT INFO WAS WRITTEN TO TESTER
1083  002250  067522                            DH1
1084  002252  071670                            DT1
1085  002254  072234                            DF1
1086                                    ;ITEM   104
1087  002256  061224                            EM104                   ;DOING A WRITE OPERATION RDY
1088                                                                    ;DID NOT SET AND WC WAS NOT INCREMENTED
1089                                                                    ;AND INFO WAS NOT WRITTEN TO TESTER
1090                                                                    ;(WRITE OPERATION DID NOT WORK)
1091  002260  000000                            0
1092  002262  000000                            0
1093  002264  000000                            0
1094                                    ;ITEM   105
1095  002266  061415                            EM105                   ;RHBAE IS MESSED UP IT SHOULD
1096                                                                    ;EQUAL 40,IT DOES NOT = 37(OLD)
1097                                                                    ;AND IT DOES NOT = 0
1098  002270  071106                            DH105
1099  002272  072052                            DT105
1100  002274  072310                            DF105
1101                                    ;ITEM   106
1102  002276  061462                            EM106                   ;RHBAE DID NOT GET INCREMENTED
1103  002300  071106                            DH105
1104  002302  072052                            DT105
1105  002304  072310                            DF105
1106                                    ;ITEM   107
1107  002306  061510                            EM107                   ;READ REV. OPERATIONS DID NOT
1108  002310  000000                            0                       ;READ FROM TESTER TO STORAGE LOCATION
1109  002312  000000                            0                       ;(RBUS)
1110  002314  000000                            0
1111                                    ;ITEM   110
1112  002316  061617                            EM110                   ;RHBAE = 0 IT SHOULD = 40
1113                                                                    ;AFTER A ONE WORD WRITE
1114  002320  000000                            0
1115  002322  000000                            0
1116  002324  000000                            0
1117                                    ;ITEM   111
1118  002326  061711                            EM111                   ;A17 DID NOT SET AFTER BA WAS INCREMENTED
```

```
1119  002330  071153                    DH111
1120  002332  072066                    DT111
1121  002334  072310                    DF105
1122                            ;ITEM   112
1123  002336  061764                    EM112               ;BA DID NOT INCREMENT
1124  002340  071153                    DH111
1125  002342  072066                    DT111
1126  002344  072310                    DF105
1127                            ;ITEM   113
1128  002346  062011                    EM113               ;RHBA INCREMENTED BUT IT DID
1129                                                        ;NOT CARRY TO A16 + A17 IN RHCS1
1130  002350  071153                    DH111
1131  002352  072066                    DT111
1132  002354  072310                    DF105
1133                            ;ITEM   114
1134  002356  062106                    EM114               ;OUTPUT READY WAS NOT NEGATED
1135                                                        ;AFTER CLR WAS LOADED INTO RHCS2
1136  002360  000000                    0
1137  002362  000000                    0
1138  002364  000000                    0
1139                            ;ITEM   115
1140  002366  062204                    EM115               ;ALL BITS DID NOT READ TO STORAGE
1141  002370  000000                    0                   ;LOCATION (RBUF) DURING A READ REV. OPERATION
1142  002372  000000                    0
1143  002374  000000                    0
1144                            ;ITEM   116
1145  002376  062316                    EM116               ;MDPE DID NOT SET IN RHCS2
1146  002400  000000                    0
1147  002402  000000                    0
1148  002404  000000                    0
1149                            ;ITEM   117
1150  002406  062350                    EM117               ;INFO DID NOT WITE TO TESTER
1151                                                        ;DOING A WRITE REV. OPERATION
1152  002410  071465                    DH147
1153  002412  072170                    DT147
1154  002414  072304                    DF76
1155                            ;ITEM   120
1156  002416  062446                    EM120               ;TRE AND SC DO NOT SEEM TO HAVE
1157                                                        ;BEEN SET BY MDPE
1158  002420  070330                    DH11
1159  002422  071752                    DT11
1160  002424  072260                    DF11
1161                            ;ITEM   121
1162  002426  062507                    EM121               ;TRE IS ONLY BIT SET ,MDPE AND
1163                                                        ;SC SHOULD ALSO BE SET
1164  002430  071220                    DH121
1165  002432  072102                    DT121
1166  002434  072304                    DF76
1167                            ;ITEM   122
1168  002436  062572                    EM122               ;SC NOT SET AFTER MDPE AND TRE SET
1169  002440  071220                    DH121
1170  002442  072102                    DT121
1171  002444  072304                    DF76
1172                            ;ITEM   123
1173  002446  062624                    EM123               ;TRE AND SC WERE SET EITHER BY
1174                                                        ;AN ERROR OTHER THAN PGE,OR PGE
```

```
1175                                                            ;HAS AN OPEN GOING TO THE BUS
1176  002450  000000                          0
1177  002452  000000                          0
1178  002454  000000                          0
1179                                ;ITEM     124
1180  002456  062677                          EM124             ;DBL NOT SET AFTER A 4 WORD WRITE
1181                                                            ;FROM AN EVEN ADDRESS
1182  002460  000000                          0
1183  002462  000000                          0
1184  002464  000000                          0
1185                                ;ITEM     125
1186  002466  062772                          EM125             ;DBL SET AFTER DOING A 1 WORD WRITE
1187                                                            ;FROM AN EVEN ADDRESS
1188  002470  000000                          0
1189  002472  000000                          0
1190  002474  000000                          0
1191                                ;ITEM     126
1192  002476  063066                          EM126             ;DBL SET ON A 3 WORD WRITE
1193                                                            ;FROM AN EVEN ADDRESS
1194  002500  000000                          0
1195  002502  000000                          0
1196  002504  000000                          0
1197                                ;ITEM     127
1198  002506  063157                          EM127             ;DBL DID NOT SET AFTER A 2 WORD
1199                                                            ;WRITE FROM AN EVEN ADDRESS
1200  002510  000000                          0
1201  002512  000000                          0
1202  002514  000000                          0
1203                                ;ITEM     130
1204  002516  063255                          EM130             ;MCPE SET BUT SC READS AS CLEARED
1205  002520  071256                          DH130
1206  002522  072114                          DT130
1207  002524  072267                          DF36
1208                                ;ITEM     131
1209  002526  063327                          EM131             ;MCPE DID NOT SET
1210  002530  071256                          DH130
1211  002532  072114                          DT130
1212  002534  070476                          DH36
1213                                ;ITEM     132
1214  002536  063361                          EM132             ;WCE LO (EW) DID NOT SET IN RHCS3
1215  002540  071304                          DH132
1216  002542  072124                          DT132
1217  002544  072315                          DF132
1218                                ;ITEM     133
1219  002546  063415                          EM133             ;WCE HI (OW) SET ALONG WITH
1220                                                            ;WCE LO IN RHCS3
1221  002550  071304                          DH132
1222  002552  072124                          DT132
1223  002554  072315                          DF132
1224                                ;ITEM     134
1225  002556  063516                          EM134             ;WCE LO IS SET IN RHCS3 BUT
1226                                                            ;WCE IS NOT SET IN RHCS2
1227  002560  071304                          DH132
1228  002562  072124                          DT132
1229  002564  072315                          DF132
1230                                ;ITEM     135
```

```
  1231  002566  063577                    EM135                   ;WCE HI DID NOT SET IN RHCS3
  1232  002570  071304                    DH132
  1233  002572  072124                    DT132
  1234  002574  072315                    DF132
  1235                          ;ITEM     136
  1236  002576  063633                    EM136                   ;WCE HI SET BUT WCE DID NOT SET IN RHCS2
  1237  002600  071304                    DH132
  1238  002602  072124                    DT132
  1239  002604  072315                    DF132
  1240                          ;ITEM     137
  1241  002606  063714                    EM137                   ;WCE LO SET WITH WCE HI IN RHCS3
  1242  002610  071304                    DH132
  1243  002612  072124                    DT132
  1244  002614  072315                    DF132
  1245                          ;ITEM     140
```

```
 1246  002616  064015                EM140                   ;WRITE OPERATION DID NOT INC WC
 1247  002620  000000                0
 1248  002622  000000                0
 1249  002624  000000                0
 1250                          ;ITEM  141
 1251  002626  064072                EM141                   ;BA WAS NOT INC AFTER A WRITE
 1252  002630  000000                0
 1253  002632  000000                0
 1254  002634  000000                0
 1255                          ;ITEM  142
 1256  002636  064146                EM142                   ;INFO WAS NOT WRITTEN TO TESTER
 1257  002640  071362                DH142
 1258  002642  072142                DT142
 1259  002644  072304                DF76
 1260                          ;ITEM  143
 1261  002646  064220                EM143                   ;READ OPERATION DID NOT INC WC
 1262  002650  000000                0
 1263  002652  000000                0
 1264  002654  000000                0
 1265                          ;ITEM  144
 1266  002656  064274                EM144                   ;BA WAS NOT INC AFTER A READ
 1267  002660  000000                0
 1268  002662  000000                0
 1269  002664  000000                0
 1270                          ;ITEM  145
 1271  002666  064362                EM145                   ;INFO DID NOT READ FROM TESTER
 1272  002670  071362                DH142
 1273  002672  072142                DT142
 1274  002674  072304                DF76
 1275                          ;ITEM  146
 1276  002676  064427                EM146                   ;THIS IS FOR PRINTED CONTENTS
 1277                                                        ;OF THE RH REGISTERS
 1278  002700  071420                DH146
 1279  002702  072154                DT146
 1280  002704  072310                DF105
 1281                          ;ITEM  147
 1282  002706  064500                EM147                   ;ALL BITS DID NOT GET TRANSFERED
 1283                                                        ;DURING A READ OPERATION
 1284  002710  071465                DH147
 1285  002712  072170                DT147
 1286  002714  072304                DF76
 1287                          ;ITEM  150
 1288  002716  064571                EM150                   ;READ OPERATION DID NOT SEEM TO WORK
 1289  002720  071465                DH147
 1290  002722  072170                DT147
 1291  002724  072304                DF76
 1292                          ;ITEM  151
 1293  002726  064723                EM151                   ;ALL BITS DID NOT WRITE TO TESTER
 1294  002730  071465                DH147
 1295  002732  072170                DT147
 1296  002734  072304                DF76
 1297                          ;ITEM  152
 1298  002736  065025                EM152                   ;WRITE OPERATION DID NOT WRITE
 1299                                                        ;TO TESTER
 1300  002740  071465                DH147
 1301  002742  072170                DT147
```

```
 1302  002744  072304                    DF76
 1303                          :ITEM   153
 1304  002746  065075                    EM153           ;DBL SET ON A 2 WORD TRANSFER
                                                        ;WITH BAI SET
 1305
 1306  002750  000000                    0
 1307  002752  000000                    0
 1308  002754  000000                    0
 1309                          :ITEM   154
 1310  002756  065161                    EM154           ;DBL SET ON A 1 WORD READ FROM
                                                        ;AN EVEN ADDRESS
 1311
 1312  002760  000000                    0
 1313  002762  000000                    0
 1314  002764  000000                    0
 1315                          :ITEM   155
 1316  002766  065252                    EM155           ;DBL SET ON A 2 WORD WRITE REV
                                                        ;WITH BAI SET
 1317
 1318  002770  000000                    0
 1319  002772  000000                    0
 1320  002774  000000                    0
 1321                          :ITEM   156
 1322  002776  065340                    EM156           ;DBL SET ON A 2 WORD WRITE FROM
 1323                                                   ;FROM AN ODD ADDRESS
 1324  003000  000000                    0
 1325  003002  000000                    0
 1326  003004  000000                    0
 1327                          :ITEM   157
 1328  003006  065431                    EM157           ;DBL DID NOT SET ON A 2 WORD
 1329                                                   ;WRITE REV FROM AN EVEN ADDRESS
 1330  003010  000000                    0
 1331  003012  000000                    0
 1332  003014  000000                    0
 1333                          :ITEM   160
 1334  003016  065525                    EM160           ;DBL SET ON A 2 WORD WRITE REV
                                                        ;FROM AN ODD ADDRESS
 1336  003020  000000                    0
 1337  003022  000000                    0
 1338  003024  000000                    0
 1339                          :ITEM   161
 1340  003026  065614                    EM161           ;DBL SET ON A 3 WORD WRITE REV
                                                        ;FROM AN ODD ADDRESS
 1341
 1342  003030  000000                    0
 1343  003032  000000                    0
 1344  003034  000000                    0
 1345                          :ITEM   162
 1346  003036  065703                    EM162           ;DBL DID NOT SET ON A 2 WORD
 1347  003040  000000                    0
 1348  003042  000000                    0
 1349  003044  000000                    0
 1350                          :ITEM   163
 1351  003046  065772                    EM163           ;DBL SET ON A 2 WORD READ
                                                        ;FROM AN ODD ADDRESS
 1352
 1353  003050  000000                    0
 1354  003052  000000                    0
 1355  003054  000000                    0
 1356                          :ITEM   164
 1357  003056  066050                    EM164           ;DBL SET ON A 2 WORD READ REV
```

```
1358                                                    ;FROM AN ODD ADDRESS
1359  003060  000000                          0
1360  003062  000000                          0
1361  003064  000000                          0
1362                          ;ITEM   165
1363  003066  066137                          EM165     ;DBL DID NOT SET ON A 2 WORD
1364                                                    ;READ REV FROM AN EVEY ADDRESS
1365  003070  000000                          0
1366  003072  000000                          0
1367  003074  000000                          0
1368                          ;ITEM   166
1369  003076  066235                          EM166     ;DBL SET ON A 3 WORD READ FROM
1370                                                    ;AN EVEN ADDRESS
1371  003100  000000                          0
1372  003102  000000                          0
1373  003104  000000                          0
1374                          ;ITEM   167
1375  003106  066314                          EM167     ;DBL DID NOT SET ON A 3 WORD
1376                                                    ;READ REV FROM AN EVEN ADDRESS
1377  003110  000000                          0
1378  003112  000000                          0
1379  003114  000000                          0
1380                          ;ITEM   170
1381  003116  000000                          0
1382  003120  071523                          DH170
1383  003122  072232                          DT170
1384  003124  072323                          DF170
1385                          ;ITEM   171
1386  003126  066413                          EM171     ;TRE READS AS SET,PGE AND SC
1387                                                    ;READ AS CLEARED.PGE AND SC
1388                                                    ;SHOULD ALSO BE SET
1389  003130  000000                          0
1390  003132  000000                          0
1391  003134  000000                          0
1392                          ;ITEM   172
1393  003136  066465                          EM172     ;PGE AND TRE READ AS SET SC
1394                                                    ;READS AS CLEARED
1395  003140  000000                          0
1396  003142  000000                          0
1397  003144  000000                          0
1398                          ;ITEM   173
1399  003146  066506                          EM173     ;READY DID NOT CAUSE AN INTRUPT
1400                                                    ;WITH IE SET IN RHCS1
1401  003150  000000                          0
1402  003152  000000                          0
1403  003154  000000                          0
1404                          ;ITEM   174
1405  003156  066572                          EM174     ;IE WILL NOT SET IN RHCS1
1406  003160  000000                          0
1407  003162  000000                          0
1408  003164  000000                          0
1409                          ;ITEM   175
1410  003166  066623                          EM175     ;IE HAS AN OPEN GOING TO THE BUS
1411  003170  000000                          0
1412  003172  000000                          0
1413  003174  000000                          0
```

```
1414
1415  003176  066663                  ;ITEM   176
                                      EM176                   ;TRE IS SET DLT AND SC SHOULD ALSO BE SET
1416  003200  071220                  DH121
1417  003202  072102                  DT121
1418  003204  072304                  DF76
1419                                  ;ITEM   177
1420  003206  066716                  EM177                   ;DLT AND TRE ARE SET .SC READS AS CLEARED
1421  003210  071220                  DH121
1422  003212  072102                  DT121
1423  003214  072304                  DF76
1424                                  ;ITEM   200
1425  003216  066763                  EM200                   ;HIBITE LOBYTE GATE FOR WC NG
1426  003220  070557                  DH41
1427  003222  072006                  DT41
1428  003224  072272                  DF41
1429                                  ;ITEM   201
1430  003226  067045                  EM201                   ;HIBYTE LOBYTE GATE FOR DB NG
1431  003230  070557                  DH41
1432  003232  072006                  DT41
1433  003234  072272                  DF41
1434                                  ;ITEM   202
1435  003236  067127                  EM202                   ;HIBYTE LOBYTE GATE FOR BA IS NG
1436  003240  070557                  DH41
1437  003242  072006                  DT41
1438  003244  072272                  DF41
1439                                  ;ITEM   203
1440  003246  067211                  EM203                   ;RHBA HAS WRONG ADDRESS
1441  003250  070557                  DH41
1442  003252  072006                  DT41
1443  003254  072272                  DF41
1444                                  ;ITEM   204
1445  003256  067271                  EM204                   ;TESTER DATA BUFFER HAS WRONG INFO
1446  003260  070557                  DH41
1447  003262  072006                  DT41
1448  003264  072272                  DF41
1449                                  ;ITEM   205
1450  003266  067356                  EM205                   ;RH DID NOT INTERUPT
1451  003270  070557                  DH41
1452  003272  072006                  DT41
1453  003274  072272                  DF41
1454                                  ;ITEM   206
1455  003276  067442                  EM206                   ;RHWC SHOULD BE ZERO
1456  003300  070557                  DH41
1457  003302  072006                  DT41
1458  003304  072272                  DF41
1459                                  ;ITEM   207
1460  003306  067466                  EM207                   ;TRANSFER WAS DONE ON PORT B
1461  003310  000000                  0
1462  003312  000000                  0
1463  003314  000000                  0
1464                                  ;RH REGISTERS
1465
1466
1467
1468  003316  000774                  RHVEC:774                       ;RH VECTOR ADDRESS
1469                                  ;;*****************************************************************
```

```
                                ;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)
```

```
                                PSEL=   2000            ;PORT SELECT (BIT #13)
                                DVA=    4000            ;DEVICE AVAILABLE (BIT #11)
                                MCPE=   20000           ;MASSBUSS PARITY ERROR (BIT #13,
                                TRE=    40000           ;TRANSFER ERROR (BIT #14,
                                TREB=   100             ;TRE BIT FOR A BYTE OPERATION
                                SC=     100000          ;SPECIAL CONDITION (BIT #15,

                                ;STATUS REGISTER (RHST)  #01)

                                DRY=    200             ;DRIVE READY (BIT #7)
                                DPR=    400             ;DRIVE PRESENT (BIT #8)
                                MOL=    10000           ;MEDIUM ON-LINE (BIT #12)
                                PIP=    20000           ;POSITIONING OPERATION IN PROGRESS (BIT #13)
                                ERR=    40000           ;COMPOSIT ERROR. (BIT #14)
                                ATA=    100000          ;ATTENTION ACTIVE (BIT #15)

                                ;ERROR REGISTER #01 (RHER) (#02)
                                ILF=    1               ;ILLEGAL FUNCTION (BIT #0)
                                RMR=    4               ;REGISTER MODIFICATION REFUSED (BIT #2)
                                CPE=    10              ;CONTROL PARITY ERROR(BIT #3)
                                DPE=    20              ;DATA PARITY ERROR(BIT #4)
                                RMBEX=  40              ;MASSBUS EXCEPTION ,WHEN SET CAUSES AN ABORT OF A DATA T
                                RFAIL=  100             ;MASSBUS POWER FAIL(BIT #6)
                                DTE=    10000           ;DRIVE TIMING ERROR (BIT #12)
                                OPI=    20000           ;OPERATION INCOMPLETE (BIT #13)
```

```
                                ;DIAGNOSTIC REGISTER (RHMR1) (#03)

                    000001      DMD=    1                   ;DIAGINOSTIC MODE (BIT #0)
                    000002      MCLK=   2                   ;MAINTAINCE CLOCK (BIT #1)
                    000004      FERR=   4                   ;FORCE ERROR (BIT #2)
                    000010      ICPA=   10                  ;INVERT CONTROL PARITY,CAUSES PARITY TO BE EVEN WHEN SET
                    000020      IDPA=   20                  ;INVERT DATA PARITY,CAUSES DATA PARITY TOBE EVEN WHEN SE
                    000040      DPCA=   40                  ;DISABLE PARITY CHECK,INHIBITS PARITY CHECK ON BOTH C AN
                    000100      NEBL=   100                 ;NO END OF BLOCK,INHIBITS TESTER FROM GENERATING END OF
                    000200      DTRM=   200                 ;WHEN SET DELAYS TRA FROM BEING ASSERTED FOR 500NS (BIT
                    000400      DOCC=   400                 ;DISSABLE OCCUPY (BIT #8)
                    001000      SLKM=   1000                ;SYNC CLOCK MINIMUM WIDTH ,WHEN SET CHANGES SYNC CLOCK T
                    002000      ISLK=   2000                ;INVERT SYNC CLOCK,WHEN SET INVERTS SYNC CLOCK,NO EFFECT
                    004000      ENPS=   4000                ;ENABLE PATTERN SHIFT,WHEN SET CAUSES A 16 OR 18 BIT ROT
                    010000      BMD18=  10000               ;18 BIT MODE (BIT #12)

                                ;ATTENTION SUMMARY PSEUDO-REGISTER (RHAS) (#04)

                    000001      AT0=    1                   ;DEVICE 0 (BIT #0)
                    000002      AT1=    2                   ;DEVICE 1 (BIT #1)
                    000004      AT2=    4                   ;DEVICE 2 (BIT #2)
                    000010      AT3=    10                  ;DEVICE 3 (BIT #3)
                    000020      AT4=    20                  ;DEVICE 4 (BIT #4)
                    000040      AT5=    40                  ;DEVICE 5 (BIT #5)
                    000100      AT6=    100                 ;DEVICE 6 (BIT #6)
                    000200      AT7=    200                 ;DEVICE 7 (BIT #7)

                                ;TRANSFER CONTROL REGISTER (#5)

                    000001      DN0=    1                   ;DRIVE NUBER BIT #0 (BIT #0)
                    000002      DN1=    2                   ;DRIVE NUMBER BIT #1 (BIT #1)
                    000004      DN2=    4                   ;DRIVE NUMBER BIT #2 (BIT #2)
                    000010      SCLK=   10                  ;SYNC CLOCK RANGE BIT ,WHEN CLEAR SYNC CLOCK IS 0.4-2.6
                                                            ;WHEN SET 2.0-10.6 MICRO SECONDS (BIT #3)
                    000020      GAP=    20                  ;GAP SIZE BIT,SETS GAP SIZE TO 5 MICROSECONDS WHEN CLEAR
                    000040      BL0=    40                  ;BLOCK SIZE BIT 0 (BIT #5)
                    000100      BL1=    100                 ;BLOCK SIZE BIT 1(BIT #6)
                    000200      BL2=    200                 ;BLOCK SIZE BIT 2(BIT #7)

                                ;RH70 I/O REGISTERS LOCATED IN RH

 003320  160100      ADC1:   160100          ;BASE ADDRESS RH #1
 003322  160200      ADD2:   160200          ;BASE ADDRESS RH #2
 003324  160300      ADC3:   160300          ;BASE ADDRESS RH #3
 003326  160400      ADD4:   160400          ;BASE ADDRESS RH #4
 003330  000000      RHCS1:  0                       ;CONTROL AND STATUS 1
 003332  000000      RHWC:   0                       ;WORD COUNT
 003334  000000      RHBA:   0                       ;BUS ADDRESS
 003336  000000      RHMR2:  0                       ;TRANSFER CONTROL REGISTER
 003340  000000      RHCS2:  0                       ;CONTROL AND STATUS 2
 003342  000000      RHST:   0                       ;TESTER STATUS
 003344  000000      RHER:   0                       ;ERROR REGISTER
 003346  000000      RHAS:   0                       ;ATTENTION SUMMARY REG
 003350  000000      RHTDB:  0                       ;TESTER DATA REGISTER
 003352  000000      RHDB:   0                       ;DATA BUFFER
 003354  000000      RHMR1:  0                       ;DIAGNOSTIC (MAINTENCE) REGISTER
```

```
1608  003356  000000  RHDT:   0                       ;DRIVE TYPE REGISTER
1609  003360  000000  RHBAE:  0                       ;BUS ADDRESS EXTENTION
1610  003362  000000  RHCS3:  0                       ;CONTROL AND STATUS 3
1611  003364  000000  RHCS1B: 0                       ;HIGH BYTE OF RHCS1 REG.
1612
1613  003366  000000  DEVIC1: 0                       ;ADDRESS OF RH #1
1614  003370  000000  DEVIC2: 0                       ;ADDRESS OF RH #2
1615  003372  000000  DEVIC3: 0                       ;ADDRESS OF RH #3
1616  003374  000000  DEVIC4: 0                       ;ADDRESS OF RH #4
1617
1618  003376  000000  DEVCNT: 0                       ;DEVICE COUNTER
1619  003400  000000  DEVIC5: 0                       ;USED TO CONSTRUCT REG. ADDRESSES
1620
1621                    ;OFF11 WILL BE USED AS A CALCULATION LOCATION
1622
1623  003402  000000  OFF11:  0             ;REG. CALCULATION LOCATION
1624          177740  LERADD= 177740                  ;LOW ERROR ADDRESS REG.
1625          177742  HERADD= 177742                  ;HIGH ERROR ADDRESS REG
1626          177744  MEMERR= 177744                  ;MEMORY SYSTEM ERROR REG
1627  003404  000000  REGEND: 0                       ;REGISTER ENDING ADDRESS
1628  003406  000000  VECADD: 0                       ;VECTOR ADDRESS
1629  003410  000000  RETAIN: 0
1630
1631                    ;;*****************************************************************
1632                            ;REGISTER STORAGE ADDRESSES
1633                    ;;*****************************************************************
1634
1635  003412  000000          AS:     0               ;ATTENTION SUMMARY
1636  003414  000000          BA:     0               ;BUS ADDRESS
1637  003416  000000          BAE:    0               ;BUS ADDRESS EXTENTION
1638  003420  000000          CS1:    0               ;CONTROL AND STATUS 1
1639  003422  000000          CS2:    0               ;CONTROL AND STATUS 2
1640  003424  000000          CS3:    0               ;CONTROL AND STATUS 3
1641  003426  000000          DB:     0               ;DATA BUFFER
1642  003430  000000          DR:     0               ;DIAGNOSTIC REGISTER
1643  003432  000000          DS1:    0               ;TESTER STATUS
1644  003434  000000          DT:     0               ;DRIVE TYPE
1645  003436  000000          ER1:    0               ;ERROR REGISTER
1646  003440  000000          TC:     0               ;TRANSFER CONTROL
1647  003442  000000          TDR:    0               ;TESTER DATA REGISTER
1648  003444  000000          WC:     0               ;WORD COUNT
1649
1650                    ;;*****************************************************************
1651                            ;BITS AND BIT PATTERNS
1652                    ;;*****************************************************************
1653
1654          052525          AB=     52525           ;ALTERNATE BIT PATTERN
1655          125252          OAB=    125252          ;OPPOSITE ALTERNATE BIT PATTERN
1656          000000          ZERO=   0               ;CONSTANT ZERO
1657          000001          ONE=    1               ;CONSTANT 1
1658          000002          TWO=    2               ;CONSTANT 2
1659                    ;;*****************************************************************
1660
1661                            ;FUNCTION CODES
1662                    ;;*****************************************************************
1663          000001  NOOP=   01                      ;NO OPERATION,RESETS GO BIT
```

```
1664                                    ;;*****************************************************************
1665            000051                  WRCH0=  51                      ;THESE WRCH BITS ARE WRITE/CHECK
1666            000052                  WRCH1=  52                      ;CODES ,IF THE CODE IS AN ODD
1667            000053                  WRCH2=  53                      ;NUMBER THE GO BIT IS INCLUDED
1668            000054                  WRCH3=  54                      ;IF THEY ARE EVEN GO BIT IS NOT INCLUDED
1669            000055                  WRCH4=  55
1670            000056                  WRCH5=  56
1671            000057                  WRCH6=  57
1672
1673                                    ;;*****************************************************************
1674
1675            000071                  READ0=  71                      ;READ CODES
1676            000072                  READ1=  72                      ;IF THE CODE IS AN ODD NUMBER
1677            000073                  READ2=  73                      ;THE GO BIT IS INCLUDED
1678            000074                  READ3=  74
1679            000075                  READ4=  75
1680            000076                  READ5=  76
1681            000077                  READ6=  77
1682
1683                                    ;;*****************************************************************
1684
1685            000061                  WRITE0= 61                      ;WRITE CODES
1686            000062                  WRITE1= 62                      ;IF THE CODE IS AN ODD NUMBER
1687            000063                  WRITE2= 63                      ;THE GO BIT IS INCLUDED
1688            000064                  WRITE3= 64                      ;IF IT IS EVEN THE GO BIT
1689            000065                  WRITE4= 65                      ;IS NOT INCLUDED
1690            000066                  WRITE5= 66
1691            000067                  WRITE6= 67
1692
1693                                    ;;*****************************************************************
1694
1695            000011                  DRCLR=  11                      ;CLEARS ALL ERROR BITS IN THE DRIVE
1696                                                                    ;AND SETS THE DRIVE READY BIT
1697                                    ;;*****************************************************************
1698
1699            000031                  SEARCH= 31                      ;SETS A ONE SHOT WHICH SETS
1700                                                                    ;ATA AFTER 100USEC + OR MINUS 20%
1701
1702                                    ;;*****************************************************************
1703                                            ;WATBIT STORAGE LOCATIONS
1704                                    ;;*****************************************************************
1705
1706   003446   000000                  BITCNT: 0                       ;BIT COUNTER
1707   003450   000000                  LOOCNT: 0                       ;LOOP CPUNT
1708   003452   000000                  PASS:   0                       ;PASS COUNT FOR THE LARGE TRANSFER TEST
1709                                    ;;*****************************************************************
1710                                            ;THIS IS WHERE THE TEST NUMBER IS STORED JUST
1711                                            ;BEFORE IT IS PRINTED OUT.....................
1712                                    ;;*****************************************************************
1713
1714   003454   000000                  TSTNM:  0                       ;TEST NO. STORAGE
1715   003456   000000                  OFFSET: 0                       ;OFFSET FOR ERROR HEADER
1716   003460   000000                  HEDDAD: 0                       ;USE TO FIND HEADER ERROR MESSAGE
1717                                    ;;*****************************************************************
1718                                            ;THESE ARE THE READ WRITE BUFFERS
1719                                    ;;*****************************************************************
```

```
1720            004000                  .=4000
1721   004000   000000                  EVENAD: 0                               ;EVEN ADDRESS
1722   004002   000000                  ODDAD:  0                               ;ODD ADDRESS
1723            004100                  .=4100
1724   004100   000000                  RBUF:   0
1725   004102   000000                  RBUF1:  0
1726   004104   000000                  RBUF2:  0
1727   004106   000000                  RBUF3:  0
1728   004110   000000                  RBUF4:  0
1729   004112   000000                  RBUF5:  0
1730   004114   000000                  RBUF6:  0
1731   004116   000000                  RBUF7:  0
1732
1733                                    ;;*****************************************************************
1734                                    ;       THESE ARE FOR THE CLEARS TEST
1735                                    ;;*****************************************************************
1736
1737   004120   177777                  MINUS:  -1
1738   004122   000000                  BEFORE: 0
1739
1740   004124   000000                  $CS1:   0
1741   004126   000000                  $CS2:   0
1742   004130   000000                  $CS3:   0
1743   004132   000000                  $ST:    0
1744   004134   000000                  $ER:    0
1745   004136   000000                  $RHBA:  0
1746   004140   000000                  $RHDB:  0
1747   004142   000000                  $RHWC:  0
```

```
                                        ;;*****************************************************************
                                        ;;*****************************************************************
004144  005000                  BEGIN:  CLR     R0                      ;GET SKIP FLAG READY
004146  005100                          COM     R0                      ;SET SKIP FLAG
004150  000421                          BR      START                   ;GO TO START
004152  005000                  BEGIN3: CLR     R0                      ;GET SKIP FLAG READY
004154  005037  001174                  CLR     $REGS                   ;CLR ALTERNATE START FLAG
004160  005137  001174                  COM     $REGS                   ;SET FOR ALTERNATE START
004164  000413                          BR      START                   ;START PROGRAM
004166  005000                  BEGIN2: CLR     R0                      ;GET R0 READY
004170  005100                          COM     R0                      ;TO BE COMPLIMENTED
004172  000137  004560                  JMP     @#TST1                  ;ENTER DIAG. FOR NEXT PASS
004176  012737  000074  003404  BEGIN1: MOV     #74,@#REGEND
004204  012737  000774  003406          MOV     #774,@#VECADD
004212  005000                          CLR     R0                      ;CLEAR THE SKIP FLAG
                                        ;;*****************************************************************
                                        ;;*****************************************************************
004214                          START:
                                .SBTTL  INITIALIZE THE COMMON TAGS
                                ;;CLEAR THE COMMON TAGS ($CMTAG) AREA
004214  012706  001100                  MOV     #$CMTAG,R6      ;;FIRST LOCATION TO BE CLEARED
004220  005026                          CLR     (R6)+           ;;CLEAR MEMORY LOCATION
004222  022706  001140                  CMP     #SWR,R6 ;;DONE?
004226  001374                          BNE     .-6             ;;LOOP BACK IF NO
004230  012706  000750                  MOV     #STACK,SP       ;;SETUP THE STACK POINTER
                                ;;INITIALIZE A FEW VECTORS
004234  012737  072530  000020          MOV     #$SCOPE,@#IOTVEC ;;IOT VECTOR FOR SCOPE ROUTINE
004242  012737  000340  000022          MOV     #340,@#IOTVEC+2 ;;LEVEL 7
004250  012737  074204  000030          MOV     #$ERROR,@#EMTVEC ;;EMT VECTOR FOR ERROR ROUTINE
004256  012737  000340  000032          MOV     #340,@#EMTVEC+2 ;;LEVEL 7
004264  012737  074734  000034          MOV     #$TRAP,@#TRAPVEC ;;TRAP VECTOR FOR TRAP CALLS
004272  012737  000340  000036          MOV     #340,@#TRAPVEC+2;LEVEL 7
004300  012737  073000  000024          MOV     #$PWRDN,@#PWRVEC ;;POWER FAILURE VECTOR
004306  012737  000340  000026          MOV     #340,@#PWRVEC+2 ;;LEVEL 7
004314  005037  001212                  CLR     $TIMES          ;;INITIALIZE NUMBER OF ITERATIONS
004320  005037  001214                  CLR     $ESCAPE         ;;CLEAR THE ESCAPE ON ERROR ADDRESS
004324  112737  000001  001115          MOVB    #1,$ERMAX       ;;ALLOW ONE ERROR PER TEST
004332  012737  004332  001106          MOV     #.,$LPADR       ;;INITIALIZE THE LOOP ADDRESS FOR SCOPE
004340  012737  004340  001110          MOV     #.,$LPERR       ;;SETUP THE ERROR LOOP ADDRESS
                                ;;SIZE FOR A HARDWARE SWITCH REGISTER. IF NOT FOUND OR IT IS
                                ;;EQUAL TO A "-1", SETUP FOR A SOFTWARE SWITCH REGISTER.
004346  013746  000004                  MOV     @#ERRVEC,-(SP)  ;;SAVE ERROR VECTOR
004352  012737  004406  000004          MOV     #64$,@#ERRVEC   ;;SET UP ERROR VECTOR
004360  012737  177570  001140          MOV     #DSWR,SWR       ;;SETUP FOR A HARDWARE SWICH REGISTER
004366  012737  177570  001142          MOV     #DDISP,DISPLAY  ;;AND A HARDWARE DISPLAY REGISTER
004374  022777  177777  174536          CMP     #-1,@SWR        ;;TRY TO REFERENCE HARDWARE SWR
004402  001012                          BNE     66$             ;;BRANCH IF NO TIMEOUT TRAP OCCURRED
                                                                ;;AND  THE HARDWARE SWR IS NOT = -1
004404  000403                          BR      65$             ;;BRANCH IF NO TIMEOUT
004406  012716  004414          64$:    MOV     #65$,(SP)       ;;SET UP FOR TRAP RETURN
004412  000002                          RTI
004414  012737  000176  001140  65$:    MOV     #SWREG,SWR      ;;POINT TO SOFTWARE SWR
004422  012737  000174  001142          MOV     #DISPREG,DISPLAY
004430  012637  000004          66$:    MOV     (SP)+,@#ERRVEC  ;;RESTORE ERROR VECTOR

004434  005700                          TST     R0                      ;WAS IT A RESTART
```

```
1804  004436  100450                        BMI     AROUND                  ;YES,SKIP TYPING
1805  004440  104401  004446                TYPE    ,68$            ;;TYPE ASCIZ STRING
1806  004444  000427                        BR      67$             ;;GET OVER THE ASCIZ
1807                                  ;;68$:  .ASCIZ  <15><12>/RH 11 AND 70 I O AND CONTROLLER DIAGNOSTIC/
1808  004524                          67$:
1809  004524  104401  004532                TYPE    ,70$            ;;TYPE ASCIZ STRING
1810  004530  000413                        BR      69$             ;;GET OVER THE ASCIZ
1811                                  ;;70$:  .ASCIZ  <15><12>/MAINDEC-11-DZRHB-C /
1812  004560                          69$:
1813  004560                          AROUND:
1814
1815                                  ;;*****************************************************************
1816                                  ;*TEST 1        THIS IS THE RH ADRESS DECODE TEST
1817                                          ;*THIS PROGRAM WILL ALLOW THE OPERATOR TO SAY
1818                                          ;*WHICH RH IS ON THE BUS AND WHAT ITS BASE
1819                                          ;*ADDRESS IS.  THE RH IS THEN TESTED FOR A
1820                                          ;*RESPONSE AND CHECKED FOR A TESTER BEING
1821                                          ;*CONNECTED.
1822                                  ;;*****************************************************************
1823  004560  000004                  TST1:   SCOPE
1824  004562  012737  000001  001212          MOV     #1,$TIMES       ;;DO 1 ITERATION
1825  004570  012737  047120  000114          MOV     #PARITY,@#114
1826  004576  012706  000750                  MOV     #STACK,SP
1827  004602  012737  000340  000116          MOV     #340,@#116
1828  004610  012737  046666  000004          MOV     #TIEOUT,@#ERRVEC        ;SET UP TIMEOUT
1829  004616  012737  000340  000006          MOV     #340,@#ERRVEC+2         ;SETUP PRIORTY
1830  004624  005700                          TST     R0                      ;SKIP TYPOUT ?
1831  004626  001403                          BEQ     SKIPIN                  ;NO
1832  004630  005000                          CLR     R0                      ;CLEAR SKIP FLAG
1833  004632  000137  006562                  JMP     @#TST2                  ;GET OUT OF TEST
1834  004636  005001                  SKIPIN: CLR     R1                      ;GET R1 READY
1835  004640  005737  001174                  TST     $REGS                   ;IS IT AN ALTERNATE START
1836  004644  001402                          BEQ     SLEUTH                  ;NO
1837  004646  000137  004656                  JMP     KONG                    ;YES DO ALTERNATE SETUP
1838  004652  000137  005100          SLEUTH: JMP     AD1ERR                  ;DO REGULAR SETUP
1839  004656  005037  001174          KONG:   CLR     $REGS                   ;RESET ALT. START FLAG
1840  004662  104401  004670                  TYPE    ,65$            ;;TYPE ASCIZ STRING
1841  004666  000416                          BR      64$             ;;GET OVER THE ASCIZ
1842                                  ;;65$:  .ASCIZ  <15><12>/TYPE BASE ADDRESS FOR RH /
1843  004724                          64$:
1844  004724  104410                          RDOCT
1845  004726  012637  003366                  MOV     (SP)+,DEVIC1            ;GET BASE ADDRESS
1846  004732  104401  004740                  TYPE    ,67$            ;;TYPE ASCIZ STRING
1847  004736  000415                          BR      66$             ;;GET OVER THE ASCIZ
1848                                  ;;67$:  .ASCIZ  <15><12>/TYPE RH VECTOR ADDRESS /
1849  004772                          66$:
1850  004772  104410                          RDOCT
1851  004774  012637  003406                  MOV     (SP)+,VECADD            ;GET VECTOR ADDRESS
1852  005000  104401  005006                  TYPE    ,69$            ;;TYPE ASCIZ STRING
1853  005004  000426                          BR      68$             ;;GET OVER THE ASCIZ
1854                                  ;;69$:  .ASCIZ  <15><12>/HOW MANY REGISTERS ARE YOU JUMPERED FOR /
1855  005062                          68$:
1856  005062  104410                          RDOCT
1857  005064  012637  003404                  MOV     (SP)+,REGEND            ;GET NUMBER OF REG
1858  005070  006137  003404                  ROL     REGEND                  ;MULT BY 2
1859  005074  000137  005414                  JMP     GI1                     ;GO CREATE ADDRESSES
```

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1860  005100  013737  003320  003366  AD1ERR: MOV     ADD1,DEVIC1             ;SETUP DEVICE 1
1861  005106  012737  005200  000004          MOV     #AD2ERR,ERRVEC          ;FOR TIMEOUT
1862  005114  005777  176202                  TST     @ADD2                   ;IS THERE A DEVICE
1863  005120  013737  003322  003370          MOV     ADD2,DEVIC2             ;YES
1864  005126  012737  005220  000004          MOV     #AD3ERR,ERRVEC          ;FOR TIMEOUT
1865  005134  005777  176164                  TST     @ADD3                   ;IS THERE A DEVICE
1866  005140  013737  003324  003372          MOV     ADD3,DEVIC3             ;YES
1867  005146  012737  005240  000004          MOV     #AD4ERR,ERRVEC          ;FOR TIMEOUT
1868  005154  005777  176146                  TST     @ADD4                   ;IS THERE A DEVICE
1869  005160  013737  003326  003374          MOV     ADD4,DEVIC4             ;YES
1870  005166  012737  046666  000004          MOV     #TIEOUT,ERRVEC          ;REPLACE TIMEOUT
1871  005174  000137  006066                  JMP     RESTAR          ;TEST DEVICES
1872  005200  005037  003370          AD2ERR: CLR     DEVIC2                  ;NO DEVICE 2
1873  005204  012737  046666  000004          MOV     #TIEOUT,ERRVEC          ;REPLACE TIMEOUT
1874  005212  022626                          CMP     (SP)+,(SP)+             ;CORRECT STACK
1875  005214  000137  006066                  JMP     RESTAR                  ;TEST DEVICES
1876  005220  005037  003372          AD3ERR: CLR     DEVIC3                  ;NO DEVICE 3
1877  005224  012737  046666  000004          MOV     #TIEOUT,ERRVEC          ;REPLACE TIMEOUT
1878  005232  022626                          CMP     (SP)+,(SP)+             ;CORRECT STACK
1879  005234  000137  006066                  JMP     RESTAR                  ;TEST DEVICES
1880  005240  005037  003374          AD4ERR: CLR     DEVIC4                  ;NO DEVICE 4
1881  005244  012737  046666  000004          MOV     #TIEOUT,ERRVEC          ;REPLACE TIMEOUT
1882  005252  022626                          CMP     (SP)+,(SP)+             ;CORRECT STACK
1883  005254  000137  006066                  JMP     RESTAR                  ;TEST DEVICES
1884  005260  005737  000042          GIGO:   TST     @#42                    ;IS THERE A MONITOR
1885  005264  001402                          BEQ     GIG1                    ;NO
1886  005266  000137  046072                  JMP     $EOP                    ;YES EXIT
1887  005272  022737  160100  003366  GIG1:   CMP     #160100,DEVIC1          ;ARE WE HERE AFTER 210
1888  005300  001402                          BEQ     SA200                   ;NO, 200
1889  005302  000137  004656                  JMP     KONG                    ;GET NEW ADDRESS FOR 210
1890  005306                          SA200:
1891  005306  104401  005314                  TYPE    ,65$                ;;TYPE ASCIZ STRING
1892  005312  000420                          BR      64$                 ;;GET OVER THE ASCIZ
1893                                  ;;65$:  .ASCIZ  <15><12>/TYPE BASE ADDRESS FOR RH #1 /
1894  005354                          64$:
1895  005354  104410                          RDOCT
1896  005356  012637  003366                  MOV     (SP)+,DEVIC1            ;GET BASE ADDRESS FOR RH1
1897  005362  105737  001103                  TSTB    $ERFLG                  ;ARE WE HERE BECAUSE OF AN ADDRESS ERROR
1898  005366  001405                          BEQ     GO1                     ;NO,GET READY FOR NEXT ADDRESS
1899  005370  005737  003366                  TST     DEVIC1                  ;IS IT A ZERO
1900  005374  001007                          BNE     GI1                     ;NO
1901  005376  000137  005272                  JMP     GIG1                    ;NEED FIRST ADDRESS
1902  005402  005737  003366          GO1:    TST DEVIC1                      ;DID HE CORRECT WITH A 0
1903  005406  001012                          BNE     GIGO1                   ;GET BASE FOR RH # 2
1904  005410  000137  005272                  JMP     GIG1                    ;NEED ADDRESS
1905  005414  013737  003366  003400  GI1:    MOV     DEVIC1,DEVIC5           ;GET READY TO CREATE REG. ADDRESS
1906  005422  012777  005260  175760          MOV     #GIGO,@RETAIN           ;SAVE RETURN ADDRESS
1907  005430  000137  006160                  JMP     GIGO4                   ;CONSTRUCT REGISTER ADDRESSES
1908  005434  005737  000042          GIGO1:  TST     @#42                    ;IS THER A MONITOR
1909  005440  001402                          BEQ     GIG2                    ;NO
1910  005442  000137  046072                  JMP     $EOP                    ;EXIT
1911  005446                          GIG2:
1912  005446  104401  005454                  TYPE    ,65$                ;;TYPE ASCIZ STRING
1913  005452  000420                          BR      64$                 ;;GET OVER THE ASCIZ
1914                                  ;;65$:  .ASCIZ  <15><12>/TYPE BASE ADDRESS FOR RH #2 /
1915  005514                          64$:
```

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1916  005514  104410                          RDOCT                           ;GET VALUE
1917  005516  012637  003370                  MOV     (SP)+,DEVIC2            ;SAVE ADDRESS
1918  005522  105737  001103                  TSTB    $ERFLG                  ;ARE WE HERE BECAUSE OF ERROR
1919  005526  001405                          BEQ     G02                     ;NO
1920  005530  005737  003370                  TST     DEVIC2                  ;IS IT 0
1921  005534  001007                          BNE     GI2                     ;NO
1922  005536  000137  045316                  JMP     RESTAT                  ;SET UP FOR RH #1
1923  005542  005737  003370          G02:    TST     DEVIC2                  ;IS IT 0
1924  005546  001012                          BNE     GIG02                   ;NO,GET NEXT ADDRESS
1925  005550  000137  006066                  JMP     RESTAR                  ;CREATE ADDRESS FOR RH#1
1926  005554  013737  003370  003400  GI2:    MOV     DEVIC2,DEVIC5           ;GET READY TO CREATE
1927  005562  012777  005434  175620          MOV     #GIG01,@RETAIN          ;SAVE RETURN ADDRESS
1928  005570  000137  006160                  JMP     GIGO4                   ;CREATE REG. ADDRESSES
1929  005574  005737  000042          GIG02:  TST     @#42                    ;IS THERE A MONITOR
1930  005600  001402                          BEQ     GIG3                    ;NO
1931  005602  000137  046072                  JMP     $EOP                    ;EXIT
1932  005606                          GIG3:
1933  005606  104401  005614                  TYPE    ,65$                ;;TYPE ASCIZ STRING
1934  005612  000420                          BR      64$                 ;;GET OVER THE ASCIZ
1935                                  ;;65$:  .ASCIZ  <15><12>/TYPE BASE ADDRESS FOR RH #3 /
1936  005654                          64$:
1937  005654  104410                          RDOCT
1938  005656  012637  003372                  MOV     (SP)+,DEVIC3            ;SAVE ADDRESS
1939  005662  105737  001103                  TSTB    $ERFLG                  ;ARE WE HERE DO TO ERROR
1940  005666  001405                          BEQ     G03                     ;NO
1941  005670  005737  003372                  TST     DEVIC3                  ;IS IT 0
1942  005674  001007                          BNE     GI3                     ;NO
1943  005676  000137  045316                  JMP     RESTAT                  ;RESTART PASS
1944  005702  005737  003372          G03:    TST     DEVIC3                  ;IS IT 0
1945  005706  001012                          BNE     GIG03                   ;GET NEXT ADDRESS
1946  005710  000137  006066                  JMP     RESTAR                  ;CREATE RH#1 ADDRESSES
1947  005714  013737  003372  003400  GI3:    MOV     DEVIC3,DEVIC5           ;SETUP TO CREATE ADDRESS
1948  005722  012777  005574  175460          MOV     #GIG02,@RETAIN          ;SAVE RETURN ADDRESS
1949  005730  000137  006160                  JMP     GIGO4                   ;CREATE ADDRESSES
1950  005734  005737  000042          GIG03:  TST     @#42                    ;IS THERE A MONITOR
1951  005740  001402                          BEQ     GIG4                    ;NO
1952  005742  000137  046072                  JMP     $EOP                    ;EXIT
1953  005746                          GIG4:
1954  005746  104401  005754                  TYPE    ,65$                ;;TYPE ASCIZ STRING
1955  005752  000420                          BR      64$                 ;;GET OVER THE ASCIZ
1956                                  ;;65$:  .ASCIZ  <15><12>/TYPE BASE ADDRESS FOR RH #4 /
1957  006014                          64$:
1958  006014  104410                          RDOCT
1959  006016  012637  003374                  MOV     (SP)+,DEVIC4            ;SAVE ADDRESS
1960  006022  105737  001103                  TSTB    $ERFLG                  ;ARE WE HERE BECAUSE OF ERROR
1961  006026  001405                          BEQ     G04                     ;NO
1962  006030  005737  003374                  TST     DEVIC4                  ;IS IT 0
1963  006034  001004                          BNE     GI4                     ;NO
1964  006036  000137  045316                  JMP     RESTAT                  ;RESTART PASS
1965  006042  000137  006066          G04:    JMP     RESTAR                  ;GO SET UP REG. ADDRESSES
1966  006046  013737  003374  003400  GI4:    MOV     DEVIC4,DEVIC5           ;GET READY TO CREATE REG. ADDRESSES
1967  006054  012777  005734  175326          MOV     #GIG03,@RETAIN          ;STORE RETURN ADDRESS
1968  006062  000137  006160                  JMP     GIGO4                   ;GO CREATE ADDRESSES
1969  006066  013737  003366  003400  RESTAR: MOV     DEVIC1,DEVIC5           ;GET READY TO CREATE REG. ADDRESSES
1970  006074  012777  005260  175306          MOV     #GIGO,@RETAIN           ;SAVE RETURN ADDRESS
1971  006102  104401  006110                  TYPE    ,65$                ;;TYPE ASCIZ STRING
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 1972  006106  000421                        BR      64$                     ;;GET OVER THE ASCIZ
 1973                                ;;65$:  .ASCIZ  <15><12>/TESTING RH #1 AT BASE ADDRESS /
 1974  006152                        64$:
 1975  006152  013746  003366                MOV     DEVIC1,-(SP)    ;;SAVE DEVIC1 FOR TYPEOUT
 1976  006156  104402                        TYPOC                   ;;GO TYPE--OCTAL ASCII(ALL DIGITS.
 1977  006160  013737  003400  003402  GIG04: MOV     DEVIC5,@#OFF11          ;SETUP FOR ADDRESSES
 1978  006166  012702  003330                MOV     #RHCS1,R2               ;SET UP WHERE TO PUT THEM
 1979  006172  013722  003402          4$:   MOV     @#OFF11,(R2)+           ;SETUP ADDRESS
 1980  006176  062737  000002  003402        ADD     #TWO,@#OFF11            ;SETUP NEXT ADDRESS
 1981  006204  022702  003360                CMP     #RHBAE,R2               ;ARE ALL ADDRESSES SET UP
 1982  006210  001401                        BEQ     3$                      ;IS INFORMATION CORRECT?
 1983  006212  000767                        BR      4$                      ;NO SETUP NEW ADDRESS
 1984  006214  013737  003400  003402  3$:   MOV     DEVIC5,@#OFF11
 1985  006222  063737  003404  003402        ADD     REGEND,@#OFF11
 1986  006230  013737  003402  003360        MOV     @#OFF11,RHBAE           ;WITH CORRECT ADDRESS
 1987  006236  062737  000002  003402        ADD     #2,@#OFF11              ;SETUP RHCS3 ADDRESS
 1988  006244  013737  003402  003362        MOV     @#OFF11,RHCS3           ;WITH CORRECT ADDRESS
 1989  006252  013737  003330  003364        MOV     RHCS1,RHCS1B            ;SETUP RHCS1B WITH
 1990  006260  005237  003364                INC     RHCS1B                  ;HIGH BYTE ADDRESS OF RHCS1
 1991  006264  013746  000004          TSTADD: MOV     @#ERRVEC,-(SP)          ;SAVE TIOUT VALUE
 1992  006270  012737  006350  000004        MOV     #ADDERR,@#ERRVEC        ;SETUP NEW TIOUT VALUE
 1993  006276  012777  000007  175034        MOV     #7,@RHCS2               ;SETUP UNIT NO.
 1994  006304  005777  175020                TST     @RHCS1                  ;WILL RH RESPOND
 1995  006310  022777  000040  175040        CMP     #40,@RHDT               ;IS A TESTER THERE
 1996  006316  001403                        BEQ     1$                      ;YES, CONTINUE
 1997  006320  104034                        ERROR   34                      ;TESTER IS NOT CONNECTED
 1998  006322  000137  006352                JMP     ADDERR+2                ;BAD ADDRESS
 1999  006326  122777  000007  175002  1$:   CMPB    #7,@RHMR2               ;IS THERE ALSO A 7 FOR UNIT NO.
 2000  006334  001403                        BEQ     2$                      ;YES,CONTINUE
 2001  006336  104071                        ERROR   71                      ;BAD ADDRESS
 2002  006340  000137  006352                JMP     ADDERR+2
 2003  006344  005726                  2$:   TST     (SP)+                   ;CORRECT STACK
 2004  006346  000406                        BR      RHTEST                  ;YES AN RH IS THERE
 2005  006350  022626                ADDERR: CMP     (SP)+,(SP)+             ;CORRECT STACK
 2006  006352  012637  000004                MOV     (SP)+,@#ERRVEC          ;REPLACE OLD TIOUT VALUE
 2007  006356  104036                        ERROR   36                      ;RH DID NOT RESPOND
 2008  006360  000177  175C24                JMP     @RETAIN                 ;GET CORRECT BASE ADDRESS
 2009  006364  012637  000004          RHTEST: MOV     (SP)+,@#ERRVEC          ;REPLACE TIEOUT VALUE
 2010  006370  005701                        TST     R1                      ;IS IT A 70
 2011  006372  001433                        BEQ     RH70TT                  ;YES,LETS MAKE SURE
 2012  006374  013746  000004                MOV     @#ERRVEC,-(SP)          ;SAVE TIME OUT VALUE
 2013  006400  012737  006550  000004        MOV     #RH11,@#ERRVEC          ;CHECK FOR AN RH11
 2014  006406  012777  000117  174746        MOV     #IPCK0!IPCK1!IPCK2!IPCK3!IE3,@RHCS3
 2015                                                                        ;SET ALL BITS IN RHCS3
 2016  006414  012637  000004                MOV     (SP)+,@#ERRVEC          ;REPLACE TIMEOUT
 2017  006420                          RH11BA:
 2018  006420  104401  006426                TYPE    ,65$            ;;TYPE ASCIZ STRING
 2019  006424  000413                        BR      64$             ;;GET OVER THE ASCIZ
 2020                                ;;65$:  .ASCIZ  <15><12>/TESTING FOR AN RH70/
 2021  006454                        64$:
 2022  006454  005001                        CLR     R1                      ;SET UP RH70 FLAG
 2023  006456  000137  006552                JMP     RH11+2                  ;EXIT
 2024  006462  013746  000004          RH70TT: MOV     @#ERRVEC,-(SP)          ;SAVE LOCATION 4
 2025  006466  012737  006506  000004        MOV     #FAKE70,@#ERRVEC        ;REPLACE ADDRESS
 2026  006474  012777  000117  174660        MOV     #IPCK0!IPCK1!IPCK2!IPCK3!IE3,@RHCS3
 2027                                                                        ;SET ALL BITS
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                                        JMP     RH11+2                  ;EXIT TEST
                                FAKE70: CMP     (SP)+,(SP)+             ;CORRECT STACK
                                        MOV     (SP)+,@#ERRVEC          ;CORRECT TIMEOUT
                                RH70BA: CLR     R1                      ;GET FLAG READY
                                        COM     R1                      ;SET FOR RH11
                                        TYPE    ,65$            ;;TYPE ASCIZ STRING
                                        BR      64$             ;;GET OVER THE ASCIZ
                                ;;65$:  .ASCIZ  <15><12>/TESTING AN RH11/
                                64$:
                                RH11:   CMP     (SP)+,(SP)+             ;CORRECT STACK POINTER
                                        MOV     (SP)+,@#ERRVEC          ;REPLACE TIMEOUT VALUE
                                ERR1:   JSR     R7,ERRTST
                                ;;**************************************************************
                                ;*TEST 2         CLEAR TEST
                                        ;*THIS TEST CHECKS THAT ALL
                                        ;*ERROR BITS ARE CLEARED AFTER
                                        ;*THE CLEAR BIT WAS LOADED INTO
                                        ;*RHCS2 REGISTER.............
                                ;;**************************************************************
                                TST2:   SCOPE
                                        MOV     #1,$TIMES       ;;DO 1 ITERATION
                                        CLR     $TMP5                   ;GET READY TO
                                        COM     $TMP5                   ;SET UP FOR JSR ROUTINE
                                ;;**************************************************************
                                        ;*THIS TEST IS ALSO ENTERED AT THE LABLE CLEER
                                        ;*AT THE END OF ALL THE ERROR BIT TESTS TO SEE
                                        ;*THAT A CLEAR WILL CLEAR THE ERROR BIT SET
                                ;;**************************************************************
000602  012777  000040  174530  CLEER:  MOV     #CLR,@RHCS2             ;TELL IT TO CLEAR
000610  012777  000007  174522          MOV     #7,@RHCS2               ;SETUP UNIT NO.
000616  122777  000007  174512          CMPB    #7,@RHMR2               ;HAS DEVICE BEEN SET TO 7
000624  001107                          BNE     1$                      ;NO,FIND WHAT BIT WAS NOT SET
                                ;;**************************************************************
                                        ;*THE TEST IS ENTERED HERE IF THE ERROR BIT BEING
                                        ;*FORCED SET DID NOT SET TO SEE IF ANY OTHER ERROR
                                        ;*BIT DID SET.............
                                ;;**************************************************************
000626  005701                  12$:    TST     R1                      ;IS IT AN 11 OR A 70
000630  100417                          BMI     15$                     ;IT'S A 70
000632  005737  004122                   TST     BEFORE                  ;ARE WE HERE FOR SHORTS
000636  001406                          BEQ     14$                     ;NO
000640  033777  004130  174514          BIT     $CS3,@RHCS3             ;ANY EXTRA ERROR BITS
000646  001410                          BEQ     15$                     ;NO
000650  000137  007204                  JMP     13$                     ;WE FOUND AN ERROR
000654  032777  174000  174500  14$:    BIT     #WCELO!WCEHI!DPELO!DPEHI!APE,@RHCS3
                                                                        ;TEST ERROR BITS
000662  001412                          BEQ     5$                      ;NO ERROR BITS SET
000664  000137  007204                  JMP     13$                     ;GO REPORT ERROR BITS
000670  005737  004122          15$:    TST     BEFORE                  ;ARE WE HERE FOR SHORTS
000674  001405                          BEQ     5$                      ;NO
000676  033777  004124  174424          BIT     $CS1,@RHCS1             ;YES SEE IF THERE ARE ANY
000704  001070                          BNE     2$                      ;NONE FOUND
000706  000404                          BR      16$                     ;GO CHECK THE NEXT ONE
000710  032777  160000  174412  5$:     BIT     #TRE!SC!MCPE,@RHCS1     ;ANY ERROR BITS SET IN CS1
000716  001063                          BNE     2$                      ;YES,FIND THEM
000720  005737  004122          16$:    TST     BEFORE                  ;ARE WE HERE FOR SHORTS
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2084  006724  001405                          BEQ     6$                      ;NO
2085  006726  033777  004126  174404          BIT     $CS2,@RHCS2             ;ANY SHORTS
2086  006734  001065                          BNE     3$                      ;YES
2087  006736  000404                          BR      17$                     ;NO,CONTINUE
2088  006740  032777  177400  174372  6$:     BIT     #MPE!MXF!PGE!NEM!NED!UPE!WCE!DLT,@RHCS2
2089                                                                          ;ARE ANY ERROR BITS SET IN CS2
2090  006746  001060                          BNE     3$                      ;YES ,FIND THEM
2091  006750  005737  004122          17$:    TST     BEFORE                  ;ARE WE HERE FOR SHORTS
2092  006754  001405                          BEQ     7$                      ;NO
2093  006756  033777  004132  174356          BIT     $ST,@RHST               ;ANY SHORTS ?
2094  006764  001076                          BNE     9$                      ;YES
2095  006766  000404                          BR      18$                     ;CONTINUE
2096  006770  032777  140000  174344  7$:     BIT     #ERR!ATA,@RHST          ;ARE ANY ERROR BITS SET IN ER!
2097  006776  001071                          BNE     9$                      ;YES ,GO FIND THEM
2098  007000  005737  004122          18$:    TST     BEFORE                  ;ARE WE HERE FOR SHORTS
2099  007004  001405                          BEQ     8$                      ;NO
2100  007006  033777  004134  174330          BIT     $ER,@RHER               ;YES ,SEE IF THER ARE AN
2101  007014  001046                          BNE     4$                      ;WE FOUND SOME
2102  007016  000404                          BR      19$                     ;CONTINUE
2103  007020  032777  030175  174316  8$:     BIT     #ILF!RMR!CPE!DPE!RMBE!RF!AIL!DTE!OPI,@RHER
2104                                                                          ;ANY ERRORS IN RHER REG.
2105  007026  001041                          BNE     4$                      ;YES,GO FIND THEM
2106  007030  005737  001210          19$:    TST     $TMPS                   ;IS IT BEING USED AS A SUBROUTINE
2107  007034  001501                          BEQ     LEAVE                   ;YES
2108  007036  005037  001210                  CLR     $TMPS                   ;SETUP SUB ROUTINE FLAG
2109  007042  000477                          BR      ERR2                    ;WAS THERE ANY ERRORS
2110  007044  004737  047754          1$:     JSR     R7,FOUND                ;DEVICE NO. ERROR
2111  007050  017737  174264  004100          MOV     @RHCS2,RBUF             ;GET CONTENTS
2112  007056  104071                          ERROR   71                      ;DEVICE NO. NOT =7
2113  007060  004737  046302                  JSR     R7,WATBIT               ;FIND BIT NOT SET
2114  007064  000660                          BR      12$                     ;TEST REST OF ERROR BITS
2115  007066  004737  047634          2$:     JSR     R7,FINDIT               ;RHCS1 IN ERROR
2116  007072  017737  174232  004100          MOV     @RHCS1,RBUF             ;GET CONTENTS
2117  007100  104072                          ERROR   72                      ;ERROR BIT SET IN CS1
2118  007102  004737  046302                  JSR     R7,WATBIT               ;WHAT BIT IS SET
2119  007106  000704                          BR      16$                     ;TEST REST OF REGISTERS
2120  007110  004737  047660          3$:     JSR     R7,LOOKFD               ;ERROR IN RHCS2
2121  007114  017737  174220  004100          MOV     @RHCS2,RBUF             ;GET CONTENTS
2122  007122  104073                          ERROR   73                      ;BIT SET IN CS2
2123  007124  004737  046302                  JSR     R7,WATBIT               ;TELL WHAT BIT
2124  007130  000707                          BR      17$                     ;CONTINUE TEST
2125  007132  004737  047704          4$:     JSR     R7,LOOKED               ;RHER HAS A BIT SET
2126  007136  017737  174202  004100          MOV     @RHER,RBUF              ;GET CONTENTS
2127  007144  104074                          ERROR   74                      ;ER1 HAS AN ERROR BIT SET
2128  007146  004737  046302                  JSR     R7,WATBIT               ;TELL WHAT BIT
2129  007152  005737  001210                  TST     $TMPS                   ;IS IT BEING USED AS A SUBROUTINE
2130  007156  001430                          BEQ     LEAVE                   ;YES
2131  007160  000430                          BR      ERR2                    ;WAS THERE ANY ERRORS
2132  007162  004737  047730          9$:     JSR     R7,FINC                 ;RHST HAS AN ERROR BIT SET
2133  007166  017737  174150  004100          MOV     @RHST,RBUF              ;GET CONTENTS
2134  007174  104075                          ERROR   75                      ;ERROR IN RHST
2135  007176  004737  046302                  JSR     R7,WATBIT               ;TELL WHAT BIT
2136  007202  000676                          BR      18$                     ;CONTINUE TEST
2137  007204  004737  050000          13$:    JSR     R7,CS3ERR               ;CLEAR UNWANTED BITS
2138  007210  017737  174146  004100          MOV     @RHCS3,RBUF             ;GET REG. CONTENTS
2139  007216  104176                          ERROR   176                     ;RHCS3 HAS AN ERROR BIT SET
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2140  007220  004737  046302              JSR     R7,WATBIT               ;TELL WHAT BITS
2141  007224  000137  006670              JMP     15$                     ;CONT CHECK
2142  007230  000137  006626              JMP     12$                     ;START ISR WHYFO
2143  007234  000137  007230    WHYFO:    JMP     .-4                     ;FIND ERROR BITS SET
2144  007240  000207            LEAVE:    RTS     R7                      ;GO BACK TO PROGRAM THAT SENT US HERE
2145  007242  004737  050130    ERR2:     JSR     R7,ERRTST
2146                              ;;*****************************************************************
2147                              ;*TEST 3         THIS TEST SEES IF THE TESTER IS CONNECTED
2148                                      ;*THIS TEST SEES IF THE DEVICE CODE IS
2149                                      ;*A 40 TO SAY AN RH SIMULATOR IS ATTACHED
2150                              ;;*****************************************************************
2151  007246  000004            TST3:     SCOPE
2152  007250  012777  000040  174062      MOV     #CLR,@RHCS2             ;CLEAR TESTER
2153  007256  012777  000007  174054      MOV     #7,@RHCS2               ;UNIT SEVEN
2154  007264  017737  174066  001172      MOV     @RHDT,$REG4             ;GET DRIVE TYPE
2155  007272  022737  000040  001172      CMP     #40,$REG4               ;IS IT THE TESTER
2156  007300  001401                      BEQ     ERR4                    ;WAS  THERE AN ERROR
2157  007302  104034                      ERROR   34                      ;TESTER NOT CONNECTED
2158  007304  004737  050130    ERR4:     JSR     R7,ERRTST               ;
2159
2160
2161                              ;;*****************************************************************
2162                              ;*TEST 4         WC CLEAR TEST
2163                                      ;*THIS TEST WILL SEE THAT WHEN A CLEAR IS GIVEN
2164                                      ;*THE WORD COUNT REGISTER REMAINS THE SAME
2165                              ;;*****************************************************************
2166  007310  000004            TST4:     SCOPE
2167  007312  012737  000001  001212      MOV     #1,$TIMES       ;;DO 1 ITERATION
2168  007320  012777  177777  174004      MOV     #-1,@RHWC               ;MAKE WC NEGITIVE
2169  007326  022777  177777  173776      CMP     #-1,@RHWC               ;WAS IT LOADED CORRECTLY
2170  007334  001056                      BNE     WCERR1                  ;NO,ALL BITS DID NOT SET
2171  007336  012777  000040  173774  HERE:     MOV     #CLR,@RHCS2             ;TELL DEVICE TO CLEAR
2172  007344  017737  173760  003420      MOV     @RHCS1,CS1              ;SAVE RHCS1
2173  007352  017737  173754  003444      MOV     @RHWC,WC                ;SAVE WORD COUNT
2174  007360  017737  173750  003414      MOV     @RHBA,BA                ;SAVE BUS ADDRESS
2175  007366  005701                      TST     R1                      ;IS IT AN RH11
2176  007370  001406                      BEQ     87$                     ;NO IT'S A 70
2177  007372  005037  003416              CLR     BAE                     ;CLEAR BAE
2178  007376  005037  003424              CLR     CS3                     ;CLEAR CS3
2179  007402  000137  007422              JMP     86$                     ;CONTINUE
2180  007406  017737  173746  003416  87$:       MOV     @RHBAE,BAE              ;SAVE BUS ADDRESS EXTENSION
2181  007414  017737  173742  003424              MOV     @RHCS3,CS3              ;SAVE RHCS3
2182  007422  017737  173712  003422  86$:       MOV     @RHCS2,CS2              ;SAVE CS2
2183  007430  017737  173706  003432              MOV     @RHST,DS1               ;SAVE TESTER STATUS
2184  007436  017737  173702  003436              MOV     @RHER,ER1               ;SAVE ERROR REGISTER
2185  007444  017737  173700  003442              MOV     @RHTDB,TDR              ;SAVE TESTER DATA REG.
2186  007452  017737  173660  003440              MOV     @RHMR2,TC               ;SAVE MR2 TESTER REG.
2187  007460  005777  173646                      TST     @RHWC                   ;DID IT CLEAR
2188  007464  001434                              BEQ     WCERR2                  ;YES,CLEAR SHOULD NOT CLEAR WC
2189  007466  000137  007606                      JMP     @#DOIT                  ;GO TO NEXT CHECK
2190  007472  005777  173634    WCERR1:   TST     @RHWC                   ;DID ANY BITS LOAD
2191  007476  001416                      BEQ     1$                      ;NO
2192  007500  012737  177777  001162      MOV     #-1,$REG0               ;SAVE WHAT WC SHOULD HAVE BEEN
2193  007506  017737  173620  003444              MOV     @RHWC,WC                ;SAVE CONTENTS OF WC
2194  007514  104042                              ERROR   42                      ;ALL BITS DID NOT SET
2195  007516  013737  003444  001200              MOV     WC,$TMP1                ;SETUP FOR WATBIT
```

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 2196  007524  004737  046302                  JSR     R7,WATBIT               ;FIND THE BIT(S)
 2197  007530  000137  007336                  JMP     @#HERE                  ;SEE IF BITS SET CLEAR
 2198  007534  013737  177777  001162  1$:     MOV     -1,$REGO                ;SETUP FOR ERROR
 2199  007542  017737  173564  003444          MOV     @RHWC,WC                ;GET BAD DATA
 2200  007550  104043                          ERROR   43                      ;WC DID NOT LOAD ANY BITS
 2201  007552  000137  007606                  JMP     @#DOIT                  ;GO TO NEXT REG. TEST
 2202  007556  012737  177777  001162  WCERR2: MOV     #-1,$REGO               ;SETUP GOOD DATA
 2203  007564  017737  173542  003444          MOV     @RHWC,WC                ;GET BAD DATA
 2204  007572  013737  003444  001200          MOV     WC,$TMP1                ;SETUP FOR WATBIT
 2205  007600  104044                          ERROR   44                      ;SOME BITS CLEARED IN WC
 2206  007602  004737  046302                  JSR     R7,WATBIT               ;FIND THE BITS THAT CLEARED
 2207  007606  004737  006602          DOIT:   JSR     R7,CLEER                ;CLEAR ERRORS
 2208  007612  004737  050130                  JSR     R7,ERRTST
 2209                                          ;;**************************************************************
 2210                                          ;*TEST 5         RHBA CLEAR TEST
 2211                                                  ;*THIS TEST SEES THAT WHEN A CLEAR IS GENERATED
 2212                                                  ;*THE BUS ADDRESS REGISTER IS CLEARED
 2213                                          ;;**************************************************************
 2214  007616  000004                  TST5:   SCOPE
 2215  007620  012777  177776  173506  ITDO:   MOV     #-2,@RHBA               ;SET ALL BITS IN RHBA
 2216  007626  022777  177776  173500          CMP     #-2,@RHBA               ;ARE THEY ALL SET
 2217  007634  001366                          BNE     1$                      ;ALL THE BITS DID NOT SET
 2218  007636  012777  000040  173474          MOV     #CLR,@RHCS2             ;TELL IT TO CLEAR
 2219  007644  017737  173460  003420          MOV     @RHCS1,CS1              ;SAVE RHCS1
 2220  007652  017737  173454  003444          MOV     @RHWC,WC                ;SAVE WORD COUNT
 2221  007660  017737  173450  003414          MOV     @RHBA,BA                ;SAVE BUS ADDRESS
 2222  007666  005701                          TST     R1                      ;IS IT AN RH11
 2223  007670  001406                          BEQ     87$                     ;NO IT'S A 70
 2224  007672  005037  003416                  CLR     BAE                     ;CLEAR BAE
 2225  007676  005037  003424                  CLR     CS3                     ;CLEAR CS3
 2226  007702  000137  007722                  JMP     86$                     ;CONTINUE
 2227  007706  017737  173446  003416  87$:    MOV     @RHBAE,BAE              ;SAVE BUS ADDRESS EXTENSION
 2228  007714  017737  173442  003424          MOV     @RHCS3,CS3              ;SAVE RHCS3
 2229  007722  017737  173412  003422  86$:    MOV     @RHCS2,CS2              ;SAVE CS2
 2230  007730  017737  173406  003432          MOV     @RHST,DS1               ;SAVE TESTER STATUS
 2231  007736  017737  173402  003436          MOV     @RHER,ER1               ;SAVE ERROR REGISTER
 2232  007744  017737  173400  003442          MOV     @RHTDB,TDR              ;SAVE TESTER DATA REG.
 2233  007752  017737  173360  003440          MOV     @RHMR2,TC               ;SAVE MR2 TESTER REG.
 2234  007760  005777  173350                  TST     @RHBA                   ;IS IT ZERO
 2235  007764  001421                          BEQ     TOIT                    ;TEST IS GOOD
 2236  007766  005037  001162                  CLR     $REGO                   ;CREATE GOOD DATA
 2237  007772  017737  173336  001200          MOV     @RHBA,$TMP1             ;SETUP FOR WATBIT
 2238  010030  104045                          ERROR   45                      ;RHBA DID NOT CLEAR
 2239  010032  004737  046302                  JSR     R7,WATBIT               ;FIND BITS STILL SET
 2240  010036  000137  010030                  JMP     @#TOIT                  ;GO TO NEXT REG. TEST
 2241  010042  012737  177776  001162  1$:     MOV     #-2,$REGO               ;SETUP GOOD DATA
 2242  010050  017737  173310  001200          MOV     @RHBA,$TMP1             ;SETUP FOR WATBIT
 2243  010056  104046                          ERROR   46                      ;BITS DID NOT SET IN RHBA
 2244  010060                          TOIT:
 2245  010060  004737  006602                  JSR     R7,CLEER                ;CLEAR ERRORS
 2246  010064  004737  050130                  JSR     R7,ERRTST
 2247                                          ;;**************************************************************
 2248                                          ;*TEST 6         RHBAE CLEAR TEST
 2249                                                  ;*THIS TEST CHECKS THAT WHEN A CLEAR IS GENERATED
 2250                                                  ;*THE BUS ADDRESS EXTENSION REGISTER IS CLEARED
 2251                                          ;;**************************************************************
```

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2252  010040  000004                        TST6:   SCOPE
2253  010042  005701                                TST     R1                      ;IS IT A 70 OR AN 11
2254  010044  100510                                BMI     TST7            ;:SKIP OVER TEST FOR RH11
2255  010046  012777  000077  173304  WATFOR:       MOV     #77,@RHBAE              ;SET ALL BITS IN RHBAE
2256  010054  022777  000077  173276                CMP     #77,@RHBAE              ;ARE THEY ALL SET
2257  010062  001066                                BNE     1$                      ;ALL THE BITS DID NOT SET
2258  010064  012777  000040  173246                MOV     #CLR,@RHCS2             ;TELL IT TO CLEAR
2259  010072  017737  173232  003420                MOV     @RHCS1,CS1              ;SAVE RHCS1
2260  010100  017737  173226  003444                MOV     @RHWC,WC                ;SAVE WORD COUNT
2261  010106  017737  173222  003414                MOV     @RHBA,BA                ;SAVE BUS ADDRESS
2262  010114  005701                                TST     R1                      ;IS IT AN RH11
2263  010116  001406                                BEQ     8$                      ;NO IT'S A 70
2264  010120  005037  003416                        CLR     BAE                     ;CLEAR BAE
2265  010124  005037  003424                        CLR     CS3                     ;CLEAR CS3
2266  010130  000137  010150                        JMP     86$                     ;CONTINUE
2267  010134  017737  173220  003416  87$:   MOV     @RHBAE,BAE              ;SAVE BUS ADDRESS EXTENSION
2268  010142  017737  173214  003424                MOV     @RHCS3,CS3              ;SAVE RHCS3
2269  010150  017737  173164  003422  86$:   MOV     @RHCS2,CS2              ;SAVE CS2
2270  010156  017737  173160  003432                MOV     @RHST,DS1               ;SAVE TESTER STATUS
2271  010164  017737  173154  003436                MOV     @RHER,ER1               ;SAVE ERROR REGISTER
2272  010172  017737  173150  003442                MOV     @RHTDB,TDR              ;SAVE TESTER DATA REG.
2273  010200  017737  173132  003440                MOV     @RHMR2,TC               ;SAVE MR2 TESTER REG.
2274  010206  005777  173146                        TST     @RHBAE                  ;IS IT ZERO
2275  010212  001421                                BEQ     WATFIV                  ;TEST IS GOOD
2276  010214  005037  001162                        CLR     $REGO                   ;CREATE GOOD DATA
2277  010220  017737  173134  001200                MOV     @RHBAE,$TMP1            ;SETUP FOR WATBIT
2278  010226  104100                                ERROR   100                     ;RHBAE DID NOT CLEAR
2279  010230  004737  046302                        JSR     R7,WATBIT               ;FIND BITS STILL SET
2280  010234  000137  010256                        JMP     @#WATFIV                        ;GO TO NEXT REG. TEST
2281  010240  012737  000077  001162  1$:    MOV     #77,$REGO               ;SETUP GOOD DATA
2282  010246  017737  173106  001200                MOV     @RHBAE,$TMP1            ;SETUP FOR WATBIT
2283  010254  104101                                ERROR   101                     ;BITS DID NOT SET IN RHBAE
2284  010256                                WATFIV:
2285  010256  004737  006602                        JSR     R7,CLEER                ;CLEAR ERRORS
2286  010262  004737  050130                        JSR     R7,ERRTST
2287                                        ;;*****************************************************************
2288                                        ;*TEST 7         RHDB CLEAR TEST
2289                                        ;*THIS TEST CHECKS THAT WHEN A CLEAR IS GENERATED
2290                                        ;*OUTPUT READY IS NEGATED
2291                                        ;;*****************************************************************
2292  010266  000004                        TST7:   SCOPE
2293  010270  012777  177777  173054                MOV     #-1,@RHDB               ;SET ALL BITS IN RHDB
2294  010276  005037  003446                        CLR     BITCNT                  ;CLEAR BIT COUNTER
2295  010302  032777  000200  173030  18$:    BIT     #OR,@RHCS2              ;IS OR SET
2296  010310  001015                                BNE     DBMG                    ;BIT IS SET
2297  010312  005237  003446                        INC     BITCNT                  ;COUNT UP
2298  010316  001371                                BNE     18$                     ;NOT FINISHED COUNTING
2299  010320  005037  003446                        CLR     BITCNT                  ;GET READY TO DO IT AGAIN
2300  010324  032777  000200  173006  19$:    BIT     #OR,@RHCS2              ;IS IT SET YET?
2301  010332  001004                                BNE     DBMG                    ;YES
2302  010334  005237  003446                        INC     BITCNT                  ;COUNT UP
2303  010340  001401                                BEQ     DBMG                    ;BIT IS NOT GOING TO SET
2304  010342  000770                                BR      19$
2305  010344                                DBMG:
2306  010344  017737  172760  003420                MOV     @RHCS1,CS1              ;SAVE RHCS1
2307  010352  017737  172754  003444                MOV     @RHWC,WC                ;SAVE WORD COUNT
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 2308  010360  017737  172750  003414          MOV     @RHBA,BA                ;SAVE BUS ADDRESS
 2309  010366  005701                          TST     R1                      ;IS IT AN RH11
 2310  010370  001406                          BEQ     87$                     ;NO IT'S A 70
 2311  010372  005037  003416                  CLR     BAE                     ;CLEAR BAE
 2312  010376  005037  003424                  CLR     CS3                     ;CLEAR CS3
 2313  010402  000137  010422                  JMP     86$                     ;CONTINUE
 2314  010406  017737  172746  003416  87$:    MOV     @RHBAE,BAE              ;SAVE BUS ADDRESS EXTENSION
 2315  010414  017737  172742  003424          MOV     @RHCS3,CS3              ;SAVE RHCS3
 2316  010422  017737  172712  003422  86$:    MOV     @RHCS2,CS2              ;SAVE CS2
 2317  010430  017737  172706  003432          MOV     @RHST,DS1               ;SAVE TESTER STATUS
 2318  010436  017737  172702  003436          MOV     @RHER,ER1               ;SAVE ERROR REGISTER
 2319  010444  017737  172700  003442          MOV     @RHTDB,TDR              ;SAVE TESTER DATA REG.
 2320  010452  017737  172660  003440          MOV     @RHMR2,TC               ;SAVE MR2 TESTER REG.
 2321  010460  032777  000200  172652          BIT     #OR,@RHCS2              ;IS OUTPUT READY SET
 2322  010466  001001                          BNE     HURTS                   ;YES ,CONTINUE TEST
 2323  010470  104041                          ERROR   41                      ;OUTPUT READY DID NOT SET
 2324  010472  022777  177777  172652  HURTS:  CMP     #-1,@RHDB               ;DID INFO GET LOADED TO DB
 2325  010500  005037  003446                  CLR     BITCNT                  ;CLEAR BIT COUNTER
 2326  010504  032777  000200  172626  18$:    BIT     #OR,@RHCS2              ;IS OR SET
 2327  010512  001015                          BNE     DBMSG                   ;BIT IS SET
 2328  010514  005237  003446                  INC     BITCNT                  ;COUNT UP
 2329  010520  001371                          BNE     18$                     ;NOT FINISHED COUNTING
 2330  010522  005037  003446                  CLR     BITCNT                  ;GET READY TO DO IT AGAIN
 2331  010526  032777  000200  172604  19$:    BIT     #OR,@RHCS2              ;IS IT SET YET?
 2332  010534  001004                          BNE     DBMSG                   ;YES
 2333  010536  005237  003446                  INC     BITCNT                  ;COUNT UP
 2334  010542  001401                          BEQ     DBMSG                   ;BIT IS NOT GOING TO SET
 2335  010544  000770                          BR      19$
 2336  010546                          DBMSG:
 2337  010546  012777  000040  172564          MOV     #CLR,@RHCS2             ;TELL IT TO CLEAR
 2338  010554  005037  003446                  CLR     BITCNT                  ;CLEAR THE COUNTER
 2339  010560  032777  000200  172552  18$:    BIT     #OR,@RHCS2              ;DID OUTPUT READY CLEAR
 2340  010566  001403                          BEQ     SNAFOO                  ;YES GET OUT OF LOOP
 2341  010570  005237  003446                  INC     BITCNT                  ;INCREMENT COUNT LOOP
 2342  010574  001371                          BNE     18$                     ;CONTINUE LOOP IF NO CARRY
 2343  010576  032777  000200  172534  SNAFOO: BIT     #OR,@RHCS2              ;IS OUTPUT READY CLEARED
 2344  010604  001403                          BEQ     1$                      ;YES,EXIT TEST
 2345  010606  104114                          ERROR   114                     ;OUTPUT READY NOT CLEARED
 2346                                                                          ;BY SETTING CLR IN RHCS2
 2347  010610  004737  007234                  JSR     R7,WHYFO                ;ANY ERROR BITS SET
 2348  010614  004737  006602          1$:     JSR     R7,CLEER                ;CLEAR ERRORS
 2349  010620  004737  050130                  JSR     R7,ERRTST
 2350                                  ;;*****************************************************************
 2351                                  ;*TEST 10       PROM REGISTER DECODE TEST
 2352                                  ;*THIS TEST CHECKS THAT THE PROM
 2353                                  ;*CAN ACCESS ALL REGISTERS
 2354                                  ;;*****************************************************************
 2355  010624  000004                  TST10:  SCOPE
 2356  010626  023727  003366  160100          CMP     DEVIC1,#160100          ;CHECK FOR WHAT REG END
 2357  010634  001000                          BNE     1$                      ;WE ARE OK
 2358  010636  013704  003356          1$:     MOV     RHDT,R4                 ;SETUP TO TEST RH11
 2359  010642  005724                          TST     (R4)+                   ;CORRECT ADDRESS
 2360  010644  005724                  2$:     TST     (R4)+                   ;TEST REGISTER
 2361  010646  001004                          BNE     3$                      ;SOME INFORMATION WAS FOUND
 2362  010650  023704  003360                  CMP     RHBAE,R4                ;ARE ALL REGISTERS CHECKED
 2363  010654  001521                          BEQ     ERR3                    ;WAS THERE ANY ERRORS
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2364  010656  000772                        BR      2$                      ;TEST NOT COMPLETED
2365  010660  005744                3$:     TST     -(R4)                   ;CORRECT ADDRESS
2366  010662  010437  003416                MOV     R4,BAE                  ;SAVE ADDRESS
2367  010666  011437  001162                MOV     (R4),$REGO              ;GET CONTENTS
2368  010672  017737  172450  003412        MOV     @RHAS,AS                ;GET ATTENTION SUMMARY
2369  010700  104052                        ERROR   52                      ;FALSE INFO IN FAKE REGISTER
2370  010702  005003                        CLR     R3                      ;GET OFFSET READY
2371  010704  013737  003330  003420        MOV     RHCS1,CS1               ;GET ADDRESS TO START CHECKING
2372  010712  027737  172502  001162  29$:  CMP     @CS1,$REGO              ;HAS A REGISTER BEEN FOUND THAT COMPARES
2373  010720  001412                        BEQ     28$                     ;YES,PRINT IT OUT
2374  010722  023737  003356  003420  30$:  CMP     RHDT,CS1                ;IS IT LAST REG IN RH11
2375  010730  001473                        BEQ     ERR3                    ;WAS THERE ANY ERRORS
2376  010732  062737  000002  003420        ADD     #TWO,CS1                ;NO,CORRECT FOR NEXT CHECK
2377  010740  062703  000004                ADD     #4,R3                   ;CORRECT OFFSET
2378  010744  000762                        BR      29$                     ;CONTINUE TEST
2379  010746  032737  020000  177570  28$:  BIT     #SW13,@#177570          ;SKIP ERROR PRINTOUT
2380  010754  001024                        BNE     55$                     ;SKIP MESSAGE
2381  010756  104401  010764                TYPE    ,65$            ;;TYPE ASCIZ STRING
2382  010762  000421                        BR      64$             ;;GET OVER THE ASCIZ
2383                          ;;65$:  .ASCIZ  <15><12>/REGISTER CONTENTS COMPARES TO:/
2384  011026                  64$:
2385  011026  000163  011032  55$:  JMP     27$(R3)                 ;PRINT REGISTER
2386  011032  104053          27$:  ERROR   53                      ;RHCS1
2387  011034  000732                BR      30$                     ;CONTINUE TEST
2388  011036  104054                ERROR   54                      ;RHWC
2389  011040  000730                BR      30$                     ;CONTINUE TEST
2390  011042  104055                ERROR   55                      ;RHBA
2391  011044  000726                BR      30$                     ;CONTINUE TEST
2392  011046  104056                ERROR   56                      ;RHMR2
2393  011050  000724                BR      30$                     ;CONTINUE TEST
2394  011052  104057                ERROR   57                      ;RHCS2
2395  011054  000722                BR      30$                     ;CONTINUE TEST
2396  011056  104060                ERROR   60                      ;RHST
2397  011060  000720                BR      30$                     ;CONTINUE TEST
2398  011062  104061                ERROR   61                      ;RHER
2399  011064  000716                BR      30$                     ;CONTINUE TEST
2400  011066  104062                ERROR   62                      ;RHAS
2401  011070  000714                BR      30$                     ;CONTINUE TEST
2402  011072  104063                ERROR   63                      ;RHTDB
2403  011074  000712                BR      30$                     ;CONTINUE TEST
2404  011076  104064                ERROR   64                      ;RHDB
2405  011100  000710                BR      30$                     ;CONTINUE TEST
2406  011102  104065                ERROR   65                      ;RHMR1
2407  011104  000706                BR      30$                     ;CONTINUE TEST
2408  011106  104066                ERROR   66                      ;RHDT
2409  011110  000704                BR      30$                     ;CONTINUE TEST
2410  011112  104067                ERROR   67                      ;RHBAE
2411  011114  000702                BR      30$                     ;CONTINUE TEST
2412  011116  104070                ERROR   70                      ;RHCS3
2413  011120  004737  050130  ERR3: JSR     R7,ERRTST
2414  011124  004737  006602        JSR     R7,CLEER                ;CLEAR ERRORS
2415
2416                    ;;*****************************************************************
2417                    ;*TEST 11        RHCS3 TEST
2418                            ;*THIS TEST CHECKS THE READ/WRITE BITS
2419                            ;*IN THE RHCS3 REGISTER CAN BE CLEARED AND SET.
```

```
2420
2421  011130  000004                        ;;*****************************************************************
2422  011132  012777  000040  172200  TST11:  SCOPE
2423  011140  012777  000007  172172          MOV     #CLR,@RHCS2             ;CLEAR TESTER
2424  011146  005701                          MOV     #7,@RHCS2               ;SETUP UNIT SEVEN
2425  011150  001122                          TST     R1                      ;IS IT AN RH70
2426  011152  012737  000004  003450          BNE     TST12           ;;THIS IS A RH11
2427  011160  012737  000001  001162          MOV     #4,LOOCNT               ;SETUP LOOP COUT OF FOUR
2428  011166  013777  001162  172166  1$:     MOV     #1,$REGO                ;SETUP BIT TO BE TESTED
2429  011174  017737  172162  003424          MOV     $REGO,@RHCS3            ;SET THE BIT
2430  011202  013737  003424  001200          MOV     @RHCS3,CS3              ;SAVE CONTENTS OF RHCS3
2431  011210  123777  001162  172144          MOV     CS3,$TMP1               ;SETUP FOR WHAT BIT IF NEEDED
2432  011216  001022                          CMPB    $REGO,@RHCS3            ;IS THE BIT SET?
2433  011220  006137  001162                  BNE     2$                      ;NO,GO TO ERROR
2434  011224  005337  003450                  ROL     $REGO                   ;SETUP TO TEST NEXT BIT
2435  011230  001356                          DEC     LOOCNT                  ;-1 TO THE LOOP COUNT
2436  011232  012737  000100  001162          BNE     1$                      ;TEST NEXT BIT
2437  011240  013777  001162  172114          MOV     #IE3,$REGO              ;SET INTERRUPT BIT
2438  011246  017737  172110  003424          MOV     $REGO,@RHCS3            ;SET BIT
2439  011254  023777  001162  172100          MOV     @RHCS3,CS3                      ;SAVE CONTENTS
2440  011262  001451                          CMP     $REGO,@RHCS3                    ;IS BIT SET?
2441  011264                                  BEQ     ERR5                    ;WAS THERE AN ERROR
2442  011264  017737  172040  003420  2$:
2443  011272  017737  172034  003444          MOV     @RHCS1,CS1              ;SAVE RHCS1
2444  011300  017737  172030  003414          MOV     @RHWC,WC                ;SAVE WORD COUNT
2445  011306  005701                          MOV     @RHBA,BA                ;SAVE BUS ADDRESS
2446  011310  001406                          TST     R1                      ;IS IT AN RH11
2447  011312  005037  003416                  BEQ     87$                     ;NO IT'S A 70
2448  011316  005037  003424                  CLR     BAE                     ;CLEAR BAE
2449  011322  000137  011342                  CLR     CS3                     ;CLEAR CS3
2450  011326  017737  172026  003416  87$:     JMP     86$                     ;CONTINUE
2451  011334  017737  172022  003424          MOV     @RHBAE,BAE              ;SAVE BUS ADDRESS EXTENSION
2452  011342  017737  171772  003422  86$:     MOV     @RHCS3,CS3              ;SAVE RHCS3
2453  011350  017737  171766  003432          MOV     @RHCS2,CS2              ;SAVE CS2
2454  011356  017737  171762  003436          MOV     @RHST,DS1               ;SAVE TESTER STATUS
2455  011364  017737  171760  003442          MOV     @RHER,ER1               ;SAVE ERROR REGISTER
2456  011372  017737  171740  003440          MOV     @RHTDB,TDR              ;SAVE TESTER DATA REG.
2457  011400  104035                          MOV     @RHMR2,TC               ;SAVE MR2 TESTER REG.
2458  011402  004737  046302                  ERROR   35                      ;BIT DID NOT SET
2459  011406  004737  050130          ERR5:   JSR     R7,WATBIT               ;TELL WHAT BIT POSITION IS NO GOOD
2460  011412  004737  006602                  JSR     R7,ERRTST
2461                                          JSR     R7,CLEER                ;CLEAR ERRORS
2462
2463                                  ;;*****************************************************************
2464                                  ;*TEST 12        RHWC BIT TEST
2465                                        ;*THIS TEST CHECKS THE WORD COUNT REGISTER
2466                                        ;*TO SEE IF ALL BITS CAN BE SET AND CLEARED
2467                                        ;*AND CHECKS THE REGISTER USING ALTERNATE BITS
2468                                        ;*SET (52525) AND USING (125252) TO MAKE SURE
2469                                        ;*IT WORKS WITH ALTERNATE PATTERN.
2470  011416  000004                  ;;*****************************************************************
2471  011420  012737  000001  001162  TST12:  SCOPE
2472  011426  013777  001162  171676          MOV     #ONE,$REGO              ;SET UP REFERANCE WORD
2473  011434  023777  001162  171670  RHWCT:  MOV     $REGO,@RHWC             ;MOVE BIT INTO WORD COUNT REGISTER
2474  011442  001454                          CMP     $REGO,@RHWC             ;IS BIT SET?
2475  011444  013737  003444  001200          BEQ     1$                      ;YES,CONTINUE BIT TEST
                                              MOV     WC,$TMP1                ;SETUP FOR WATBIT PROG.
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2476  011452  004737  046302                  JSR     R7,WATBIT               ;GO TO WATBIT PROGRAM
2477  011456  017737  171646  003420          MOV     @RHCS1,CS1              ;SAVE RHCS1
2478  011464  017737  171642  003444          MOV     @RHWC,WC                ;SAVE WORD COUNT
2479  011472  017737  171636  003414          MOV     @RHBA,BA                ;SAVE BUS ADDRESS
2480  011500  005701                          TST     R1                      ;IS IT AN RH11
2481  011502  001406                          BEQ     87$                     ;NO IT'S A 70
2482  011504  005037  003416                  CLR     BAE                     ;CLEAR BAE
2483  011510  005037  003424                  CLR     CS3                     ;CLEAR CS3
2484  011514  000137  011534                  JMP     86$                     ;CONTINUE
2485  011520  017737  171634  003416  87$:    MOV     @RHBAE,BAE              ;SAVE BUS ADDRESS EXTENSION
2486  011526  017737  171630  003424          MOV     @RHCS3,CS3              ;SAVE RHCS3
2487  011534  017737  171600  003422  86$:    MOV     @RHCS2,CS2              ;SAVE CS2
2488  011542  017737  171574  003432          MOV     @RHST,DS1               ;SAVE TESTER STATUS
2489  011550  017737  171570  003436          MOV     @RHER,ER1               ;SAVE ERROR REGISTER
2490  011556  017737  171566  003442          MOV     @RHTDB,TDR              ;SAVE TESTER DATA REG.
2491  011564  017737  171546  003440          MOV     @RHMR2,TC               ;SAVE MR2 TESTER REG.
2492  011572  104001                          ERROR   1                       ;BIT WAS NOT SET IN RHWC REG
2493  011574  005737  001162          1$:     TST     $REGO                   ;WAS IT BIT 15 THAT WAS LAST TESTED
2494  011600  100403                          BMI     RHWCA                   ;YES ,GO TO NEXT PART OF TEST
2495  011602  006137  001162                  ROL     $REGO                   ;NO,THEN TEST NEXT BIT
2496  011606  000707                          BR      RHWCT                   ;DO BIT TEST AGAIN
2497  011610  012737  052525  001162  RHWCA:  MOV     #AB,$REGO               ;SET UP ALTERNATE BIT PATTERN
2498  011616  013777  001162  171506          MOV     $REGO,@RHWC             ;SET ALTERNATE BITS
2499  011624  017737  171502  003444          MOV     @RHWC,WC                ;SAVE RHWC CONTENTS
2500  011632  023777  001162  171472          CMP     $REGO,@RHWC             ;ARE THEY ALL SET?
2501  011640  001457                          BEQ     1$                      ;YES,CONTINUE TEST
2502  011642  013737  003444  001200          MOV     WC,$TMP1                ;SETUP FOR WATBIT PROG.
2503  011650  004737  046302                  JSR     R7,WATBIT               ;GO TO WATBIT PROGRAM
2504  011654  017737  171450  003420          MOV     @RHCS1,CS1              ;SAVE RHCS1
2505  011662  017737  171444  003444          MOV     @RHWC,WC                ;SAVE WORD COUNT
2506  011670  017737  171440  003414          MOV     @RHBA,BA                ;SAVE BUS ADDRESS
2507  011676  005701                          TST     R1                      ;IS IT AN RH11
2508  011700  001406                          BEQ     87$                     ;NO IT'S A 70
2509  011702  005037  003416                  CLR     BAE                     ;CLEAR BAE
2510  011706  005037  003424                  CLR     CS3                     ;CLEAR CS3
2511  011712  000137  011732                  JMP     86$                     ;CONTINUE
2512  011716  017737  171436  003416  87$:    MOV     @RHBAE,BAE              ;SAVE BUS ADDRESS EXTENSION
2513  011724  017737  171432  003424          MOV     @RHCS3,CS3              ;SAVE RHCS3
2514  011732  017737  171402  003422  86$:    MOV     @RHCS2,CS2              ;SAVE CS2
2515  011740  017737  171376  003432          MOV     @RHST,DS1               ;SAVE TESTER STATUS
2516  011746  017737  171372  003436          MOV     @RHER,ER1               ;SAVE ERROR REGISTER
2517  011754  017737  171370  003442          MOV     @RHTDB,TDR              ;SAVE TESTER DATA REG.
2518  011762  017737  171350  003440          MOV     @RHMR2,TC               ;SAVE MR2 TESTER REG.
2519  011770  104001                          ERROR   1                       ;TEST FAILED
2520  011772  012737  125252  001162          MOV     #0AB,$REGO              ;SET UP ALTERNATE OPPISITE BITS
2521  012000  013777  001162  171324  1$:     MOV     $REGO,@RHWC             ;SET OPPISITE ALTERNATE BITS
2522  012006  017737  171320  003444          MOV     @RHWC,WC                ;SAVE CONTENTS OF RHWC
2523  012014  023777  001162  171310          CMP     $REGO,@RHWC             ;ARE CORRECT BITS SET?
2524  012022  001454                          BEQ     ERR6                    ;WAS THERE AN ERROR
2525  012024  013737  003444  001200          MOV     WC,$TMP1                ;SETUP FOR WATBIT PROG.
2526  012032  004737  046302                  JSR     R7,WATBIT               ;GO TO WATBIT PROGRAM
2527  012036                          GOOF:
2528  012036  017737  171266  003420          MOV     @RHCS1,CS1              ;SAVE RHCS1
2529  012044  017737  171262  003444          MOV     @RHWC,WC                ;SAVE WORD COUNT
2530  012052  017737  171256  003414          MOV     @RHBA,BA                ;SAVE BUS ADDRESS
2531  012060  005701                          TST     R1                      ;IS IT AN RH11
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2532  012062  001406                          BEQ     87$                     ;NO IT'S A 70
2533  012064  005037  003416                  CLR     BAE                     ;CLEAR BAE
2534  012070  005037  003424                  CLR     CS3                     ;CLEAR CS3
2535  012074  000137  012114                  JMP     86$                     ;CONTINUE
2536  012100  017737  171254  003416  87$:    MOV     @RHBAE,BAE              ;SAVE BUS ADDRESS EXTENSION
2537  012106  017737  171250  003424          MOV     @RHCS3,CS3              ;SAVE RHCS3
2538  012114  017737  171220  003422  86$:    MOV     @RHCS2,CS2              ;SAVE CS2
2539  012122  017737  171214  003432          MOV     @RHST,DS1               ;SAVE TESTER STATUS
2540  012130  017737  171210  003436          MOV     @RHER,ER1               ;SAVE ERROR REGISTER
2541  012136  017737  171206  003442          MOV     @RHTDB,TDR              ;SAVE TESTER DATA REG.
2542  012144  017737  171166  003440          MOV     @RHMR2,TC               ;SAVE MR2 TESTER REG.
2543  012152  104001                          ERROR   1                       ;OPPISITE BIT TEST FAILED
2544  012154  013737  003332  004142  ERR6:   MOV     RHWC,$RHWC              ;GET READY TO TEST BYTES
2545  012162  012777  000000  171142          MOV     #ZERO,@RHWC             ;CLEAR WC FIRST
2546  012170  113777  004120  171744          MOVB    MINUS,@$RHWC            ;CHECK LOBYTE
2547  012176  022777  000377  171126          CMP     #377,@RHWC              ;ANY EXTRA BITS
2548  012204  001401                          BEQ     HIBYTE                  ;OK SO FAR
2549  012206  104200                          ERROR   200                     ;HIBYTE GATE NOT WORKING PROPERLY
2550  012210  005237  004142          HIBYTE: INC     $RHWC                   ;GET READY FOR NEXT BYTE
2551  012214  012777  000000  171110          MOV     #ZERO,@RHWC             ;CLEAR WC
2552  012222  113777  004121  171712          MOVB    MINUS+1,@$RHWC          ;CHECK THE HI BYTE
2553  012230  022777  177400  171074          CMP     #177400,@RHWC           ;IS IT OK
2554  012236  001401                          BEQ     ALRIGT                  ;ITS OK
2555  012240  104200                          ERROR   200                     ;LOBYTE GATE NOT WORKING PROPERLY
2556  012242  004737  050130          ALRIGT: JSR     R7,ERRTST
2557  012246  012777  000000  171056          MOV     #ZERO,@RHWC             ;CLEAR WORD COUNT
2558  012254  004737  006602                  JSR     R7,CLEER                ;CLEAR ERRORS
2559
2560
2561                                  ;;**************************************************************
2562                                  ;*TEST 13       RHBAE BIT TEST
2563                                          ;*THIS TEST TESTS THE RHBAE REGISTER
2564                                          ;*ONLY IF THE RH IS AN RH70,RH11'S
2565                                          ;*DO NOT HAVE AN RHBAE REGISTER
2566                                  ;;**************************************************************
2567  012260  000004                  TST13:  SCOPE
2568  012262  005701                          TST     R1                      ;IS RH AN RH70
2569  012264  001104                          BNE     TST14           ;;NO PASS OVER TEST
2570  012266  012737  000001  001162          MOV     #1,$REG0                ;SET UP BIT TEST
2571  012274  013777  001162  171056  BAETST: MOV     $REG0,@RHBAE            ;SET BIT IN RHBAE REGISTER
2572  012302  017737  171052  003416          MOV     @RHBAE,BAE              ;SAVE CONTENTS OF RHBAE REGISTER
2573  012310  023777  001162  171042          CMP     $REG0,@RHBAE            ;IS IT SET?
2574  012316  001454                          BEQ     1$                      ;YES CONTINUE TEST
2575  012320  013737  003416  001200          MOV     BAE,$TMP1               ;SETUP FOR WATBIT PROG.
2576  012326  004737  046302                  JSR     R7,WATBIT               ;GO TO WATBIT PROGRAM
2577  012332  017737  170772  003420          MOV     @RHCS1,CS1              ;SAVE RHCS1
2578  012340  017737  170766  003444          MOV     @RHWC,WC                ;SAVE WORD COUNT
2579  012346  017737  170762  003414          MOV     @RHBA,BA                ;SAVE BUS ADDRESS
2580  012354  005701                          TST     R1                      ;IS IT AN RH11
2581  012356  001406                          BEQ     87$                     ;NO IT'S A 70
2582  012360  005037  003416                  CLR     BAE                     ;CLEAR BAE
2583  012364  005037  003424                  CLR     CS3                     ;CLEAR CS3
2584  012370  000137  012410                  JMP     86$                     ;CONTINUE
2585  012374  017737  170760  003416  87$:    MOV     @RHBAE,BAE              ;SAVE BUS ADDRESS EXTENSION
2586  012402  017737  170754  003424          MOV     @RHCS3,CS3              ;SAVE RHCS3
2587  012410  017737  170724  003422  86$:    MOV     @RHCS2,CS2              ;SAVE CS2
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 2588  012416  017737  170720  003432          MOV     @RHST,DS1               ;SAVE TESTER STATUS
 2589  012424  017737  170714  003436          MOV     @RHER,ER1               ;SAVE ERROR REGISTER
 2590  012432  017737  170712  003442          MOV     @RHTDB,TDR              ;SAVE TESTER DATA REG.
 2591  012440  017737  170672  003440          MOV     @RHMR2,TC               ;SAVE MR2 TESTER REG.
 2592  012446  104002                          ERROR   2                       ;BIT DID NIT SET
 2593  012450  022737  000040  001162  1$:     CMP     #40,$REGO               ;IS IT LAST BIT TO BE TESTED
 2594  012456  001403                          BEQ     ERR7                    ;WAS THERE AN ERROR
 2595  012460  006137  001162                  ROL     $REGO                   ;NO,SET UP FOR NEXT BIT
 2596  012464  000703                          BR      BAETST                  ;CONTINUE TEST
 2597  012466  004737  006602          ERR7:   JSR     R7,CLEER                ;CLEAR ERRORS
 2598  012472  004737  050130                  JSR     R7,ERRTST
 2599
 2600
 2601                                  ;;**********************************************************************
 2602                                  ;*TEST 14        RHBA BIT TEST
 2603                                          ;*THIS TEST TESTS THE BUS ADDRESS REGISTER
 2604                                          ;*BY FIRST ALTERNATLY SETTING AND CLEARING
 2605                                          ;*BITS IN THE BA REGISTER AND THEN BY USING
 2606                                          ;*AN ALTERNATE BIT PATTERN (52525) AND AN
 2607                                          ;*OPPOSITE BIT PATTERN (125252).
 2608                                  ;;**********************************************************************
 2609  012476  000004                  TST14:  SCOPE
 2610
 2611  012500  012737  000002  001162          MOV     #TWO,$REGO              ;SET UP BIT TEST
 2612  012506  013777  001162  170620  BATST:  MOV     $REGO,@RHBA             ;SET BIT IN RHBA REGISTER
 2613  012514  017737  170614  003414          MOV     @RHBA,BA                ;SAVE CONTENTS OF BA REGISTER
 2614  012522  023777  001162  170604          CMP     $REGO,@RHBA             ;ARE CORRECT BITS SET
 2615  012530  001454                          BEQ     1$                      ;YES,CONTINUE TEST
 2616  012532  013737  003414  001200          MOV     BA,$TMP1                ;SETUP FOR WATBIT PROG.
 2617  012540  017737  170564  003420          MOV     @RHCS1,CS1              ;SAVE RHCS1
 2618  012546  017737  170560  003444          MOV     @RHWC,WC                ;SAVE WORD COUNT
 2619  012554  017737  170554  003414          MOV     @RHBA,BA                ;SAVE BUS ADDRESS
 2620  012562  005701                          TST     R1                      ;IS IT AN RH11
 2621  012564  001406                          BEQ     87$                     ;NO IT'S A 70
 2622  012566  005037  003416                  CLR     BAE                     ;CLEAR BAE
 2623  012572  005037  003424                  CLR     CS3                     ;CLEAR CS3
 2624  012576  000137  012616                  JMP     86$                     ;CONTINUE
 2625  012602  017737  170552  003416  87$:    MOV     @RHBAE,BAE              ;SAVE BUS ADDRESS EXTENSION
 2626  012610  017737  170546  003424          MOV     @RHCS3,CS3              ;SAVE RHCS3
 2627  012616  017737  170516  003422  86$:    MOV     @RHCS2,CS2              ;SAVE CS2
 2628  012624  017737  170512  003432          MOV     @RHST,DS1               ;SAVE TESTER STATUS
 2629  012632  017737  170506  003436          MOV     @RHER,ER1               ;SAVE ERROR REGISTER
 2630  012640  017737  170504  003442          MOV     @RHTDB,TDR              ;SAVE TESTER DATA REG.
 2631  012646  017737  170464  003440          MOV     @RHMR2,TC               ;SAVE MR2 TESTER REG.
 2632  012654  104003                          ERROR   3                       ;NO,CORRECT BITS ARE NOT SE~
 2633  012656  004737  046302                  JSR     R7,WATBIT               ;GO TO WATBIT PROGRAM
 2634  012662  005737  001162          1$:     TST     $REGO                   ;WAS BIT 15 THE LAST BIT TESTED
 2635  012666  100403                          BMI     BATSTA                  ;YES,GO TO ALTERNATE BIT TEST
 2636  012670  006137  001162                  ROL     $REGO                   ;NO,SET UP TO TEST NEXT BIT
 2637  012674  000704                          BR      BATST                   ;CONTINUE BIT TEST
 2638  012676  012737  052525  001162  BATSTA: MOV     #AB,$REGO               ;SET UP BIT PATTERN
 2639  012704  042737  000001  001162          BIC     #ONE,$REGO              ;CLEAR BIT 0 POSITION
 2640  012712  013777  001162  170414          MOV     $REGO,@RHBA             ;SET BITS IN RHBA REGISTER
 2641  012720  017737  170410  003414          MOV     @RHBA,BA                ;SAVE CONTENTS OF BA REGISTER
 2642  012726  023777  001162  170400          CMP     $REGO,@RHBA             ;ARE CORRECT BITS SET
 2643  012734  001454                          BEQ     1$                      ;YES,CONTINUE TEST
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 2644  012736  013737  003414  001200          MOV     BA,$TMP1                ;SETUP FOR WATBIT PROG.
 2645  012744  017737  170360  003420          MOV     @RHCS1,CS1              ;SAVE RHCS1
 2646  012752  017737  170354  003444          MOV     @RHWC,WC                ;SAVE WORD COUNT
 2647  012760  017737  170350  003414          MOV     @RHBA,BA                ;SAVE BUS ADDRESS
 2648  012766  005701                          TST     R1                      ;IS IT AN RH11
 2649  012770  001406                          BEQ     87$                     ;NO IT'S A 70
 2650  012772  005037  003416                  CLR     BAE                     ;CLEAR BAE
 2651  012776  005037  003424                  CLR     CS3                     ;CLEAR CS3
 2652  013002  000137  013022                  JMP     86$                     ;CONTINUE
 2653  013006  017737  170346  003416  87$:    MOV     @RHBAE,BAE              ;SAVE BUS ADDRESS EXTENSION
 2654  013014  017737  170342  003424          MOV     @RHCS3,CS3              ;SAVE RHCS3
 2655  013022  017737  170312  003422  86$:    MOV     @RHCS2,CS2              ;SAVE CS2
 2656  013030  017737  170306  003432          MOV     @RHST,DS1               ;SAVE TESTER STATUS
 2657  013036  017737  170302  003436          MOV     @RHER,ER1               ;SAVE ERROR REGISTER
 2658  013044  017737  170300  003442          MOV     @RHTDB,TDR              ;SAVE TESTER DATA REG.
 2659  013052  017737  170260  003440          MOV     @RHMR2,TC               ;SAVE MR2 TESTER REG.
 2660  013060  104003                          ERROR   3                       ;NO,CORRECT BITS ARE NOT SET
 2661  013062  004737  046302                  JSR     R7,WATBIT               ;GO TO WATBIT PROGRAM
 2662  013066  012737  125252  001162  1$:     MOV     #0AB,$REGO              ;SET UP OPPOSITE ALTERNATE BIT TEST
 2663  013074  013777  001162  170232          MOV     $REGO,@RHBA             ;SET BITS IN RHBA REGISTER
 2664  013102  017737  170226  003414          MOV     @RHBA,BA                ;SAVE CONTENTS OF BA REGISTER
 2665  013110  023777  001162  170216          CMP     $REGO,@RHBA             ;ARE CORRECT BITS SET
 2666  013116  001454                          BEQ     ERR10                   ;WAS THERE AN ERROR
 2667  013120  013737  003414  001200          MOV     BA,$TMP1                ;SETUP FOR WATBIT PROG.
 2668  013126                          GOOFED:
 2669  013126  017737  170176  003420          MOV     @RHCS1,CS1              ;SAVE RHCS1
 2670  013134  017737  170172  003444          MOV     @RHWC,WC                ;SAVE WORD COUNT
 2671  013142  017737  170166  003414          MOV     @RHBA,BA                ;SAVE BUS ADDRESS
 2672  013150  005701                          TST     R1                      ;IS IT AN RH11
 2673  013152  001406                          BEQ     87$                     ;NO IT'S A 70
 2674  013154  005037  003416                  CLR     BAE                     ;CLEAR BAE
 2675  013160  005037  003424                  CLR     CS3                     ;CLEAR CS3
 2676  013164  000137  013204                  JMP     86$                     ;CONTINUE
 2677  013170  017737  170164  003416  87$:    MOV     @RHBAE,BAE              ;SAVE BUS ADDRESS EXTENSION
 2678  013176  017737  170160  003424          MOV     @RHCS3,CS3              ;SAVE RHCS3
 2679  013204  017737  170130  003422  86$:    MOV     @RHCS2,CS2              ;SAVE CS2
 2680  013212  017737  170124  003432          MOV     @RHST,DS1               ;SAVE TESTER STATUS
 2681  013220  017737  170120  003436          MOV     @RHER,ER1               ;SAVE ERROR REGISTER
 2682  013226  017737  170116  003442          MOV     @RHTDB,TDR              ;SAVE TESTER DATA REG.
 2683  013234  017737  170076  003440          MOV     @RHMR2,TC               ;SAVE MR2 TESTER REG.
 2684  013242  104003                          ERROR   3                       ;NO,CORRECT BITS ARE NOT SET
 2685  013244  004737  046302                  JSR     R7,WATBIT               ;GO TO WATBIT PROGRAM
 2686  013250  013737  003334  004136  ERR10:  MOV     RHBA,$RHBA              ;GET READY TO TEST BYTES
 2687  013256  012777  000000  170050          MOV     #ZERO,@RHBA             ;ZERO THE BUS ADDRESS
 2688  013264  113777  004120  170644          MOVB    MINUS,@$RHBA            ;MOVE THE BYTE
 2689  013272  022777  000376  170034          CMP     #376,@RHBA              ;DID IT GET THERE ALRIGHT
 2690  013300  001401                          BEQ     99$                     ;YES,CHECK NEXT BYTE
 2691  013302  104202                          ERROR   202                     ;HIGH BYTE DOES NOT SEEM TO BE WORKING
 2692  013304  005237  004136          99$:    INC     $RHBA                   ;GET READY FOR NEXT BYTE
 2693  013310  012777  000000  170016          MOV     #ZERO,@RHBA             ;ZERO THE BUS ADDRESS
 2694  013316  113777  004121  170612          MOVB    MINUS+1,@$RHBA          ;MOVE TO UPPER BYTE
 2695  013324  022777  177400  170002          CMP     #177400,@RHBA           ;DID IT GET THERE ALRIGHT
 2696  013332  001401                          BEQ     98$                     ;YES,EXIT TEST
 2697  013334  104202                          ERROR   202                     ;LOBYTE IS NOT WORKING PROPERLY
 2698  013336  004737  006602          98$:    JSR     R7,CLEER                ;CLAER ERRORS
 2699  013342  004737  050130                  JSR     R7,ERRTST
```

27?0C

```
                                        ;;*****************************************************************
                                        ;*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)
                                        ;;*****************************************************************
013346  000004                  TST15:  SCOPE

013350  005037  003450                  CLR     LOOCNT                  ;CLEAR LOOP COUNT
013354  012737  000001  001162          MOV     #ONE,$REGO              ;SET UP BIT TEST
013362  013777  001162  167762  DBTST:  MOV     $REGO,@RHDB             ;SET BIT IN RHDB REGISTER
013370  005037  003446                  CLR     BITCNT                  ;CLEAR BIT COUNTER
013374  032777  000200  167726  18$:    BIT     #RDY,@RHCS1             ;IS RDY SET
013402  001015                          BNE     ABLE                    ;BIT IS SET
013404  005237  003446                  INC     BITCNT                  ;COUNT UP
013410  001371                          BNE     18$                     ;NOT FINISHED COUNTING
013412  005037  003446                  CLR     BITCNT                  ;GET READY TO DO IT AGAIN
013416  032777  000200  167704  19$:    BIT     #RDY,@RHCS1             ;IS IT SET YET?
013424  001004                          BNE     ABLE                    ;YES
013426  005237  003446                  INC     BITCNT                  ;COUNT UP
013432  001401                          BEQ     ABLE                    ;BIT IS NOT GOING TO SET
013434  000770                          BR      19$
013436                          ABLE:
013436  017737  167666  003420          MOV     @RHCS1,CS1              ;SAVE RHCS1
013444  017737  167662  003444          MOV     @RHWC,WC                ;SAVE WORD COUNT
013452  017737  167656  003414          MOV     @RHBA,BA                ;SAVE BUS ADDRESS
013460  005701                          TST     R1                      ;IS IT AN RH11
013462  001406                          BEQ     87$                     ;NO IT'S A 70
013464  005037  003416                  CLR     BAE                     ;CLEAR BAE
013470  005037  003424                  CLR     CS3                     ;CLEAR CS3
013474  000137  013514                  JMP     86$                     ;CONTINUE
013500  017737  167654  003416  87$:    MOV     @RHBAE,BAE              ;SAVE BUS ADDRESS EXTENSION
013506  017737  167650  003424          MOV     @RHCS3,CS3              ;SAVE RHCS3
013514  017737  167620  003422  86$:    MOV     @RHCS2,CS2              ;SAVE CS2
013522  017737  167614  003432          MOV     @RHST,DS1               ;SAVE TESTER STATUS
013530  017737  167610  003436          MOV     @RHER,ER1               ;SAVE ERROR REGISTER
013536  017737  167606  003442          MOV     @RHTDB,TDR              ;SAVE TESTER DATA REG.
013544  017737  167566  003440          MOV     @RHMR2,TC               ;SAVE MR2 TESTER REG.
013552  032777  000200  167550          BIT     #RDY,@RHCS1             ;IS READY SET
013560  001003                          BNE     RDYSET                  ;SKIP ERROR
013562  104102                          ERROR   102                     ;READY DID NOT SET
013564  004737  007234                  JSR     R7,WHYFO                ;ANY ERRORS SET
013570  032777  000200  167542  RDYSET: BIT     #OR,@RHCS2              ;IS OR SET?
013576  001004                          BNE     ORSET                   ;YES,IT'S SET
013600  017737  167546  003426          MOV     @RHDB,DB                ;SAVE CONTENTS OF RHDB REGISTER
013606  104041                          ERROR   41                      ;OUTPUT READY DID NOT SET
013610  017737  167536  003426  ORSET:  MOV     @RHDB,DB                ;SAVE CONTENTS OF REGISTER
013616  023737  001162  003426          CMP     $REGO,DB                ;IS CORRECT BIT SET?
013624  001406                          BEQ     1$                      ;YES,CONTINUE TEST
013626  013737  003426  001200          MOV     DB,$TMP1                ;SETUP FOR WATBIT PROG.
013634  104004                          ERROR   4                       ;NO,CORRECT BIT IS NOT SET
013636  004737  046302                  JSR     R7,WATBIT               ;GO TO WATBIT PROGRAM
```

```
 2757  013642  005737  001162          1$:     TST     $REG0           ;WAS BIT IS THE LAST BIT TESTED
 2758  013646  100415                          BMI     DBTSTA          ;YES,GO TO ALTERNATE BIT PATTERN TEST
 2759  013650  022737  000001  003450          CMP     #ONE,LOOCNT     ;IS IT FIRST TIME
 2760  013656  001404                          BEQ     2$              ;NO, IT'S SECOND
 2761  013660  005237  003450                  INC     LOOCNT          ;YES,
 2762  013664  000137  013362                  JMP     DBTST           ;CONTINUE TEST
 2763  013670  005037  003450          2$:     CLR     LOOCNT          ;CLEAR LOOP COUNT
 2764  013674  006137  001162                  ROL     $REG0           ;NO,SET UP TO TEST NEXT BIT
 2765  013700  000630                          BR      DBTST           ;GO AND TEST BIT
 2766  013702  022737  000001  003450  DBTSTA: CMP     #ONE,LOOCNT     ;IS IT FIRST TIME
 2767  013710  001404                          BEQ     1$              ;NO
 2768  013712  005237  003450                  INC     LOOCNT          ;INCREMENT LOOP COUNTER
 2769  013716  000137  013362                  JMP     DBTST           ;DO AGAIN
 2770  013722  012737  052525  001162  1$:     MOV     #AB,$REG0       ;SET UP BIT PATTERN TEST
 2771  013730  013777  001162  167414          MOV     $REG0,@RHDB     ;SET BITS IN REGISTER
 2772  013736  005037  003446                  CLR     BITCNT          ;CLEAR BIT COUNTER
 2773  013742  032777  000200  167370  18$:     BIT     #OR,@RHCS2      ;IS OR SET
 2774  013750  001015                          BNE     DBOUT           ;BIT IS SET
 2775  013752  005237  003446                  INC     BITCNT          ;COUNT UP
 2776  013756  001371                          BNE     18$             ;NOT FINISHED COUNTING
 2777  013760  005037  003446                  CLR     BITCNT          ;GET READY TO DO IT AGAIN
 2778  013764  032777  000200  167346  19$:     BIT     #OR,@RHCS2      ;IS IT SET YET?
 2779  013772  001004                          BNE     DBOUT           ;YES
 2780  013774  005237  003446                  INC     BITCNT          ;COUNT UP
 2781  014000  001401                          BEQ     DBOUT           ;BIT IS NOT GOING TO SET
 2782  014002  000770                          BR      19$
 2783  014004                          DBOJT:
 2784  014004  017737  167320  003420          MOV     @RHCS1,CS1      ;SAVE RHCS1
 2785  014012  017737  167314  003444          MOV     @RHWC,WC        ;SAVE WORD COUNT
 2786  014020  017737  167310  003414          MOV     @RHBA,BA        ;SAVE BUS ADDRESS
 2787  014026  005701                          TST     R1              ;IS IT AN RH11
 2788  014030  001406                          BEQ     87$             ;NO IT'S A 70
 2789  014032  005037  003416                  CLR     BAE             ;CLEAR BAE
 2790  014036  005037  003424                  CLR     CS3             ;CLEAR CS3
 2791  014042  000137  014062                  JMP     86$             ;CONTINUE
 2792  014046  017737  167306  003416  87$:     MOV     @RHBAE,BAE      ;SAVE BUS ADDRESS EXTENSION
 2793  014054  017737  167302  003424          MOV     @RHCS3,CS3      ;SAVE RHCS3
 2794  014062  017737  167252  003422  86$:     MOV     @RHCS2,CS2      ;SAVE CS2
 2795  014070  017737  167246  003432          MOV     @RHST,DS1       ;SAVE TESTER STATUS
 2796  014076  017737  167242  003436          MOV     @RHER,ER1       ;SAVE ERROR REGISTER
 2797  014104  017737  167240  003442          MOV     @RHTDB,TDR      ;SAVE TESTER DATA REG.
 2798  014112  017737  167220  003440          MOV     @RHMR2,TC       ;SAVE MR2 TESTER REG.
 2799  014120  032777  000200  167212          BIT     #OR,@RHCS2      ;IS OUTPUT READY ?
 2800  014126  001001                          BNE     2$              ;YES CONTINUE TEST
 2801  014130  104041                          ERROR   41              ;OUTPUT READY DID@NOT SET
 2802  014132  023777  001162  167212  2$:     CMP     $REG0,@RHDB     ;ARE CORRECT BITS SET?
 2803  014140  001411                          BEQ     1$              ;YES,CONTINUE TESTS
 2804  014142  017737  167204  003426          MOV     @RHDB,DB        ;SAVE CONTENTS OF REGISTER
 2805  014150  013737  003426  001200          MOV     DB,$TMP1        ;SETUP FOR WATBIT TEST
 2806  014156  104004                          ERROR   4               ;NO,CORRECT BITS ARE NOT SET
 2807  014160  004737  046302                  JSR     R7,WATBIT       ;GO TO WATBIT PROGRAM
 2808  014164  012737  125252  001162  1$:     MOV     #0AB,$REG0      ;SET UP OPPISITE ALTERNATE BIT PATTERN TEST
 2809  014172  013777  001162  167152          MOV     $REG0,@RHDB     ;SET BITS IN REGISTER
 2810  014200  005037  003446                  CLR     BITCNT          ;CLEAR BIT COUNTER
 2811  014204  032777  000200  167126  18$:     BIT     #OR,@RHCS2      ;IS OR SET
 2812  014212  001C15                          BNE     0ABTST          ;BIT IS SET
```

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                                INC     BITCNT                  ;COUNT UP
                                BNE     18$                     ;NOT FINISHED COUNTING
                                CLR     BITCNT                  ;GET READY TO DO IT AGAIN
014226  032777  000200  167104  19$:    BIT     #OR,@RHCS2      ;IS IT SET YET?
014234  001004                          BNE     OABTST          ;YES
014236  005237  003446                  INC     BITCNT          ;COUNT UP
014242  001401                          BEQ     OABTST          ;BIT IS NOT GOING TO SET
014244  000770                          BR      19$
014246                          OABTST:
014246                          MYSTIC:
014246  017737  167056  003420          MOV     @RHCS1,CS1      ;SAVE RHCS1
014254  017737  167052  003444          MOV     @RHWC,WC        ;SAVE WORD COUNT
014262  017737  167046  003414          MOV     @RHBA,BA        ;SAVE BUS ADDRESS
014270  005701                          TST     R1              ;IS IT AN RH11
014272  001406                          BEQ     87$             ;NO IT'S A 70
014274  005037  003416                  CLR     BAE             ;CLEAR BAE
014300  005037  003424                  CLR     CS3             ;CLEAR CS3
014304  000137  014324                  JMP     86$             ;CONTINUE
014310  017737  167044  003416  87$:    MOV     @RHBAE,BAE      ;SAVE BUS ADDRESS EXTENSION
014316  017737  167040  003424          MOV     @RHCS3,CS3      ;SAVE RHCS3
014324  017737  167010  003422  86$:    MOV     @RHCS2,CS2      ;SAVE CS2
014332  017737  167004  003432          MOV     @RHST,DS1       ;SAVE TESTER STATUS
014340  017737  167000  003436          MOV     @RHER,ER1       ;SAVE ERROR REGISTER
014346  017737  166776  003442          MOV     @RHTDB,TDR      ;SAVE TESTER DATA REG.
014354  017737  166756  003440          MOV     @RHMR2,TC       ;SAVE MR2 TESTER REG.
014362  032777  000200  166750          BIT     #OR,@RHCS2      ;IS OUTPUT READY SET
014370  001001                          BNE     2$              ;YES
014372  104041                          ERROR   41              ;OUTPUT READY DID NOT SET
014374  017737  166752  003426  2$:     MOV     @RHDB,DB        ;SAVE CONTENTS OF REGISTER
014402  023737  001162  003426          CMP     $REG0,DB        ;ARE CORRECT BITS SET?
014410  001406                          BEQ     ERR11           ;WAS THERE AN ERROR
014412  013737  003426  001200          MOV     DB,$TMP1        ;SETUP FOR WATBIT PROG.
014420  104004                          ERROR   4               ;CORRECT BITS ARE NOT SET
014422  004737  046302                  JSR     R7,WATBIT       ;GO TO WATBIT PROGRAM
014426  004737  006602          ERR11:  JSR     R7,CLEER        ;CLEAR ERRORS
014432  004737  050130                  JSR     R7,ERRTST


                                ;;*****************************************************************
                                ;*TEST 16        RHWC OPERATIONAL TEST
                                        ;*THIS TEST CHECKS THAT WHEN THE WORD COUNT
                                        ;*REGISTER IS INCREMENTED IT IS CARRYED TO THE
                                        ;*HIGHEST BIT AND IS RETURNED TO ZERO
                                ;;*****************************************************************
014436  000004                  ;ST16:  SCOPE
014440  012777  177777  166664          MOV     #-1,@RHWC               ;SETUP FOR 1 WORD
014446  012777  000007  166664          MOV     #7,@RHCS2               ;SETUP UNIT 7
014454  005701                          TST     R1                      ;IS IT AN RH11
014456  100403                          BMI     1$                      ;YES
014460  012777  000000  166672          MOV     #ZERO,@RHBAE            ;SETUP BUS ADDRESS EXTENSION
014466  012777  001204  166640  1$:     MOV     #$TMP3,@RHBA            ;SETUP BUS ADDRESS
014474  012777  000061  166626          MOV     #WRITE0,@RHCS1
014502  005037  003446                  CLR     BITCNT                  ;CLEAR BIT COUNTER
014506  032777  000200  166614  18$:    BIT     #RDY,@RHCS1             ;IS RDY SET
014514  001015                          BNE     6$                      ;BIT IS SET
```

```
 2869  014516  005237  003446                    INC     BITCNT                  ;COUNT UP
 2870  014522  001371                            BNE     19$                     ;NOT FINISHED COUNTING
 2871  014524  005037  003446                    CLR     BITCNT                  ;GET READY TO DO IT AGAIN
 2872  014530  032777  000200  166572  19$:      BIT     #RDY,@RHCS1             ;IS IT SET YET?
 2873  014536  001004                            BNE     6$                      ;YES
 2874  014540  005237  003446                    INC     BITCNT                  ;COUNT UP
 2875  014544  001401                            BEQ     6$                      ;BIT IS NOT GOING TO SET
 2876  014546  000770                            BR      19$
 2877  014550                          6$:
 2878  014550  017737  166554  003420            MOV     @RHCS1,CS1              ;SAVE RHCS1
 2879  014556  017737  166550  003444            MOV     @RHWC,WC                ;SAVE WORD COUNT
 2880  014564  017737  166544  003414            MOV     @RHBA,BA                ;SAVE BUS ADDRESS
 2881  014572  005701                            TST     R1                      ;IS IT AN RH11
 2882  014574  001406                            BEQ     87$                     ;NO IT'S A 70
 2883  014576  005037  003416                    CLR     BAE                     ;CLEAR BAE
 2884  014602  005037  003424                    CLR     CS3                     ;CLEAR CS3
 2885  014606  000137  014626                    JMP     86$                     ;CONTINUE
 2886  014612  017737  166542  003416  87$:      MOV     @RHBAE,BAE              ;SAVE BUS ADDRESS EXTENSION
 2887  014620  017737  166536  003424            MOV     @RHCS3,CS3              ;SAVE RHCS3
 2888  014626  017737  166506  003422  86$:      MOV     @RHCS2,CS2              ;SAVE CS2
 2889  014634  017737  166502  003432            MOV     @RHST,DS1               ;SAVE TESTER STATUS
 2890  014642  017737  166476  003436            MOV     @RHER,ER1               ;SAVE ERROR REGISTER
 2891  014650  017737  166474  003442            MOV     @RHTDB,TDR              ;SAVE TESTER DATA REG.
 2892  014656  017737  166454  003440            MOV     @RHMR2,TC               ;SAVE MR2 TESTER REG.
 2893  014664  032777  000200  166436            BIT     #RDY,@RHCS1             ;IS READY SET
 2894  014672  001007                            BNE     2$                      ;YES
 2895  014674  005777  166432                    TST     @RHWC                   ;DOES WC=0
 2896  014700  001425                            BEQ     3$                      ;YES
 2897  014702  022777  177777  166422            CMP     #-1,@RHWC               ;IS IT EQUAL TO OLD
 2898  014710  001410                            BEQ     4$                      ;YES,SEE IF DATA WAS WRITTEN
 2899  014712  005777  166414          2$:       TST     @RHWC                   ;DID WC INCREMENT ?
 2900  014716  001435                            BEQ     8$                      ;YES,EXIT TEST
 2901  014720  005037  001162                    CLR     $REG0                   ;SETUP GOOD DATA
 2902  014724  104077                            ERROR   77                      ;RDY DID NOT SET, WC DID NOT CLEAR
 2903  014726  004737  007234                    JSR     R7,WHYFO                ;ARE ANY ERROR BITS SET
 2904  014732  023777  001204  166410  4$:       CMP     $TMP3,@RHTDB            ;WAS INFO WRITTEN TO TESTER
 2905  014740  001414                            BEQ     5$                      ;INFO WAS WRITTEN TO TESTER
 2906  014742  005037  001162                    CLR     $REG0                   ;SETUP GOOD DATA
 2907  014746  104123                            ERROR   123                     ;WRITE OPERATION DID NOT WORK
 2908  014750  000137  015012                    JMP     8$                      ;RH DID NOT START OPERATION
 2909  014754  023777  001204  166366  3$:       CMP     $TMP3,@RHTDB
 2910  014762  001010                            BNE     7$
 2911  014764  104102                            ERROR   102                     ;RDY BIT NOT SET
 2912                                                                            ;INFORMATION WAS WRITTEN TO TEST DB
 2913  014766  000137  015012                    JMP     8$
 2914  014772  005037  001162          5$:       CLR     $REG0                   ;SETUP GOOD DATA
 2915  014776  104103                            ERROR   103                     ;DURING A WRITE OPERATION RDY
 2916                                                                            ;DID NOT SET, WC DID NOT INCREMENT
 2917                                                                            ;BUT CORRECT INFO DID GET WRITTEN
 2918                                                                            ;TO TESTER
 2919  015000  000137  015012                    JMP     8$
 2920
 2921  015004  104104                  7$:       ERROR   104                     ;RDY BIT DID NOT SET AFTER
 2922                                                                            ;A WRITE OPERATION, WC WAS INC
 2923                                                                            ;AND INF WAS NOT WRITTEN TO
 2924                                                                            ;TESTER
```

```
 2925  015006  004737  007234                  JSR     R7,WHYFO                ;WAS AN ERROR SET
 2926  015012  004737  006602          8$:     JSR     R7,CLEER                ;CLEAR ERRORS
 2927  015016  004737  050130                  JSR     R7,ERRTST               ;WAS THER ANY ERRORS
 2928
 2929                                          ;;*********************************************************************
 2930                                          ;*TEST 17        RHBA OPERATIONAL TEST
 2931                                          ;*THIS TEST CHECKS THAT THE BUS ADDRESS REGISTER
 2932                                          ;*WILL CARRY THROUGH TO THE HIGHEST BIT
 2933                                          ;*IN THE BUS ADDRESS EXTENSION REGISTER OR BIT A17
 2934                                          ;*IN THE RHCS1 REGISTER AFTER IT IS INCREMENTED
 2935                                          ;;*********************************************************************
 2936  015022  000004                 $T17:   SCOPE
 2937  015024  012737  000001  001212          MOV     #1,$TIMES       ;;DO 1 ITERATION
 2938
 2939  015032  005701                          TST     R1                      ;IS IT AN 11 OR A 70
 2940  015034  100403                          BMI     1$                      ;IT'S AN RH11
 2941  015036  012777  000037  166314          MOV     #37,@RHBAE              ;SETUP BAE IN RH70
 2942  015044  012777  177776  166262  1$:     MOV     #177776,@RHBA           ;SETUP BA
 2943  015052  012777  177777  166252          MOV     #-1,@RHWC               ;SETUP WORD COUNT
 2944  015060  005701                          TST     R1                      ;IS IT A RH70
 2945  015062  001404                          BEQ     34$                     ;YES
 2946  015064  012777  000461  166236          MOV     #A16!WRITEO,@RHCS1      ;TELL IT TO WRITE
 2947  015072  000403                          BR      35$                     ;SKIP OVER 70 CODE
 2948  015074  112777  000061  166226  34$:     MOVB    #WRITEO,@RHCS1          ;TELL IT TO WRITE
 2949  015102                          35$:
 2950  015102  005037  003446                  CLR     BITCNT                  ;CLEAR BIT COUNTER
 2951  015106  032777  000200  166214  18$:     BIT     #RDY,@RHCS1             ;IS RDY SET
 2952  015114  001015                          BNE     2$                      ;BIT IS SET
 2953  015116  005237  003446                  INC     BITCNT                  ;COUNT UP
 2954  015122  001371                          BNE     18$                     ;NOT FINISHED COUNTING
 2955  015124  005037  003446                  CLR     BITCNT                  ;GET READY TO DO IT AGAIN
 2956  015130  032777  000200  166172  19$:     BIT     #RDY,@RHCS1             ;IS IT SET YET?
 2957  015136  001004                          BNE     2$                      ;YES
 2958  015140  005237  003446                  INC     BITCNT                  ;COUNT UP
 2959  015144  001401                          BEQ     2$                      ;BIT IS NOT GOING TO SET
 2960  015146  000770                          BR      19$
 2961  015150                          2$:
 2962  015150  017737  166154  003420          MOV     @RHCS1,CS1              ;SAVE RHCS1
 2963  015156  017737  166150  003444          MOV     @RHWC,WC                ;SAVE WORD COUNT
 2964  015164  017737  166144  003414          MOV     @RHBA,BA                ;SAVE BUS ADDRESS
 2965  015172  005701                          TST     R1                      ;IS IT AN RH11
 2966  015174  001406                          BEQ     87$                     ;NO IT'S A 70
 2967  015176  005037  003416                  CLR     BAE                     ;CLEAR BAE
 2968  015202  005037  003424                  CLR     CS3                     ;CLEAR CS3
 2969  015206  000137  015226                  JMP     86$                     ;CONTINUE
 2970  015212  017737  166142  003416  87$:     MOV     @RHBAE,BAE              ;SAVE BUS ADDRESS EXTENSION
 2971  015220  017737  166136  003424          MOV     @RHCS3,CS3              ;SAVE RHCS3
 2972  015226  017737  166106  003422  86$:     MOV     @RHCS2,CS2              ;SAVE CS2
 2973  015234  017737  166102  003432          MOV     @RHST,DS1               ;SAVE TESTER STATUS
 2974  015242  017737  166076  003436          MOV     @RHER,ER1               ;SAVE ERROR REGISTER
 2975  015250  017737  166074  003442          MOV     @RHTDB,TDR              ;SAVE TESTER DATA REG.
 2976  015256  017737  166054  003440          MOV     @RHMR2,TC               ;SAVE MR2 TESTER REG.
 2977  015264  005701                          TST     R1                      ;IS IT AN 11 OR A 70
 2978  015266  001406                          BEQ     12$                     ;DO RH70 PART OF TEST
 2979  015270  032777  001000  166032          BIT     #A17,@RHCS1             ;DID A17 GET SET
 2980  015276  001022                          BNE     4$                      ;YES
```

```
 2981  015300  000137  015412                    JMP     5$                      ;CONT. FOR RH11
 2982  015304  022777  000040  166046  12$:      CMP     #40,@RHBAE              ;DID BAE INC
 2983  015312  001414                            BEQ     4$                      ;BAE INCREMENTED
 2984  015314  022777  000037  166036            CMP     #37,@RHBAE              ;IS BAE OLD VALUE
 2985  015322  001420                            BEQ     3$                      ;BAE DID NOT INCREMENT
 2986  015324  005777  166030                    TST     @RHBAE                  ;IS BAE ZERO
 2987  015330  001425                            BEQ     9$                      ;BAE IS ZERO
 2988  015332  104105                            ERROR   105                     ;BAE GOT MESSED UP DOING A WRITE
 2989  015334  004737  007234                    JSR     R7,WHYFO                ;DID AN ERROR OTHER THAN NEM CAYSIT
 2990  015340  000137  015430                    JMP     10$
 2991  015344  005777  165764          4$:       TST     @RHBA                   ;DID BA INCREMENT ?
 2992  015350  001443                            BEQ     8$                      ;YES ,EXIT TEST
 2993  015352  104112                            ERROR   112                     ;BA DID NOT INCREMENT
 2994  015354  004737  007234                    JSR     R7,WHYFO                ;WAS AN ERROR BIT SET
 2995  015360  000137  015460                    JMP     8$                      ;EXIT TEST
 2996  015364  104106                    3$:     ERROR   106                     ;BAE DID NOT INCREMENT
 2997  015366  004737  007234                    JSR     R7,WHYFO                ;WAS AN ERROR BIT SET
 2998  015372  000137  015460                    JMP     8$                      ;EXIT TEST
 2999  015376  104107                    6$:     ERROR   107                     ;BAE INCREMENTED OK BUT A17 +
 3000                                                                            ;A16 DID NOT INC PROPERLY IN RHCS1
 3001  015400  000137  015460                    JMP     8$                      ;EXIT TEST
 3002  015404  104110                    9$:     ERROR   110                     ;RHBAE IS ZERO
 3003  015406  000137  015460                    JMP     8$                      ;BIT 5 IN BAE SHOULD BE SET
 3004  015412  033777  000400  165710  5$:       BIT     A16,@RHCS1              ;IS A 16 SET
 3005  015420  001003                            BNE     10$                     ;YES, BA DID NOT INCREMENT
 3006  015422  104111                            ERROR   111                     ;A17 DID NOT SET WHEN BA WAS
 3007                                                                            ;INC
 3008  015424  000137  015460                    JMP     8$                      ;EXIT TEST
 3009  015430  005777  165700          10$:      TST     @RHBA                   ;DOES BA =0
 3010  015434  001403                            BEQ     11$                     ;YES, BA INCREMENTED
 3011  015436  104112                            ERROR   112                     ;BA DID NOT INCREMENT
 3012  015440  000137  015460                    JMP     8$                      ;EXIT TEST
 3013  015444  005701                    11$:    TST     R1                      ;IS IT A 70 OR 11
 3014  015446  100403                            BMI     13$                     ;GO TO CORRECT ERROR
 3015  015450  104076                            ERROR   76                      ;BA INCREMENTED BUT DID NOT
 3016                                                                            ;CARRY TO BAE
 3017  015452  000137  015460                    JMP     8$                      ;GET OUT OF TEST
 3018  015456  104113                    13$:    ERROR   113                     ;BA INCREMENTED BUT IT DID NOT
 3019                                                                            ;CARRY OVER TO A17 + A16
 3020  015460  004737  006602          8$:       JSR     R7,CLEER                ;CLEAR ERRORS
 3021  015464  004737  050130                    JSR     R7,ERRTST               ;WAS THERE ANY ERRORS
 3022
 3023                                    ;;**************************************************************
 3024                                    ;*TEST 20        NEM,TRE,SC BIT TEST
 3025                                            ;*THIS TEST WILL CHECK THAT NON EXISTING MEMORY
 3026                                            ;*WILL SET THE TRE AND SC BIT IN RHCS1 REGISTER
 3027                                    ;;**************************************************************
 3028  015470  000004                    TST20:  SCOPE
 3029  015472  005701                            TST     R1
 3030  015474  001404                            BEQ     40$
 3031  015476  013777  003362  165630            MOV     RHCS3,@RHBA
 3032  015504  000403                            BR      41$
 3033
 3034  015506  012777  177702  165620  40$:     MOV     #177702,@RHBA           ;SET UP BUS ADDRESS
 3035  015514  005701                    41$:    TST     R1                      ;IS IT AN RH70
 3036  015516  100403                            BMI     9$                      ;NO SKIP RH11 PORTION
```

```
3037  015520  012777  000077  165632          MOV   #77,@RHBAE              ;SET UP BAE REGISTER
3038  015526  012777  177777  165576  3$:     MOV   #-1,@RHWC               ;SET WORD COUNT TO ONE WORD
3039  015534  012777  000007  165576          MOV   #7,@RHCS2               ;SET UNIT NUMBER
3040  015542  012777  001471  165560          MOV   #A16!A17!READ0,@RHCS1   ;TELL IT TO READ
3041  015550  005037  003446                  CLR   BITCNT                  ;CLEAR BIT COUNTER
3042  015554  032777  000200  165546  18$:    BIT   #RDY,@RHCS1             ;IS RDY SET
3043  015562  001015                          BNE   DELTA                   ;BIT IS SET
3044  015564  005237  003446                  INC   BITCNT                  ;COUNT UP
3045  015570  001371                          BNE   18$                     ;NOT FINISHED COUNTING
3046  015572  005037  003446                  CLR   BITCNT                  ;GET READY TO DO IT AGAIN
3047  015576  032777  000200  165524  19$:    BIT   #RDY,@RHCS1             ;IS IT SET YET?
3048  015604  001004                          BNE   DELTA                   ;YES
3049  015606  005237  003446                  INC   BITCNT                  ;COUNT UP
3050  015612  001401                          BEQ   DELTA                   ;BIT IS NOT GOING TO SET
3051  015614  000770                          BR    19$
3052  015616                          DELTA:
3053  015616  017737  165516  003422          MOV   @RHCS2,CS2              ;SAVE CONTENTS OF RHCS2
3054  015624  017737  165500  001162          MOV   @RHCS1,$REG0            ;SET UP NEEDED BITS ONLY
3055  015632  043737  027777  001162          BIC   #GO!IE!RDY!A16!A17!PSEL!DVA!MCPE!READ6,$REG0
3056  015640  043777  100000  165514          BIC   #APE,@RHCS3
3057                                                                        ;CLEAR BITS NOT NEEDED
3058  015646  017737  165456  003420          MOV   @RHCS1,CS1              ;SAVE RHCS1
3059  015654  017737  165452  003444          MOV   @RHWC,WC                ;SAVE WORD COUNT
3060  015662  017737  165446  003414          MOV   @RHBA,BA                ;SAVE BUS ADDRESS
3061  015670  005701                          TST   R1                      ;IS IT AN RH11
3062  015672  001406                          BEQ   87$                     ;NO IT'S A 70
3063  015674  005037  003416                  CLR   BAE                     ;CLEAR BAE
3064  015700  005037  003424                  CLR   CS3                     ;CLEAR CS3
3065  015704  000137  015724                  JMP   86$                     ;CONTINUE
3066  015710  017737  165444  003416  87$:    MOV   @RHBAE,BAE              ;SAVE BUS ADDRESS EXTENSION
3067  015716  017737  165440  003424          MOV   @RHCS3,CS3              ;SAVE RHCS3
3068  015724  017737  165410  003422  86$:    MOV   @RHCS2,CS2              ;SAVE CS2
3069  015732  017737  165404  003432          MOV   @RHST,DS1               ;SAVE TESTER STATUS
3070  015740  017737  165400  003436          MOV   @RHER,ER1               ;SAVE ERROR REGISTER
3071  015746  017737  165376  003442          MOV   @RHTDB,TDR              ;SAVE TESTER DATA REG.
3072  015754  017737  165356  003440          MOV   @RHMR2,TC               ;SAVE MR2 TESTER REG.
3073  015762  032777  000200  165340          BIT   #RDY,@RHCS1             ;IS READY SET
3074  015770  001003                          BNE   99$                     ;YES CONTINUE TEST
3075  015772  104102                          ERROR 102                     ;READY NOT SET
3076  015774  004737  007234                  JSR   R7,WHYFO                ;ANY ERRORS SET
3077  016000  032777  004000  165332  99$:    BIT   #NEM,@RHCS2             ;IS NEM SET
3078  016006  001016                          BNE   1$                      ;YES CHECK TRE AND SC
3079  016010  022737  140000  001162          CMP   #SC!TRE,$REG0           ;IS THE SC AND TRE BITS SET
3080  016016  001460                          BEQ   2$                      ;YES NEM IS IN ERROR
3081  016020  032737  040000  001162          BIT   #TRE,$REG0              ;IS JUST THE TRE BIT SET
3082  016026  001060                          BNE   3$                      ;TRE BIT MUST BE IN ERROR
3083  016030  032737  100000  001162          BIT   #SC,$REG0               ;IS JUST THE SC BIT SET
3084  016036  001060                          BNE   4$                      ;SC BIT SET ERRONIOUSLY
3085  016040  104005                          ERROR 5                       ;NEM NOT SET IN RHCS2
3086  016042  000467                          BR    8$                      ;SET UP TO TEST AGAIN
3087  016044  022737  140000  001162  1$:     CMP   #SC!TRE,$REG0           ;IS SC AND TRE SET
3088  016052  001030                          BNE   22$                     ;FIND THE ERROR
3089  016054  012737  020000  004124                MOV   #MCPE,$CS1                ;TEST FOR SHORTS
3090  016062  012737  173400  004126                MOV   #MPE!MXF!PGE!NED!UPE!WCE!DLT,$CS2
3091  016070  012737  174000  004130                MOV   #WCELO!WCEHI!DPELO!DPEHI!APE,$CS3
3092  016076  012737  000000  004132                MOV   #0,$ST
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3093  016104  012737  030175  004134          MOV     #ILF!RMR!CPE!DPE!RMBEX!RFAIL!DTE!OPI,$ER
3094  016112  012737  177777  004122          MOV     #-1,BEFORE              ;TELL WHYFO ITS FOR SHORTS
3095  016120  004737  007234                  JSR     R7,WHYFO                ;TEST FOR SHORTS
3096  016124  005037  004122                  CLR     BEFORE                  ;WE HAVE CHECKED FOR SHORTS
3097  016130  000137  016222                  JMP     8$                      ;LEAVE THE TEST
3098  016134  032737  040000  001162  22$:    BIT     #TRE,$REGO              ;THEN IS THE TRE BIT SET
3099  016142  001022                          BNE     6$                      ;SC BIT DID NOT SEE TRE BIT
3100  016144  032737  100000  001162          BIT     #SC,$REGO               ;IS THE SC BIT SET
3101  016152  001022                          BNE     7$                      ;TRE HAS AN OPEN GOING TO BUS
3102  016154  104006                          ERROR   6                       ;TRE SET LOGIC NOT WORKING
3103  016156  000421                          BR      8$                      ;SET UP TO TEST AGAIN
3104  016160  104007                  2$:     ERROR   7                       ;NEM HAS OPEN IN LINE GOING TO BUS
3105  016162  004737  007234                  JSR     R7,WHYFO                ;SEE IF ANY OTHER ERROR BIT IS
3106                                                                          ;SET OTHER THAN NEM
3107  016166  000415                          BR      8$                      ;SET UP TO TEST AGAIN
3108  016170  104010                  3$:     ERROR   10                      ;SOMTHING WRONG WITH TRE BIT
3109  016172  004737  007234                  JSR     R7,WHYFO                ;SEE IF AN ERROR BIT IS SET
3110                                                                          ;OR BOTH NEM IN RHCS2 AND SC IN
3111                                                                          ;RHCS1 HAS AN OPEN BETWEEN IT AND THE BUS
3112  016176  000411                          BR      8$                      ;SET UP TO TEST AGAIN
3113  016200  104011                  4$:     ERROR   11                      ;SC BIT WAS SET BY EITHER ATTN OR
3114  016202  004737  007234                  JSR     R7,WHYFO                ;FIND WHAT ERROR BIT IS SET
3115                                                                          ;MCPE ERROR OR SC IS SHORTED TO +5 VOLTS
3116  016206  000405                          BR      8$                      ;SETUP TO TEST AGAIN
3117  016210  104012                  6$:     ERROR   12                      ;TRE WAS SET BY OTHER THAN NEM
3118  016212  004737  007234                  JSR     R7,WHYFO                ;FIND ERROR BIT THAT SET TRE
3119  016216  000401                          BR      8$                      ;SETUP TO TEST AGAIN
3120  016220  104013                  7$:     ERROR   13                      ;TRE HAS AN OPEN GOING TO THE BUS
3121  016222  032737  041400  177570  8$:     BIT     #SW14!SW9!SW8,@#177570  ;ANY LOOPING BEEING DONE
3122  016230  001003                          BNE     21$                     ;YES,LOAD TRE NO MATTER WHAT
3123  016232  105737  001103                  TSTB    $ERFLG                  ;WAS THERE AN ERROR
3124  016236  001010                          BNE     9$                      ;SKIP TRE CHECK
3125  016240  112777  000100  165116  21$:    MOVB    #TREB,@RHCS1B           ;LOAD TRE
3126  016246  032777  004000  165064          BIT     #NEM,@RHCS2             ;DID ERROR CLEAR
3127  016254  001401                          BEQ     9$                      ;YES EXIT TEST
3128  016256  104050                          ERROR   50                      ;LOADING TRE DID NOT CLEAR ERROR
3129  016260  004737  006602          9$:     JSR     R7,CLEER                ;SEE IF ERRORS ARE CLEARED
3130  016264  004737  050130                  JSR     R7,ERRTST
3131
3132
3133                                          ;;*****************************************************************
3134                                          ;*TEST 21        WCE,TRE,SC BIT TEST
3135                                                  ;*THIS TEST WILL CHECK THAT TRE AND SC SET
3136                                                  ;*WHEN A WRITE CHECK ERROR OCCURS (WCE)
3137                                          ;;*****************************************************************
3138  016270  000004                  TST21:  SCOPE
3139  016272  012777  177777  165032          MOV     #-1,@RHWC               ;ONE WORD TRANSFER
3140  016300  012777  000007  165032          MOV     #7,@RHCS2               ;TO UNIT ONE
3141  016306  005701                          TST     R1                      ;IS IT AN RH70
3142  016310  001003                          BNE     9$                      ;NO
3143  016312  012777  000000  165040          MOV     #ZERO,@RHBAE            ;SETUP RHBAE REGISTER
3144  016320  012777  001172  165006  9$:     MOV     #$REG4,@RHBA            ;SETUP BUS ADDRESS
3145  016326  012737  052525  001172          MOV     #AB,$REG4               ;CREATE INFORMATION
3146  016334  012777  000061  164766          MOV     #WRITEO,@RHCS1          ;TELL IT TO WRITE
3147  016342  005037  003446                  CLR     BITCNT                  ;CLEAR BIT COUNTER
3148  016346  032777  000200  164754  18$:     BIT     #RDY,@RHCS1             ;IS RDY SET
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 3149  016354  001015                          BNE     WCETST                  ;BIT IS SET
 3150  016356  005237  003446                  INC     BITCNT                  ;COUNT UP
 3151  016362  001371                          BNE     18$                     ;NOT FINISHED COUNTING
 3152  016364  005037  003446                  CLR     BITCNT                  ;GET READY TO DO IT AGAIN
 3153  016370  032777  000200  164732  19$:    BIT     #RDY,@RHCS1             ;IS IT SET YET?
 3154  016376  001004                          BNE     WCETST                  ;YES
 3155  016400  005237  003446                  INC     BITCNT                  ;COUNT UP
 3156  016404  001401                          BEQ     WCETST                  ;BIT IS NOT GOING TO SET
 3157  016406  000770                          BR      19$
 3158  016410                          WCETST:
 3159  016410  012777  177777  164714          MOV     #-1,@RHWC               ;RESET WORD COUNT
 3160  016416  012777  001172  164710          MOV     #$REG4,@RHBA            ;RESET BUS ADDRESS
 3161  016424  012737  125252  001172          MOV     #0AB,$REG4              ;CREATE WRITE CHECK ERROR
 3162  016432  012777  000051  164670          MOV     #WRCHO,@RHCS1           ;MAKE THE ERROR
 3163  016440  005037  003446                  CLR     BITCNT                  ;CLEAR BIT COUNTER
 3164  016444  032777  000200  164656  18$:    BIT     #RDY,@RHCS1             ;IS RDY SET
 3165  016452  001015                          BNE     WCETRE                  ;BIT IS SET
 3166  016454  005237  003446                  INC     BITCNT                  ;COUNT UP
 3167  016460  001371                          BNE     18$                     ;NOT FINISHED COUNTING
 3168  016462  005037  003446                  CLR     BITCNT                  ;GET READY TO DO IT AGAIN
 3169  016466  032777  000200  164634  19$:    BIT     #RDY,@RHCS1             ;IS IT SET YET?
 3170  016474  001004                          BNE     WCETRE                  ;YES
 3171  016476  005237  003446                  INC     BITCNT                  ;COUNT UP
 3172  016502  001401                          BEQ     WCETRE                  ;BIT IS NOT GOING TO SET
 3173  016504  000770                          BR      19$
 3174  016506                          WCETRE:
 3175  016506  017737  164626  003422          MOV     @RHCS2,CS2              ;SAVE CONTENTS
 3176  016514  017737  164610  001162          MOV     @RHCS1,$REG0            ;SET UP NEEDED BITS ONLY
 3177  016522  042737  027777  001162          BIC     #GO!IE!RDY!A16!A17!PSEL!DVA!MCPE!READ6,$REG0
 3178  016530  042777  100000  164624          BIC     #APE,@RHCS3
 3179                                                                          ;CLEAR BITS NOT NEEDED
 3180  016536  017737  164566  003420          MOV     @RHCS1,CS1              ;SAVE RHCS1
 3181  016544  017737  164562  003444          MOV     @RHWC,WC                ;SAVE WORD COUNT
 3182  016552  017737  164556  003414          MOV     @RHBA,BA                ;SAVE BUS ADDRESS
 3183  016560  005701                          TST     R1                      ;IS IT AN RH11
 3184  016562  001406                          BEQ     87$                     ;NO IT'S A 70
 3185  016564  005037  003416                  CLR     BAE                     ;CLEAR BAE
 3186  016570  005037  003424                  CLR     CS3                     ;CLEAR CS3
 3187  016574  000137  016614                  JMP     86$                     ;CONTINUE
 3188  016600  017737  164554  003416  87$:    MOV     @RHBAE,BAE              ;SAVE BUS ADDRESS EXTENSION
 3189  016606  017737  164550  003424          MOV     @RHCS3,CS3              ;SAVE RHCS3
 3190  016614  017737  164520  003422  86$:    MOV     @RHCS2,CS2              ;SAVE CS2
 3191  016622  017737  164514  003432          MOV     @RHST,DS1               ;SAVE TESTER STATUS
 3192  016630  017737  164510  003436          MOV     @RHER,ER1               ;SAVE ERROR REGISTER
 3193  016636  017737  164506  003442          MOV     @RHTDB,TDR              ;SAVE TESTER DATA REG.
 3194  016644  017737  164466  003440          MOV     @RHMR2,TC               ;SAVE MR2 TESTER REC.
 3195  016652  032777  000200  164450          BIT     #RDY,@RHCS1             ;IS READY SET
 3196  016660  001003                          BNE     99$                     ;YES CONTINUE TEST
 3197  016662  104102                          ERROR   102                     ;READY NOT SET
 3198  016664  004737  007234                  JSR     R7,WHYFO                ;ANY ERRORS SET
 3199  016670  032777  040000  164442  99$:    BIT     #WCE,@RHCS2             ;IS WCE SET
 3200  016676  001016                          BNE     1$                      ;YES CHECK TRE AND SC
 3201  016700  022737  140000  001162          CMP     #SC!TRE,$REG0           ;IS THE SC AND TRE BITS SET
 3202  016706  001460                          BEQ     2$                      ;YES WCE IS IN ERROR
 3203  016710  032737  040000  001162          BIT     #TRE,$REG0              ;IS JUST THE TRE BIT SET
 3204  016716  001060                          BNE     3$                      ;TRE BIT MUST BE IN ERROR
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3205  016720  032737  100000  001162          BIT     #SC,$REGO               ;IS JUST THE SC BIT SET
3206  016726  001060                          BNE     4$                      ;SC BIT SET ERRONIOUSLY
3207  016730  104014                          ERROR   14                      ;WCE NOT SET IN RHCS2
3208  016732  000467                          BR      8$                      ;SET UP TO TEST AGAIN
3209  016734  022737  140000  001162  1$:     CMP     #SC!TRE,$REGO           ;IS SC AND TRE SET
3210  016742  001030                          BNE     22$                     ;FIND THE ERROR
3211  016744  012737  020000  004124          MOV     #MCPE,$CS1                      ;TEST FOR SHORTS
3212  016752  012737  137400  004126          MOV     #MPE!MXF!PGE!NEM!NED!UPE!DLT,$CS2
3213  016760  013737  160000  004130          MOV     DPELO!DPEHI!APE,$CS3
3214  016766  013737  004132  004132          MOV     $ST,$ST
3215  016774  013737  004134  004134          MOV     $ER,$ER
3216  017002  012737  177777  004122          MOV     #-1,BEFORE              ;TELL WHYFO ITS FOR SHORTS
3217  017010  004737  007234                  JSR     R7,WHYFO                ;TEST FOR SHORTS
3218  017014  005037  004122                  CLR     BEFORE                  ;WE HAVE CHECKED FOR SHORTS
3219  017020  000137  017112                  JMP     8$                      ;LEAVE THE TEST
3220  017024  032737  040000  001162  22$:     BIT     #TRE,$REGO              ;THEN IS THE TRE BIT SET
3221  017032  001022                          BNE     6$                      ;SC BIT DID NOT SEE TRE BIT
3222  017034  032737  100000  001162          BIT     #SC,$REGO               ;IS THE SC BIT SET
3223  017042  001022                          BNE     7$                      ;TRE HAS AN OPEN GOING TO BUS
3224  017044  104006                          ERROR   6                       ;TRE SET LOGIC NOT WORKING
3225  017046  000421                          BR      8$                      ;SET UP TO TEST AGAIN
3226  017050  104015                  2$:     ERROR   15                      ;WCE HAS OPEN IN LINE GOING TO BUS
3227  017052  004737  007234                  JSR     R7,WHYFO                ;SEE IF ANY OTHER ERROR BIT IS
3228                                                                          ;SET OTHER THAN WCE
3229  017056  000415                          BR      8$                      ;SET UP TO TEST AGAIN
3230  017060  104016                  3$:     ERROR   16                      ;SOMTHING WRONG WITH TRE BIT
3231  017062  004737  007234                  JSR     R7,WHYFO                ;SEE IF AN ERROR BIT IS SET
3232                                                                          ;OR BOTH WCE IN RHCS2 AND SC IN
3233                                                                          ;RHCS1 HAS AN OPEN BETWEEN IT AND THE BUS
3234  017066  000411                          BR      8$                      ;SET UP TO TEST AGAIN
3235  017070  104011                  4$:     ERROR   11                      ;SC BIT WAS SET BY EITHER ATTN OR
3236  017072  004737  007234                  JSR     R7,WHYFO                ;FIND WHAT ERROR BIT IS SET
3237                                                                          ;MCPE ERROR OR SC IS SHORTED TO +5 VOLTS
3238  017076  000405                          BR      8$                      ;SETUP TO TEST AGAIN
3239  017100  104017                  6$:     ERROR   17                      ;TRE WAS SET BY OTHER THAN WCE
3240  017102  004737  007234                  JSR     R7,WHYFO                ;FIND ERROR BIT THAT SET TRE
3241  017106  000401                          BR      8$                      ;SETUP TO TEST AGAIN
3242  017110  104013                  7$:     ERROR   13                      ;TRE HAS AN OPEN GOING TO THE BUS
3243  017112  032737  041400  177570  8$:     BIT     #SW14!SW9!SW8,@#177570  ;ANY LOOPING BEEING DONE
3244  017120  001003                          BNE     21$                     ;YES,LOAD TRE NO MATTER WHAT
3245  017122  105737  001103                  TSTB    $ERFLG                  ;WAS THERE AN ERROR
3246  017126  001010                          BNE     9$                      ;SKIP TRE CHECK
3247  017130  112777  000100  164226  21$:     MOVB    #TREB,@RHCS1B           ;LOAD TRE
3248  017136  032777  040000  164174          BIT     #WCE,@RHCS2             ;DID ERROR CLEAR
3249  017144  001401                          BEQ     9$                      ;YES EXIT TEST
3250  017146  104050                          ERROR   50                      ;LOADING TRE DID NOT CLEAR ERROR
3251  017150  004737  006602          9$:     JSR     R7,CLEER                ;SEE IF ERRORS ARE CLEARED
3252  017154  004737  050130                  JSR     R7,ERRTST
3253
3254                                  ;;*****************************************************************
3255                                  ;*TEST 22       MDPE ,TRE AND SC BIT TEST
3256                                          ;*THIS TEST CHECKS THAT MDPE CAN BE SET IN
3257                                          ;*RHCS2,AND THAT MDPE SETS TRE AND SC
3258                                          ;*IN THE RHCS1 REGISTER.............
3259                                  ;;*****************************************************************
3260  017160  000004                  TST22:  SCOPE
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 3261  017162  012777  000007  164150          MOV     #7,@RHCS2               ;SET UNIT #
 3262  017170  012777  177774  164134          MOV     #-4,@RHWC               ;SET UP WORD COUNT
 3263  017176  005701                          TST     R1                      ;IS IT AN RH70
 3264  017200  001003                          BNE     9$                      ;NO ITS AN RH11
 3265  017202  012777  000000  164150          MOV     #ZERO,@RHBAE            ;SET UP BAE REGISTER
 3266  017210  012777  004100  164116  9$:     MOV     #RBUF,@RHBA             ;SET UP BUS ADDRESS
 3267  017216  012777  000071  164104          MOV     #READ0,@RHCS1           ;TELL IT TO READ
 3268  017224  012777  000027  164106          MOV     #PAT!7,@RHCS2           ;INVERT PARITY
 3269  017232  017737  164102  003422          MOV     @RHCS2,CS2              ;SAVE CONTENTS
 3270  017240  005037  003446                  CLR     BITCNT                  ;CLEAR BIT COUNTER
 3271  017244  032777  000200  164056  18$:     BIT     #RDY,@RHCS1             ;IS RDY SET
 3272  017252  001015                          BNE     UPETRE                  ;BIT IS SET
 3273  017254  005237  003446                  INC     BITCNT                  ;COUNT UP
 3274  017260  001371                          BNE     18$                     ;NOT FINISHED COUNTING
 3275  017262  005037  003446                  CLR     BITCNT                  ;GET READY TO DO IT AGAIN
 3276  017266  032777  000200  164034  19$:     BIT     #RDY,@RHCS1             ;IS IT SET YET?
 3277  017274  001004                          BNE     UPETRE                  ;YES
 3278  017276  005237  003446                  INC     BITCNT                  ;COUNT UP
 3279  017302  001401                          BEQ     UPETRE                  ;BIT IS NOT GOING TO SET
 3280  017304  000770                          BR      19$
 3281  017306                          UPETRE:
 3282  017306  017737  164016  001162          MOV     @RHCS1,$REGO            ;SET UP NEEDED BITS ONLY
 3283  017314  042737  027777  001162          BIC     #GO!IE!RDY!A16!A17!PSEL!DVA!MCPE!READ6,$REGO
 3284  017322  042777  100000  164032          BIC     #APE,@RHCS3
 3285                                                                          ;CLEAR BITS NOT NEEDED
 3286  017330  017737  163774  003420          MOV     @RHCS1,CS1              ;SAVE RHCS1
 3287  017336  017737  163770  003444          MOV     @RHWC,WC                ;SAVE WORD COUNT
 3288  017344  017737  163764  003414          MOV     @RHBA,BA                ;SAVE BUS ADDRESS
 3289  017352  005701                          TST     R1                      ;IS IT AN RH11
 3290  017354  001406                          BEQ     87$                     ;NO IT'S A 70
 3291  017356  005037  003416                  CLR     BAE                     ;CLEAR BAE
 3292  017362  005037  003424                  CLR     CS3                     ;CLEAR CS3
 3293  017366  000137  017406                  JMP     86$                     ;CONTINUE
 3294  017372  017737  163762  003416  87$:     MOV     @RHBAE,BAE              ;SAVE BUS ADDRESS EXTENSION
 3295  017400  017737  163756  003424          MOV     @RHCS3,CS3              ;SAVE RHCS3
 3296  017406  017737  163726  003422  86$:     MOV     @RHCS2,CS2              ;SAVE CS2
 3297  017414  017737  163722  003432          MOV     @RHST,DS1               ;SAVE TESTER STATUS
 3298  017422  017737  163716  003436          MOV     @RHER,ER1               ;SAVE ERROR REGISTER
 3299  017430  017737  163714  003442          MOV     @RHTDB,TDR              ;SAVE TESTER DATA REG.
 3300  017436  017737  163674  003440          MOV     @RHMR2,TC               ;SAVE MR2 TESTER REG.
 3301  017444  032777  000200  163656          BIT     #RDY,@RHCS1             ;IS READY SET
 3302  017452  001003                          BNE     99$                     ;YES CONTINUE TEST
 3303  017454  104102                          ERROR   102                     ;READY NOT SET
 3304  017456  004737  007234                  JSR     R7,WHYFO                ;ANY ERRORS SET
 3305  017462  032777  000400  163650  99$:     BIT     #MPE,@RHCS2             ;IS MPE SET
 3306  017470  001016                          BNE     1$                      ;YES CHECK TRE AND SC
 3307  017472  022737  140000  001162          CMP     #SC!TRE,$REGO           ;IS THE SC AND TRE BITS SET
 3308  017500  001460                          BEQ     2$                      ;YES MPE IS IN ERROR
 3309  017502  032737  040000  001162          BIT     #TRE,$REGO              ;IS JUST THE TRE BIT SET
 3310  017510  001060                          BNE     3$                      ;TRE BIT MUST BE IN ERROR
 3311  017512  032737  100000  001162          BIT     #SC,$REGO               ;IS JUST THE SC BIT SET
 3312  017520  001060                          BNE     4$                      ;SC BIT SET ERRONIOUSLY
 3313  017522  104116                          ERROR   116                     ;MPE NOT SET IN RHCS2
 3314  017524  000467                          BR      8$                      ;SET UP TO TEST AGAIN
 3315  017526  022737  140000  001162  1$:      CMP     #SC!TRE,$REGO           ;IS SC AND TRE SET
 3316  017534  001030                          BNE     22$                     ;FIND THE ERROR
```

```
3317  017536  013737  004124  004124          MOV     $CS1,$CS1                       ;TEST FOR SHORTS
3318  017544  012737  177000  004126          MOV     #MXF!PGE!NEM!NED!UPE!WCE!DLT,$CS2
3319  017552  012737  174000  004130          MOV     #WCELO!WCEHI!DPELO!DPEHI!APE,$CS3
3320  017560  013737  004132  004132          MOV     $ST,$ST
3321  017566  013737  004134  004134          MOV     $ER,$ER
3322  017574  012737  177777  004122          MOV     #-1,BEFORE              ;TELL WHYFO ITS FOR SHORTS
3323  017602  004737  007234                  JSR     R7,WHYFO                ;TEST FOR SHORTS
3324  017606  005037  004122                  CLR     BEFORE                  ;WE HAVE CHECKED FOR SHORTS
3325  017612  000137  017704                  JMP     8$                      ;LEAVE THE TEST
3326  017616  032737  040000  001162  22$:    BIT     #TRE,$REGO              ;THEN IS THE TRE BIT SET
3327  017624  001022                          BNE     6$                      ;SC BIT DID NOT SEE TRE BIT
3328  017626  032737  100000  001162          BIT     #SC,$REGO               ;IS THE SC BIT SET
3329  017634  001022                          BNE     7$                      ;TRE HAS AN OPEN GOING TO BUS
3330  017636  104006                          ERROR   6                       ;TRE SET LOGIC NOT WORKING
3331  017640  000421                          BR      8$                      ;SET UP TO TEST AGAIN
3332  017642  104120                  2$:     ERROR   120                     ;MPE HAS OPEN IN LINE GOING TO BUS
3333  017644  004737  007234                  JSR     R7,WHYFO                ;SEE IF ANY OTHER ERROR BIT IS
3334                                                                          ;SET OTHER THAN MPE
3335  017650  000415                          BR      8$                      ;SET UP TO TEST AGAIN
3336  017652  104121                  3$:     ERROR   121                     ;SOMTHING WRONG WITH TRE BIT
3337  017654  004737  007234                  JSR     R7,WHYFO                ;SEE IF AN ERROR BIT IS SET
3338                                                                          ;OR BOTH MPE IN RHCS2 AND SC IN
3339                                                                          ;RHCS1 HAS AN OPEN BETWEEN IT AND THE BUS
3340  017660  000411                          BR      8$                      ;SET UP TO TEST AGAIN
3341  017662  104011                  4$:     ERROR   11                      ;SC BIT WAS SET BY EITHER ATTN OR
3342  017664  004737  007234                  JSR     R7,WHYFO                ;FIND WHAT ERROR BIT IS SET
3343                                                                          ;MCPE ERROR OR SC IS SHORTED TO +5 VOLTS
3344  017670  000405                          BR      8$                      ;SETUP TO TEST AGAIN
3345  017672  104122                  6$:     ERROR   122                     ;TRE WAS SET BY OTHER THAN MPE
3346  017674  004737  007234                  JSR     R7,WHYFO                ;FIND ERROR BIT THAT SET TRE
3347  017700  000401                          BR      8$                      ;SETUP TO TEST AGAIN
3348  017702  104013                  7$:     ERROR   13                      ;TRE HAS AN OPEN GOING TO THE BUS
3349  017704  032737  041400  177570  8$:     BIT     #SW14!SW9!SW8,@#177570  ;ANY LOOPING BEEING DONE
3350  017712  001003                          BNE     21$                     ;YES,LOAD TRE NO MATTER WHAT
3351  017714  105737  001103                  TSTB    $ERFLG                  ;WAS THERE AN ERROR
3352  017720  001010                          BNE     9$                      ;SKIP TRE CHECK
3353  017722  112777  000100  163434  21$:    MOVB    #TREB,@RHCS1B           ;LOAD TRE
3354  017730  032777  000400  163402          BIT     #MPE,@RHCS2             ;DID ERROR CLEAR
3355  017736  001401                          BEQ     9$                      ;YES EXIT TEST
3356  017740  104050                          ERROR   50                      ;LOADING TRE DID NOT CLEAR ERROR
3357  017742  004737  006602          9$:     JSR     R7,CLEER                ;SEE IF ERRORS ARE CLEARED
3358  017746  004737  050130                  JSR     R7,ERRTST
3359
3360                                  ;;**************************************************************
3361                                  ;*TEST 23       UPE,TRE,SC ERROR TEST (RH11)
3362                                          ;*THIS TEST CHECKS THE UPE BIT IN RHCS2
3363                                          ;*TO SEE IF IT SETS AND WHEN IT SETS IS
3364                                          ;*TRE AND SC BITS SET IN RHCS1.....
3365                                  ;;**************************************************************
3366  017752  000004                  TST23:  SCOPE
3367
3368  017754  012777  000007  163356          MOV     #7,@RHCS2               ;SET UP UNIT 7
3369  017762  005701                          TST     R1                      ;IS IT AN RH11
3370  017764  100402                          BMI     FITIT                   ;IT'S AN RH11,DO THE TEST
3371  017766  000137  020444                  JMP     FIT                     ;IT'S AN RH70, EXIT TEST
3372  017772  012777  020007  163340  FITIT:  MOV     #UPE!7,@RHCS2           ;SET PARITY ERROR IN RH11'S CS2 REG
```

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3373  020000  017737  163324  001162          MOV     @RHCS1,$REGO            ;SET UP NEEDED BITS ONLY
3374  020006  042737  027777  001162          BIC     #GO!IE!RDY!A16!A17!PSEL!DVA!MCPE!READE,$REGO
3375  020014  042777  100000  163340          BIC     #APE,@RHCS3
3376                                                                            ;CLEAR BITS NOT NEEDED
3377  020022  017737  163302  003420          MOV     @RHCS1,CS1              ;SAVE RHCS1
3378  020030  017737  163276  003444          MOV     @RHWC,WC                ;SAVE WORD COUNT
3379  020036  017737  163272  003414          MOV     @RHBA,BA                ;SAVE BUS ADDRESS
3380  020044  005701                          TST     R1                      ;IS IT AN RH11
3381  020046  001406                          BEQ     87$                     ;NO IT'S A 70
3382  020050  005037  003416                  CLR     BAE                     ;CLEAR BAE
3383  020054  005037  003424                  CLR     CS3                     ;CLEAR CS3
3384  020060  000137  020100                  JMP     86$                     ;CONTINUE
3385  020064  017737  163270  003416  87$:    MOV     @RHBAE,BAE              ;SAVE BUS ADDRESS EXTENSION
3386  020072  017737  163264  003424          MOV     @RHCS3,CS3              ;SAVE RHCS3
3387  020100  017737  163234  003422  96$:    MOV     @RHCS2,CS2              ;SAVE CS2
3388  020106  017737  163230  003432          MOV     @RHST,DS1               ;SAVE TESTER STATUS
3389  020114  017737  163224  003436          MOV     @RHER,ER1               ;SAVE ERROR REGISTER
3390  020122  017737  163222  003442          MOV     @RHTDB,TDR              ;SAVE TESTER DATA REG.
3391  020130  017737  163202  003440          MOV     @RHMR2,TC               ;SAVE MR2 TESTER REG.
3392  020136  032777  000200  163164          BIT     #RDY,@RHCS1             ;IS READY SET
3393  020144  001003                          BNE     99$                     ;YES CONTINUE TEST
3394  020146  104102                          ERROR   102                     ;READY NOT SET
3395  020150  004737  007234                  JSR     R7,WHYFO                ;ANY ERRORS SET
3396  020154  032777  020000  163156  99$:    BIT     #UPE,@RHCS2             ;IS UPE SET
3397  020162  001016                          BNE     1$                      ;YES CHECK TRE AND SC
3398  020164  022737  140000  001162          CMP     #SC!TRE,$REGO           ;IS THE SC AND TRE BITS SET
3399  020172  001460                          BEQ     2$                      ;YES UPE IS IN ERROR
3400  020174  032737  040000  001162          BIT     #TRE,$REGO              ;IS JUST THE TRE BIT SET
3401  020202  001060                          BNE     3$                      ;TRE BIT MUST BE IN ERROR
3402  020204  032737  100000  001162          BIT     #SC,$REGO               ;IS JUST THE SC BIT SET
3403  020212  001060                          BNE     4$                      ;SC BIT SET ERRONIOUSLY
3404  020214  104020                          ERROR   20                      ;UPE NOT SET IN RHCS2
3405  020216  000467                          BR      8$                      ;SET UP TO TEST AGAIN
3406  020220  022737  140000  001162  1$:     CMP     #SC!TRE,$REGO           ;IS SC AND TRE SET
3407  020226  001030                          BNE     22$                     ;FIND THE ERROR
3408  020230  013737  004124  004124          MOV     $CS1,$CS1                       ;TEST FOR SHORTS
3409  020236  012737  157400  004126          MOV     #MPE!MXF!PGE!NEM!NED!WCE!DLT,$CS2
3410  020244  013737  004130  004130          MOV     $CS3,$CS3
3411  020252  013737  004132  004132          MOV     $ST,$ST
3412  020260  013737  004134  004134          MOV     $ER,$ER
3413  020266  012737  177777  004122          MOV     #-1,BEFORE              ;TELL WHYFO ITS FOR SHORTS
3414  020274  004737  007234                  JSR     R7,WHYFO                ;TEST FOR SHORTS
3415  020300  005037  004122                  CLR     BEFORE                  ;WE HAVE CHECKED FOR SHORTS
3416  020304  000137  020376                  JMP     8$                      ;LEAVE THE TEST
3417  020310  032737  040000  001162  22$:    BIT     #TRE,$REGO              ;THEN IS THE TRE BIT SET
3418  020316  001022                          BNE     6$                      ;SC BIT DID NOT SEE TRE BIT
3419  020320  032737  100000  001162          BIT     #SC,$REGO               ;IS THE SC BIT SET
3420  020326  001032                          BNE     7$                      ;TRE HAS AN OPEN GOING TO BUS
3421  020330  104006                          ERROR   6                       ;TRE SET LOGIC NOT WORKING
3422  020332  000421                          BR      8$                      ;SET UP TO TEST AGAIN
3423  020334  104021                  2$:     ERROR   21                      ;UPE HAS OPEN IN LINE GOING TO BUS
3424  020336  004737  007234                  JSR     R7,WHYFO                ;SEE IF ANY OTHER ERROR BIT IS
3425                                                                          ;SET OTHER THAN UPE
3426  020342  000415                          BR      8$                      ;SET UP TO TEST AGAIN
3427  020344  104023                  3$:     ERROR   23                      ;SOMTHING WRONG WITH TRE BIT
3428  020346  004737  007234                  JSR     R7,WHYFO                ;SEE IF AN ERROR BIT IS SET
```

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3429                                                                    ;OR BOTH UPE IN RHCS2 AND SC IN
3430                                                                    ;RHCS1 HAS AN OPEN BETWEEN IT AND THE BUS
3431  020352  000411                        BR      8$                    ;SET UP TO TEST AGAIN
3432  020354  104011                4$:     ERROR   11                    ;SC BIT WAS SET BY EITHER ATTN OR
3433  020356  004737  007234              JSR     R7,WHYFO              ;FIND WHAT ERROR BIT IS SET
3434                                                                    ;MCPE ERROR OR SC IS SHORTED TO +5 VOLTS
3435  020362  000405                        BR      8$                    ;SETUP TO TEST AGAIN
3436  020364  104022                6$:     ERROR   22                    ;TRE WAS SET BY OTHER THAN UPE
3437  020366  004737  007234              JSR     R7,WHYFO              ;FIND ERROR BIT THAT SET TRE
3438  020372  000401                        BR      8$                    ;SETUP TO TEST AGAIN
3439  020374  104013                7$:     ERROR   13                    ;TRE HAS AN OPEN GOING TO THE BUS
3440  020376  032737  041400  177570  8$:   BIT     #SW14!SW9!SW8,@#177570  ;ANY LOOPING BEEING DONE
3441  020404  001003                        BNE     2:$                   ;YES,LOAD TRE NO MATTER WHAT
3442  020406  105737  001103              TSTB    $ERFLG                ;WAS THERE AN ERROR
3443  020412  001010                        BNE     9$                    ;SKIP TRE CHECK
3444  020414  112777  000100  162742  21$:  MOVB    #TREB,@RHCS1B         ;LOAD TRE
3445  020422  032777  020000  162710        BIT     #UPE,@RHCS2           ;DID ERROR CLEAR
3446  020430  001401                        BEQ     9$                    ;YES EXIT TEST
3447  020432  104050                        ERROR   50                    ;LOADING TRE DID NOT CLEAR ERROR
3448  020434  004737  006602          9$:   JSR     R7,CLEER              ;SEE IF ERRORS ARE CLEARED
3449  020440  004737  050130              JSR     R7,ERRTST
3450
3451  020444                        FIT:
3452                                ;;*****************************************************************
3453                                ;*TEST 24       UPE,TRE,SC ERROR TEST (RH70)
3454                                        ;*THIS TEST CHECKS THE UPE BIT IN RHCS2
3455                                        ;*TO SEE IF IT SETS AND WHEN IT SETS IS
3456                                        ;*TRE AND SC BITS SET IN RHCS1.....
3457                                ;;*****************************************************************
3458  020444  000004                TST24:  SCOPE
3459
3460  020446  012777  000007  162664        MOV     #7,@RHCS2             ;SETUP UNIT 7
3461  020454  005701                        TST     R1                    ;IS IT AN RH11
3462  020456  001402                        BEQ     PLACE                 ;IT'S AN RH70
3463  020460  000137  021234              JMP     FANGIE                ;IT'S AN RH11, EXIT TEST
3464  020464  012777  000004  162670  PLACE: MOV    #IPCK2,@RHCS3         ;SETUP FOR PARITY ERROR
3465  020472  012777  177776  162632        MOV     #-2,@RHWC             ;SETUP WORD COUNT TO TWO WORDS
3466  020500  012777  000000  162652        MOV     #ZERO,@RHBAE          ;SETUP BAE
3467  020506  012777  001162  162620        MOV     #$REG0,@RHBA          ;SETUP ADDRESS
3468  020514  012777  000061  162606        MOV     #WRITE0,@RHCS1        ;TELL IT TO WRITE
3469  020522  005037  003446              CLR     BITCNT                        ;CLEAR BIT COUNTER
3470  020526  032777  000200  162574  18$:  BIT     #RDY,@RHCS1                   ;IS RDY SET
3471  020534  001015                        BNE     DYNO                          ;BIT IS SET
3472  020536  005237  003446              INC     BITCNT                        ;COUNT UP
3473  020542  001371                        BNE     18$                           ;NOT FINISHED COUNTING
3474  020544  005037  003446              CLR     BITCNT                        ;GET READY TO DO IT AGAIN
3475  020550  032777  000200  162552  19$:  BIT     #RDY,@RHCS1                   ;IS IT SET YET?
3476  020556  001004                        BNE     DYNO                          ;YES
3477  020560  005237  003446              INC     BITCNT                        ;COUNT UP
3478  020564  001401                        BEQ     DYNO                          ;BIT IS NOT GOING TO SET
3479  020566  000770                        BR      19$
3480  020570                        DYNO:
3481  020570  017737  162534  001162        MOV     @RHCS1,$REG0                  ;SET UP NEEDED BITS ONLY
3482  020576  042737  027777  001162        BIC     #GO!IE!RDY!A16!A17!PSEL!DVA!MCPE!READ6,$REG0
3483  020604  042777  100000  162550        BIC     #APE,@RHCS3
3484                                                                        ;CLEAR BITS NOT NEEDED
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3485  020612  017737  162512  003420          MOV     @RHCS1,CS1              ;SAVE RHCS1
3486  020620  017737  162506  003444          MOV     @RHWC,WC                ;SAVE WORD COUNT
3487  020626  017737  162502  003414          MOV     @RHBA,BA                ;SAVE BUS ADDRESS
3488  020634  005701                          TST     R1                      ;IS IT AN RH11
3489  020636  001406                          BEQ     97$                     ;NO IT'S A 70
3490  020640  005037  003416                  CLR     BAE                     ;CLEAR BAE
3491  020644  005037  003424                  CLR     CS3                     ;CLEAR CS3
3492  020650  000137  020670                  JMP     86$                     ;CONTINUE
3493  020654  017737  162500  003416  97$:    MOV     @RHBAE,BAE              ;SAVE BUS ADDRESS EXTENSION
3494  020662  017737  162474  003424          MOV     @RHCS3,CS3              ;SAVE RHCS3
3495  020670  017737  162444  003422  86$:    MOV     @RHCS2,CS2              ;SAVE CS2
3496  020676  017737  162440  003432          MOV     @RHST,DS1               ;SAVE TESTER STATUS
3497  020704  017737  162434  003436          MOV     @RHER,ER1               ;SAVE ERROR REGISTER
3498  020712  017737  162432  003442          MOV     @RHTDB,TDR              ;SAVE TESTER DATA REG.
3499  020720  017737  162412  003440          MOV     @RHMR2,TC               ;SAVE MR2 TESTER REG.
3500  020726  032777  000200  162374          BIT     #RDY,@RHCS1             ;IS READY SET
3501  020734  001003                          BNE     99$                     ;YES CONTINUE TEST
3502  020736  104102                          ERROR   102                     ;READY NOT SET
3503  020740  004737  007234                  JSR     R7,WHYFO                ;ANY ERRORS SET
3504  020744  032777  020000  162366  99$:    BIT     #UPE,@RHCS2             ;IS UPE SET
3505  020752  001016                          BNE     1$                      ;YES CHECK TRE AND SC
3506  020754  022737  140000  001162          CMP     #SC!TRE,$REGO           ;IS THE SC AND TRE BITS SET
3507  020762  001460                          BEQ     2$                      ;YES UPE IS IN ERROR
3508  020764  032737  040000  001162          BIT     #TRE,$REGO              ;IS JUST THE TRE BIT SET
3509  020772  001060                          BNE     3$                      ;TRE BIT MUST BE IN ERROR
3510  020774  032737  100000  001162          BIT     #SC,$REGO               ;IS JUST THE SC BIT SET
3511  021002  001060                          BNE     4$                      ;SC BIT SET ERRONIOUSLY
3512  021004  104020                          ERROR   20                      ;UPE NOT SET IN RHCS2
3513  021006  000467                          BR      8$                      ;SET UP TO TEST AGAIN
3514  021010  022737  140000  001162  1$:     CMP     #SC!TRE,$REGO           ;IS SC AND TRE SET
3515  021016  001030                          BNE     22$                     ;FIND THE ERROR
3516  021020  013737  004124  004124          MOV     $CS1,$CS1                       ;TEST FOR SHORTS
3517  021026  012737  157400  004126          MOV     #MPE!MXF!PGE!NEM!NED!WCE!DLT,$CS2
3518  021034  012737  134100  004130          MOV     #APE!DPELO!WCEHI!WCELO!IE3,$CS3
3519  021042  013737  004132  004132          MOV     $ST,$ST
3520  021050  013737  004134  004134          MOV     $ER,$ER
3521  021056  012737  177777  004122          MOV     #-1,BEFORE              ;TELL WHYFO ITS FOR SHORTS
3522  021064  004737  007234                  JSR     R7,WHYFO                ;TEST FOR SHORTS
3523  021070  005037  004122                  CLR     BEFORE                  ;WE HAVE CHECKED FOR SHORTS
3524  021074  000137  021166                  JMP     8$                      ;LEAVE THE TEST
3525  021100  032737  040000  001162  22$:    BIT     #TRE,$REGO              ;THEN IS THE TRE BIT SET
3526  021106  001022                          BNE     6$                      ;SC BIT DID NOT SEE TRE BIT
3527  021110  032737  100000  001162          BIT     #SC,$REGO               ;IS THE SC BIT SET
3528  021116  001022                          BNE     7$                      ;TRE HAS AN OPEN GOING TO BUS
3529  021120  104006                          ERROR   6                       ;TRE SET LOGIC NOT WORKING
3530  021122  000421                          BR      8$                      ;SET UP TO TEST AGAIN
3531  021124  104021                  2$:     ERROR   21                      ;UPE HAS OPEN IN LINE GOING TO BUS
3532  021126  004737  007234                  JSR     R7,WHYFO                ;SEE IF ANY OTHER ERROR BIT IS
3533                                                                          ;SET OTHER THAN UPE
3534  021132  000415                          BR      8$                      ;SET UP TO TEST AGAIN
3535  021134  104023                  3$:     ERROR   23                      ;SOMTHING WRONG WITH TRE BIT
3536  021136  004737  007234                  JSR     R7,WHYFO                ;SEE IF AN ERROR BIT IS SET
3537                                                                          ;OR BOTH UPE IN RHCS2 AND SC IN
3538                                                                          ;RHCS1 HAS AN OPEN BETWEEN IT AND THE BUS
3539  021142  000411                          BR      8$                      ;SET UP TO TEST AGAIN
3540  021144  104011                  4$:     ERROR   11                      ;SC BIT WAS SET BY EITHER ATTN OR
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3541  021146  004737  007234                  JSR     R7,WHYF0                ;FIND WHAT ERROR BIT IS SET
3542                                                                            ;MCPE ERROR OR SC IS SHORTED TO +5 VOLTS
3543  021152  000405                          BR      8$                      ;SETUP TO TEST AGAIN
3544  021154  104022                  6$:     ERROR   22                      ;TRE WAS SET BY OTHER THAN UPE
3545  021156  004737  007234                  JSR     R7,WHYF0                ;FIND ERROR BIT THAT SET TRE
3546  021162  000401                          BR      8$                      ;SETUP TO TEST AGAIN
3547  021164  104013                  7$:     ERROR   13                      ;TRE HAS AN OPEN GOING TO THE BUS
3548  021166  032737  041400  177570  8$:     BIT     #SW14!SW9!SW8,@#177570  ;ANY LOOPING BEEING DONE
3549  021174  001003                          BNE     21$                     ;YES,LOAD TRE NO MATTER WHAT
3550  021176  105737  001103                  TSTB    $ERFLG                  ;WAS THERE AN ERROR
3551  021202  001010                          BNE     9$                      ;SKIP TRE CHECK
3552  021204  112777  000100  162152  21$:    MOVB    #TRE,@RHCS1B            ;LOAD TRE
3553  021212  032777  020000  162120          BIT     #UPE,@RHCS2             ;DID ERROR CLEAR
3554  021220  001401                          BEQ     9$                      ;YES EXIT TEST
3555  021222  104050                          ERROR   50                      ;LOADING TRE DID NOT CLEAR ERROR
3556  021224  004737  006602          9$:     JSR     R7,CLEER                ;SEE IF ERROPS ARE CLEARED
3557  021230  004737  050130                  JSR     R7,ERRTST
3558
3559  021234                          FANGIE:
3560
3561                                          ;;**************************************************************
3562                                          ;*TEST 25       NED BIT TEST
3563                                                  ;*THIS TEST WILL CHECK THAT NED (NON-EXISTANT DRIVE)
3564                                                  ;*SETS TRE AND SC BITS IN RHCS1.....................
3565                                          ;;**************************************************************
3566  021234  000004                  TST25:  SCOPE
3567
3568  021236  012777  000C00  162074          MOV     #ZERO,@RHCS2            ;SETUP NED
3569  021244  005701                          TST     R1                      ;RH11 OR RH70
3570  021246  100403                          BMI     NEDERR                  ;IT'S AN RH11
3571  021250  012777  000000  162102          MOV     #ZERO,@RHBAE            ;SETUP BA EXTENSION
3572  021256  012777  177777  162046  NEDERR: MOV     #-1,@RHWC               ;FOR A 1 WORD TRANSFER
3573  021264  012777  001172  162042          MOV     #$REG4,@RHBA            ;SETUP BA
3574  021272  012777  000061  162030          MOV     #WRITE0,@RHCS1          ;TELL IT TO WRITE
3575  021300  005037  003446                  CLR     BITCNT                  ;CLEAR BIT COUNTER
3576  021304  032777  000200  162016  18$:    BIT     #RDY,@RHCS1             ;IS RDY SET
3577  021312  0C1015                          BNE     BAKER                   ;BIT IS SET
3578  021314  005237  003446                  INC     BITCNT                  ;COUNT UP
3579  021320  001371                          BNE     18$                     ;NOT FINISHED COUNTING
3580  021322  005037  003446                  CLR     BITCNT                  ;GET READY TO DO IT AGAIN
3581  021326  032777  000200  161774  19$:    BIT     #RDY,@RHCS1             ;IS IT SET YET?
3582  021334  001004                          BNE     BAKER                   ;YES
3583  021336  005237  003446                  INC     BITCNT                  ;COUNT UP
3584  021342  001401                          BEQ     BAKER                   ;BIT IS NOT GOING TO SET
3585  021344  000770                          BR      19$
3586  021346                          BAKER:
3587  021346  017737  161756  001162          MOV     @RHCS1,$REG0            ;SET UP NEEDED BITS ONLY
3588  021354  042737  027777  001162          BIC     #GO!IE!RDY!A16!A17!PSEL!DVA!MCPE!REQD6,$REG0
3589  021362  042777  100000  161772          BIC     #APE,@RHCS3
3590                                                                          ;CLEAR BITS NOT NEEDED
3591  021370  017737  161734  003420          MOV     @RHCS1,CS1              ;SAVE RHCS1
3592  021376  017737  161730  003444          MOV     @RHWC,WC                ;SAVE WORD COUNT
3593  021404  017737  161724  003414          MOV     @RHBA,BA                ;SAVE BUS ADDRESS
3594  021412  005701                          TST     R1                      ;IS IT AN RH11
3595  021414  001406                          BEQ     87$                     ;NO IT'S A 70
3596  021416  005037  003416                  CLR     BAE                     ;CLEAR BAE
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 3597  021422  005037  003424                    CLR     CS3                     ;CLEAR CS3
 3598  021426  000137  021446                    JMP     86$                     ;CONTINUE
 3599  021432  017737  161722  003416  87$:      MOV     @RHBAE,BAE              ;SAVE BUS ADDRESS EXTENSION
 3600  021440  017737  161716  003424            MOV     @RHCS3,CS3              ;SAVE RHCS3
 3601  021446  017737  161666  003422  96$:      MOV     @RHCS2,CS2              ;SAVE CS2
 3602  021454  017737  161662  003432            MOV     @RHST,DS1               ;SAVE TESTER STATUS
 3603  021462  017737  161656  003436            MOV     @RHER,ER1               ;SAVE ERROR REGISTER
 3604  021470  017737  161654  003442            MOV     @RHTDB,TDR              ;SAVE TESTER DATA REG.
 3605  021476  017737  161634  003440            MOV     @RHMR2,TC               ;SAVE MR2 TESTER REG.
 3606  021504  032777  000200  161616            BIT     #RDY,@RHCS1             ;IS READY SET
 3607  021512  001003                            BNE     99$                     ;YES CONTINUE TEST
 3608  021514  104102                            ERROR   102                     ;READY NOT SET
 3609  021516  004737  007234                    JSR     R7,WHYFO                ;ANY ERRORS SET
 3610  021522  032777  010000  161610  99$:      BIT     #NED,@RHCS2             ;IS NED SET
 3611  021530  001016                            BNE     1$                      ;YES CHECK TRE AND SC
 3612  021532  022737  140000  001162            CMP     #SC!TRE,$REGO           ;IS THE SC AND TRE BITS SET
 3613  021540  001460                            BEQ     2$                      ;YES NED IS IN ERROR
 3614  021542  032737  040000  001162            BIT     #TRE,$REGO              ;IS JUST THE TRE BIT SET
 3615  021550  001060                            BNE     3$                      ;TRE BIT MUST BE IN ERROR
 3616  021552  032737  100000  001162            BIT     #SC,$REGO               ;IS JUST THE SC BIT SET
 3617  021560  001060                            BNE     4$                      ;SC BIT SET ERRONIOUSLY
 3618  021562  104024                            ERROR   24                      ;NED NOT SET IN RHCS2
 3619  021564  000467                            BR      9$                      ;SET UP TO TEST AGAIN
 3620  021566  022737  140000  001162  1$:       CMP     #SC!TRE,$REGO           ;IS SC AND TRE SET
 3621  021574  001030                            BNE     22$                     ;FIND THE ERROR
 3622  021576  012737  000000  004124                    MOV     #ZERO,$CS1                      ;TEST FOR SHORTS
 3623  021604  012737  167400  004126                    MOV     #MPE!MXF!PGE!NEM!UPE!WCE!DLT,$CS2
 3624  021612  012737  174100  004130                    MOV     #APE!DPEHI!DPELO!WCEHI!WCELO!IE3,$CS3
 3625  021620  013737  004132  004132                    MOV     $ST,$ST
 3626  021626  013737  004134  004134                    MOV     $ER,$ER
 3627  021634  012737  177777  004122                    MOV     #-1,BEFORE              ;TELL WHYFO ITS FOR SHORTS
 3628  021642  004737  007234                            JSR     R7,WHYFO                ;TEST FOR SHORTS
 3629  021646  005037  004122                            CLR     BEFORE                  ;WE HAVE CHECKED FOR SHORTS
 3630  021652  000137  021744                            JMP     8$                      ;LEAVE THE TEST
 3631  021656  032737  040000  001162  22$:       BIT     #TRE,$REGO              ;THEN IS THE TRE BIT SET
 3632  021664  001022                            BNE     6$                      ;SC BIT DID NOT SEE TRE BIT
 3633  021666  032737  100000  001162            BIT     #SC,$REGO               ;IS THE SC BIT SET
 3634  021674  001022                            BNE     7$                      ;TRE HAS AN OPEN GOING TO BLS
 3635  021676  104006                            ERROR   6                       ;TRE SET LOGIC NOT WORKING
 3636  021700  000421                            BR      8$                      ;SET UP TO TEST AGAIN
 3637  021702  104025                    2$:     ERROR   25                      ;NED HAS OPEN IN LINE GOING TO BUS
 3638  021704  004737  007234                    JSR     R7,WHYFO                ;SEE IF ANY OTHER ERROR BIT IS
 3639                                                                            ;SET OTHER THAN NED
 3640  021710  000415                            BR      8$                      ;SET UP TO TEST AGAIN
 3641  021712  104026                    3$:     ERROR   26                      ;SOMTHING WRONG WITH TRE BIT
 3642  021714  004737  007234                    JSR     R7,WHYFO                ;SEE IF AN ERROR BIT IS SET
 3643                                                                            ;OR BOTH NED IN RHCS2 AND SC IN
 3644                                                                            ;RHCS1 HAS AN OPEN BETWEEN IT AND THE BUS
 3645  021720  000411                            BR      8$                      ;SET UP TO TEST AGAIN
 3646  021722  104011                    4$:     ERROR   11                      ;SC BIT WAS SET BY EITHER ATTN OR
 3647  021724  004737  007234                    JSR     R7,WHYFO                ;FIND WHAT ERROR BIT IS SET
 3648                                                                            ;MCPE ERROR OR SC IS SHORTED TO +5 VOLTS
 3649  021730  000405                            BR      8$                      ;SETUP TO TEST AGAIN
 3650  021732  104027                    6$:     ERROR   27                      ;TRE WAS SET BY OTHER THAN NED
 3651  021734  004737  007234                    JSR     R7,WHYFO                ;FIND ERROR BIT THAT SET TRE
 3652  021740  000401                            BR      8$                      ;SETUP TO TEST AGAIN
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3653  021742  104013                          7$:     ERROR   13                      ;TRE HAS AN OPEN GOING TO THE BUS
3654  021744  032737  041400  177570  8$:     BIT     #SW14!SW9!SW8,@#177570  ;ANY LOOPING BEEING DONE
3655  021752  001003                          BNE     21$                     ;YES,LOAD TRE NO MATTER WHAT
3656  021754  105737  001103                  TSTB    $ERFLG                  ;WAS THERE AN ERROR
3657  021760  001010                          BNE     9$                      ;SKIP TRE CHECK
3658  021762  112777  000100  161374  21$:    MOVB    #TREB,@RHCS1B           ;LOAD TRE
3659  021770  032777  010000  161342          BIT     #NED,@RHCS2             ;DID ERROR CLEAR
3660  021776  001401                          BEQ     9$                      ;YES EXIT TEST
3661  022000  104050                          ERROR   50                      ;LOADING TRE DID NOT CLEAR ERROR
3662  022002  004737  006602          9$:     JSR     R7,CLEER                ;SEE IF ERRORS ARE CLEARED
3663  022006  004737  050130                  JSR     R7,ERRTST
3664
3665
3666                                          ;;**************************************************************
3667                                          ;*TEST 26       MXF ,TRE AND SC BIT TEST
3668                                                  ;*THIS TEST WILL CHECK THAT MXF
3669                                                  ;*(MISSED TRANSFER ERROR) WILL
3670                                                  ;*SET TRE AND SC BITS.....
3671                                          ;;**************************************************************
3672  022012  000004                          TST26:  SCOPE
3673
3674  022014  012777  000027  161316                  MOV     #PAT!7,@RHCS2           ;SET MXF BIT
3675  022022  012777  177777  161302                  MOV     #-1,@RHWC               ;SET UP WORD COUNT
3676  022030  012777  004100  161276                  MOV     #RBUF,@RHBA             ;SETUP BA
3677  022036  012777  000000  161304                  MOV     #ZERO,@RHTDB            ;SET MXF ERROR
3678  022044  012777  000061  161256                  MOV     #WRITE0,@RHCS1          ;TELL IT TO WRITE
3679  022052  005037  003446                          CLR     BITCNT                  ;CLEAR BIT COUNTER
3680  022056  032777  000200  161244  18$:     BIT     #RDY,@RHCS1             ;IS RDY SET
3681  022064  001015                          BNE     CHARLE                  ;BIT IS SET
3682  022066  005237  003446                  INC     BITCNT                  ;COUNT UP
3683  022072  001371                          BNE     18$                     ;NOT FINISHED COUNTING
3684  022074  005037  003446                  CLR     BITCNT                  ;GET READY TO DO IT AGAIN
3685  022100  032777  000200  161222  19$:     BIT     #RDY,@RHCS1             ;IS IT SET  F
3686  022106  001004                          BNE     CHARLE                  ;YES
3687  022110  005237  003446                  INC     BITCNT                  ;COUNT UP
3688  022114  001401                          BEQ     CHARLE                  ;BIT IS NOT GOING TO SET
3689  022116  000770                          BR      19$
3690  022120                          CHARLE:
3691  022120  017737  161204  001162                  MOV     @RHCS1,$REGO            ;SET UP NEEDED BITS ONLY
3692  022126  042737  027777  001162                  BIC     #GO!IE!RDY!A16!A17!PSEL!DVA!MCPE!READ6,$REGO
3693  022134  042777  100000  161220                  BIC     #APE,@RHCS3
3694                                                                          ;CLEAR BITS NOT NEEDED
3695  022142  017737  161162  003420                  MOV     @RHCS1,CS1              ;SAVE RHCS1
3696  022150  017737  161156  003444                  MOV     @RHWC,WC                ;SAVE WORD COUNT
3697  022156  017737  161152  003414                  MOV     @RHBA,BA                ;SAVE BUS ADDRESS
3698  022164  005701                          TST     R1                      ;IS IT AN RH11
3699  022166  001406                          BEQ     87$                     ;NO IT'S A 70
3700  022170  005037  003416                  CLR     BAE                     ;CLEAR BAE
3701  022174  005037  003424                  CLR     CS3                     ;CLEAR CS3
3702  022200  000137  022220                  JMP     86$                     ;CONTINUE
3703  022204  017737  161150  003416  87$:     MOV     @RHBAE,BAE              ;SAVE BUS ADDRESS EXTENSION
3704  022212  017737  161144  003424          MOV     @RHCS3,CS3              ;SAVE RHCS3
3705  022220  017737  161114  003422  86$:     MOV     @RHCS2,CS2              ;SAVE CS2
3706  022226  017737  161110  003432          MOV     @RHST,DS1               ;SAVE TESTER STATUS
3707  022234  017737  161104  003436          MOV     @RHER,ER1               ;SAVE ERROR REGISTER
3708  022242  017737  161102  003442          MOV     @RHTDB,TDR              ;SAVE TESTER DATA REG.
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3709  022250  017737  161062  003440          MOV     @RHMR2,TC               ;SAVE MR2 TESTEP REG.
3710  022256  032777  000200  161044          BIT     #RDY,@RHCS1             ;IS READY SET
3711  022264  001003                          BNE     99$                     ;YES CONTINUE TEST
3712  022266  104102                          ERROR   102                     ;READY NOT SET
3713  022270  004737  007234                  JSR     R7,WHYFO                ;ANY ERRORS SET
3714  022274  032777  001000  161036  99$:    BIT     #MXF,@RHCS2             ;IS MXF SET
3715  022302  001016                          BNE     1$                      ;YES CHECK TRE AND SC
3716  022304  022737  140000  001162          CMP     #SC!TRE,$REGO           ;IS THE SC AND TRE BITS SET
3717  022312  001460                          BEQ     2$                      ;YES MXF IS IN ERROR
3718  022314  032737  040000  001162          BIT     #TRE,$REGO              ;IS JUST THE TRE BIT SET
3719  022322  001060                          BNE     3$                      ;TRE BIT MUST BE IN ERROR
3720  022324  032737  100000  001162          BIT     #SC,$REGO               ;IS JUST THE SC BIT SET
3721  022332  001060                          BNE     4$                      ;SC BIT SET ERRONIOUSLY
3722  022334  104030                          ERROR   30                      ;MXF NOT SET IN RHCS2
3723  022336  000467                          BR      8$                      ;SET UP TO TEST AGAIN
3724  022340  022737  140000  001162  1$:     CMP     #SC!TRE,$REGO           ;IS SC AND TRE SET
3725  022346  001030                          BNE     22$                     ;FIND THE ERROR
3726  022350  012737  020000  004124                  MOV     #MCPE,$CS1                      ;TEST FOR SHORTS
3727  022356  012737  176400  004126          MOV     #MPE!PGE!NEM!NED!UPE!WCE!DLT,$CS2
3728  022364  013737  004130  004130          MOV     $CS3,$CS3
3729  022372  013737  004132  004132          MOV     $ST,$ST
3730  022400  012737  030165  004134          MOV     #ILF!RMR!DPE!RMBEX!RFAIL!DTE!OPI,$ER
3731  022406  012737  177777  004122          MOV     #-1,BEFORE              ;TELL WHYFO ITS FOR SHORTS
3732  022414  004737  007234                  JSR     R7,WHYFO                ;TEST FOR SHORTS
3733  022420  005037  004122                  CLR     BEFORE                  ;WE HAVE CHECKED FOR SHORTS
3734  022424  000137  022516                  JMP     8$                      ;LEAVE THE TEST
3735  022430  032737  040000  001162  22$:     BIT     #TRE,$REGO              ;THEN IS THE TRE BIT SET
3736  022436  001022                          BNE     6$                      ;SC BIT DID NOT SEE TRE BIT
3737  022440  032737  100000  001162          BIT     #SC,$REGO               ;IS THE SC BIT SET
3738  022446  001022                          BNE     7$                      ;TRE HAS AN OPEN GOING TO BUS
3739  022450  104006                          ERROR   6                       ;TRE SET LOGIC NOT WORKING
3740  022452  000421                          BR      8$                      ;SET UP TO TEST AGAIN
3741  022454  104031                  2$:     ERROR   31                      ;MXF HAS OPEN IN LINE GOING TO BUS
3742  022456  004737  007234                  JSR     R7,WHYFO                ;SEE IF ANY OTHER ERROR BIT IS
3743                                                                          ;SET OTHER THAN MXF
3744  022462  000415                          BR      8$                      ;SET UP TO TEST AGAIN
3745  022464  104032                  3$:     ERROR   32                      ;SOMTHING WRONG WITH TRE BIT
3746  022466  004737  007234                  JSR     R7,WHYFO                ;SEE IF AN ERROR BIT IS SET
3747                                                                          ;OR BOTH MXF IN RHCS2 AND SC IN
3748                                                                          ;RHCS1 HAS AN OPEN BETWEEN IT AND THE BUS
3749  022472  000411                          BR      8$                      ;SET UP TO TEST AGAIN
3750  022474  104011                  4$:     ERROR   11                      ;SC BIT WAS SET BY EITHER ATTN OR
3751  022476  004737  007234                  JSR     R7,WHYFO                ;FIND WHAT ERROR BIT IS SET
3752                                                                          ;MCPE ERROR OR SC IS SHORTED TO +5 VOLTS
3753  022502  000405                          BR      8$                      ;SETUP TO TEST AGAIN
3754  022504  104033                  6$:     ERROR   33                      ;TRE WAS SET BY OTHER THAN MXF
3755  022506  004737  007234                  JSR     R7,WHYFO                ;FIND ERROR BIT THAT SET TRE
3756  022512  000401                          BR      8$                      ;SETUP TO TEST AGAIN
3757  022514  104013                  7$:     ERROR   13                      ;TRE HAS AN OPEN GOING TO THE BUS
3758  022516  032737  041400  177570  8$:     BIT     #SW14!SW9!SW8,@#177570  ;ANY LOOPING BEEING DONE
3759  022524  001003                          BNE     21$                     ;YES,LOAD TRE NO MATTER WHAT
3760  022526  105737  001103                  TSTB    $ERFLG                  ;WAS THERE AN ERROR
3761  022532  001010                          BNE     9$                      ;SKIP TRE CHECK
3762  022534  112777  000100  160622  21$:     MOVB    #TREB,@RHCS1B           ;LOAD TRE
3763  022542  032777  001000  160570          BIT     #MXF,@RHCS2             ;DID ERROR CLEAR
3764  022550  001401                          BEQ     9$                      ;YES EXIT TEST
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3765  022552  104050                          ERROR   50                      ;LOADING TRE DID NOT CLEAR ERROR
3766  022554  004737  006602          9$:     JSR     R7,CLEER                ;SEE IF ERRORS ARE CLEARED
3767  022560  004737  050130                  JSR     R7,ERRTST
3768                                  ;;**********************************************************************
3769                                  ;*TEST 27        PGE ERROR BIT TEST
3770                                          ;*THIS TEST FORCES PGE TO SET IN RHCS2
3771                                          ;*AND VERIFYS TRE AND SC IS SET IN RHCS1
3772                                  ;;**********************************************************************
3773  022564  000004                  TST27:  SCOPE
3774  022566  012777  000007  160544          MOV     #7,@RHCS2               ;SET UNIT NUMBER
3775  022574  012777  004000  160532          MOV     #EVENAD,@RHBA           ;SETUP BUS ADDRESS
3776  022602  005701                          TST     R1                      ;IS IT AN 11 OR A 70
3777  022604  100403                          BMI     JUMP                    ;ITS AN RH11
3778  022606  012777  000000  160544          MOV     #ZERO,@RHBAE            ;SETUP BAE
3779  022614  012777  000061  160536  JUMP:   MOV     #WRITE0,@RHCS1          ;TELL IT TO WRITE
3780  022622  012777  000061  160500          MOV     #WRITE0,@RHCS1          ;CREATE THE ERROR
3781  022630  005037  003446                  CLR     BITCNT                  ;CLEAR BIT COUNTER
3782  022634  032777  000200  160466  18$:    BIT     #RDY,@RHCS1             ;IS RDY SET
3783  022642  001015                          BNE     PGETST                  ;BIT IS SET
3784  022644  005237  003446                  INC     BITCNT                  ;COUNT UP
3785  022650  001371                          BNE     18$                     ;NOT FINISHED COUNTING
3786  022652  005037  003446                  CLR     BITCNT                  ;GET READY TO DO IT AGAIN
3787  022656  032777  000200  160444  19$:    BIT     #RDY,@RHCS1             ;IS IT SET YET?
3788  022664  001004                          BNE     PGETST                  ;YES
3789  022666  005237  003446                  INC     BITCNT                  ;COUNT UP
3790  022672  001401                          BEQ     PGETST                  ;BIT IS NOT GOING TO SET
3791  022674  000770                          BR      19$
3792  022676                          PGETST:
3793  022676  017737  160426  001162          MOV     @RHCS1,$REGO            ;SET UP NEEDED BITS ONLY
3794  022704  042737  027777  001162          BIC     #GO!IE!RDY!A16!A17!PSEL!DVA!MCPE!READ6,$REGO
3795  022712  042777  100000  160442          BIC     #APE,@RHCS3
3796                                                                          ;CLEAR BITS NOT NEEDED
3797  022720  017737  160404  003420          MOV     @RHCS1,CS1              ;SAVE RHCS1
3798  022726  017737  160400  003444          MOV     @RHWC,WC                ;SAVE WORD COUNT
3799  022734  017737  160374  003414          MOV     @RHBA,BA                ;SAVE BUS ADDRESS
3800  022742  005701                          TST     R1                      ;IS IT AN RH11
3801  022744  001406                          BEQ     87$                     ;NO IT'S A 70
3802  022746  005037  003416                  CLR     BAE                     ;CLEAR BAE
3803  022752  005037  003424                  CLR     CS3                     ;CLEAR CS3
3804  022756  000137  022776                  JMP     86$                     ;CONTINUE
3805  022762  017737  160372  003416  87$:    MOV     @RHBAE,BAE              ;SAVE BUS ADDRESS EXTENSION
3806  022770  017737  160366  003424          MOV     @RHCS3,CS3              ;SAVE RHCS3
3807  022776  017737  160336  003422  86$:    MOV     @RHCS2,CS2              ;SAVE CS2
3808  023004  017737  160332  003432          MOV     @RHST,DS1               ;SAVE TESTER STATUS
3809  023012  017737  160326  003436          MOV     @RHER,ER1               ;SAVE ERROR REGISTER
3810  023020  017737  160324  003442          MOV     @RHTDB,TDR              ;SAVE TESTER DATA REG.
3811  023026  017737  160304  003440          MOV     @RHMR2,TC               ;SAVE MR2 TESTER REG.
3812  023034  032777  000200  160266          BIT     #RDY,@RHCS1             ;IS READY SET
3813  023042  001003                          BNE     99$                     ;YES CONTINUE TEST
3814  023044  104102                          ERROR   102                     ;READY NOT SET
3815  023046  004737  007234                  JSR     R7,WHYFO                ;ANY ERRORS SET
3816  023052  032777  002000  160260  99$:    BIT     #PGE,@RHCS2             ;IS PGE SET
3817  023060  001016                          BNE     1$                      ;YES CHECK TRE AND SC
3818  023062  022737  140000  001162          CMP     #SC!TRE,$REGO           ;IS THE SC AND TRE BITS SET
3819  023070  001460                          BEQ     2$                      ;YES PGE IS IN ERROR
3820  023072  032737  040000  001162          BIT     #TRE,$REGO              ;IS JUST THE TRE BIT SET
```

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 3821  023100  001060                          BNE     3$                      ;TRE BIT MUST BE IN ERROR
 3822  023102  032737  100000  001162          BIT     #SC,$REGO               ;IS JUST THE SC BIT SET
 3823  023110  001060                          BNE     4$                      ;SC BIT SET ERRONIOUSLY
 3824  023112  104051                          ERROR   51                      ;PGE NOT SET IN RHCS2
 3825  023114  000467                          BR      8$                      ;SET UP TO TEST AGAIN
 3826  023116  022737  140000  001162  1$:     CMP     #SC!TRE,$REGO           ;IS SC AND TRE SET
 3827  023124  001030                          BNE     22$                     ;FIND THE ERROR
 3828  023126  013737  004124  004124          MOV     $CS1,$CS1                       ;TEST FOR SHORTS
 3829  023134  012737  175400  004126          MOV     #MPE!MXF!NEM!NED!UPE!WCE!DLT,$CS2
 3830  023142  013737  004130  004130          MOV     $CS3,$CS3
 3831  023150  013737  004132  004132          MOV     $ST,$ST
 3832  023156  012737  030175  004134          MOV     #ILF!CPE!RMR!DPE!RMBEX!RFAIL!DTE!OPI,$ER
 3833  023164  012737  177777  004122          MOV     #-1,BEFORE              ;TELL WHYFO ITS FOR SHORTS
 3834  023172  004737  007234                  JSR     R7,WHYFO                ;TEST FOR SHORTS
 3835  023176  005037  004122                  CLR     BEFORE                  ;WE HAVE CHECKED FOR SHORTS
 3836  023202  000137  023274                  JMP     8$                      ;LEAVE THE TEST
 3837  023206  032737  040000  001152  22$:     BIT     #TRE,$REGO              ;THEN IS THE TRE BIT SET
 3838  023214  001022                          BNE     6$                      ;SC BIT DID NOT SEE TRE BIT
 3839  023216  032737  100000  001162          BIT     #SC,$REGO               ;IS THE SC BIT SET
 3840  023224  001022                          BNE     7$                      ;TRE HAS AN OPEN GOING TO BUS
 3841  023226  104006                          ERROR   6                       ;TRE SET LOGIC NOT WORKING
 3842  023230  000421                          BR      8$                      ;SET UP TO TEST AGAIN
 3843  023232  104123                  2$:     ERROR   123                     ;PGE HAS OPEN IN LINE GOING TO BUS
 3844  023234  004737  007234                  JSR     R7,WHYFO                ;SEE IF ANY OTHER ERROR BIT IS
 3845                                                                          ;SET OTHER THAN PGE
 3846  023240  000415                          BR      8$                      ;SET UP TO TEST AGAIN
 3847  023242  104171                  3$:     ERROR   171                     ;SOMTHING WRONG WITH TRE BIT
 3848  023244  004737  007234                  JSR     R7,WHYFO                ;SEE IF AN ERROR BIT IS SET
 3849                                                                          ;OR BOTH PGE IN RHCS2 AND SC IN
 3850                                                                          ;RHCS1 HAS AN OPEN BETWEEN IT AND THE BUS
 3851  023250  000411                          BR      8$                      ;SET UP TO TEST AGAIN
 3852  023252  104011                  4$:     ERROR   11                      ;SC BIT WAS SET BY EITHER ATTN OR
 3853  023254  004737  007234                  JSR     R7,WHYFO                ;FIND WHAT ERROR BIT IS SET
 3854                                                                          ;MCPE ERROR OR SC IS SHORTED TO +5 VOLTS
 3855  023260  000405                          BR      8$                      ;SETUP TO TEST AGAIN
 3856  023262  104172                  6$:     ERROR   172                     ;TRE WAS SET BY OTHER THAN PGE
 3857  023264  004737  007234                  JSR     R7,WHYFO                ;FIND ERROR BIT THAT SET TRE
 3858  023270  000401                          BR      8$                      ;SETUP TO TEST AGAIN
 3859  023272  104013                  7$:     ERROR   13                      ;TRE HAS AN OPEN GOING TO THE BUS
 3860  023274  032737  041400  177570  8$:     BIT     #SW14!SW9!SW8,@#177570  ;ANY LOOPING BEEING DONE
 3861  023302  001003                          BNE     21$                     ;YES,LOAD TRE NO MATTER WHAT
 3862  023304  105737  001103                  TSTB    $ERFLG                  ;WAS THERE AN ERROR
 3863  023310  001010                          BNE     9$                      ;SKIP TRE CHECK
 3864  023312  112777  000100  160044  21$:     MOVB    #TREB,@RHCS1B           ;LOAD TRE
 3865  023320  032777  002000  160012          BIT     #PGE,@RHCS2             ;DID ERROR CLEAR
 3866  023326  001401                          BEQ     9$                      ;YES EXIT TEST
 3867  023330  104050                          ERROR   50                      ;LOADING TRE DID NOT CLEAR ERROR
 3868  023332  004737  006602          9$:     JSR     R7,CLEER                ;SEE IF ERRORS ARE CLEARED
 3869  023336  004737  050130                  JSR     R7,ERRTST
 3870                                  ;;*****************************************************************
 3871                                  ;*TEST 30       MXF,TRE AND SC BIT TEST (RH11 ONLY)
 3872                                          ;*THIS TEST SEES IF MXF CAN BE SET BY A MOVE
 3873                                          ;*INSTRUCTION AND THAT TRE AND SC ARE SET IN
 3874                                          ;*RHCS1.MXF CAN BE SET THIS WAY IN AN RH11 BUT CN
 3875                                          ;*NOT BE SET THIS WAY IN AN RH70.................
 3876                                  ;;*****************************************************************
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 3877  023342  000004                    TST30:  SCOPE
 3878  023344  005701                            TST     R1                              ;IS IT A 70 OR 11
 3879  023346  100402                            BMI     LEAP                            ;IT'S AN RH11 DO THE TEST
 3880  023350  000137  024102                    JMP     FROG                            ;RH70,EXIT TEST
 3881  023354  012777  000007  157756  LEAP:     MOV     #7,@RHCS2                       ;SETUP UNIT 7
 3882  023362  052777  001000  157750            BIS     #MXF,@RHCS2                     ;SET MXF
 3883  023370  005037  003446                    CLR     BITCNT                          ;CLEAR BIT COUNTER
 3884  023374  032777  001000  157736  18$:     BIT     #MXF,@RHCS2                     ;IS MXF SET
 3885  023402  001015                            BNE     MIXIT                           ;BIT IS SET
 3886  023404  005237  003446                    INC     BITCNT                          ;COUNT UP
 3887  023410  001371                            BNE     18$                             ;NOT FINISHED COUNTING
 3888  023412  005037  003446                    CLR     BITCNT                          ;GET READY TO DO IT AGAIN
 3889  023416  032777  001000  157714  19$:     BIT     #MXF,@RHCS2                     ;IS IT SET YET?
 3890  023424  001004                            BNE     MIXIT                           ;YES
 3891  023426  005237  003446                    INC     BITCNT                          ;COUNT UP
 3892  023432  001401                            BEQ     MIXIT                           ;BIT IS NOT GOING TO SET
 3893  023434  000770                            BR      19$
 3894  023436                            MIXIT:
 3895  023436  017737  157666  001162            MOV     @RHCS1,$REGO                    ;SET UP NEEDED BITS ONLY
 3896  023444  042737  027777  001162            BIC     #GO!IE!RDY!A16!A17!PSEL!DVA!MCPE!READ6,$REGO
 3897  023452  042777  100000  157702            BIC     #APE,@RHCS3
 3898                                                                                    ;CLEAR BITS NOT NEEDED
 3899  023460  017737  157644  003420            MOV     @RHCS1,CS1                      ;SAVE RHCS1
 3900  023466  017737  157640  003444            MOV     @RHWC,WC                        ;SAVE WORD COUNT
 3901  023474  017737  157634  003414            MOV     @RHBA,BA                        ;SAVE BUS ADDRESS
 3902  023502  005701                            TST     R1                              ;IS IT AN RH11
 3903  023504  001406                            BEQ     87$                             ;NO IT'S A 70
 3904  023506  005037  003416                    CLR     BAE                             ;CLEAR BAE
 3905  023512  005037  003424                    CLR     CS3                             ;CLEAR CS3
 3906  023516  000137  023536                    JMP     86$                             ;CONTINUE
 3907  023522  017737  157632  003416  87$:     MOV     @RHBAE,BAE                      ;SAVE BUS ADDRESS EXTENSION
 3908  023530  017737  157626  003424            MOV     @RHCS3,CS3                      ;SAVE RHCS3
 3909  023536  017737  157576  003422  86$:     MOV     @RHCS2,CS2                      ;SAVE CS2
 3910  023544  017737  157572  003432            MOV     @RHST,DS1                       ;SAVE TESTER STATUS
 3911  023552  017737  157566  003436            MOV     @RHER,ER1                       ;SAVE ERROR REGISTER
 3912  023560  017737  157564  003442            MOV     @RHTDB,TDR                      ;SAVE TESTER DATA REG.
 3913  023556  017737  157544  003440            MOV     @RHMR2,TC                       ;SAVE MR2 TESTER REG.
 3914  023574  032777  000200  157526            BIT     #RDY,@RHCS1                     ;IS READY SET
 3915  023602  001003                            BNE     99$                             ;YES CONTINUE TEST
 3916  023604  104102                            ERROR   102                             ;READY NOT SET
 3917  023606  004737  007234                    JSR     R7,WHYF0                        ;ANY ERRORS SET
 3918  023612  032777  001000  157520  99$:     BIT     #MXF,@RHCS2                     ;IS MXF SET
 3919  023620  001016                            BNE     1$                              ;YES CHECK TRE AND SC
 3920  023622  022737  140000  001162            CMP     #SC!TRE,$REGO                   ;IS THE SC AND TRE BITS SET
 3921  023630  001460                            BEQ     2$                              ;YES MXF IS IN ERROR
 3922  023632  032737  040000  001162            BIT     #TRE,$REGO                      ;IS JUST THE TRE BIT SET
 3923  023640  001060                            BNE     3$                              ;TRE BIT MUST BE IN ERROR
 3924  023642  032737  100000  001162            BIT     #SC,$REGO                       ;IS JUST THE SC BIT SET
 3925  023650  001060                            BNE     4$                              ;SC BIT SET ERRONIOUSLY
 3926  023652  104030                            ERROR   30                              ;MXF NOT SET IN RHCS2
 3927  023654  000467                            BR      8$                              ;SET UP TO TEST AGAIN
 3928  023656  022737  140000  001162  1$:      CMP     #SC!TRE,$REGO                   ;IS SC AND TRE SET
 3929  023664  001030                            BNE     22$                             ;FIND THE ERROR
 3930  023666  013737  004124  004124            MOV     $CS1,$CS1                               ;TEST FOR SHORTS
 3931  023674  012737  176400  004126            MOV     #MPE!PGE!NEM!NED!UPE!WCE!DLT,$CS2
 3932  023702  013737  004130  004130            MOV     $CS3,$CS3
```

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3933  023710  013737  004132  004132          MOV     $ST,$ST
3934  023716  013737  004134  004134          MOV     $ER,$ER
3935  023724  012737  177777  004122          MOV     #-1,BEFORE      ;TELL WHYFO ITS FOR SHORTS
3936  023732  004737  007234                  JSR     R7,WHYFO        ;TEST FOR SHORTS
3937  023736  005037  004122                  CLR     BEFORE          ;WE HAVE CHECKED FOR SHORTS
3938  023742  000137  024034                  JMP     8$              ;LEAVE THE TEST
3939  023746  032737  040000  001162  22$:    BIT     #TRE,$REGO      ;THEN IS THE TRE BIT SET
3940  023754  001022                          BNE     6$              ;SC BIT DID NOT SEE TRE BIT
3941  023756  032737  100000  001162          BIT     #SC,$REGO       ;IS THE SC BIT SET
3942  023764  001022                          BNE     7$              ;TRE HAS AN OPEN GOING TO BUS
3943  023766  104006                          ERROR   6               ;TRE SET LOGIC NOT WORKING
3944  023770  000421                          BR      8$              ;SET UP TO TEST AGAIN
3945  023772  104031                  2$:     ERROR   31              ;MXF HAS OPEN IN LINE GOING TO BUS
3946  023774  004737  007234                  JSR     R7,WHYFO        ;SEE IF ANY OTHER ERROR BIT IS
3947                                                                  ;SET OTHER THAN MXF
3948  024000  000415                          BR      8$              ;SET UP TO TEST AGAIN
3949  024002  104032                  3$:     ERROR   32              ;SOMTHING WRONG WITH TRE BIT
3950  024004  004737  007234                  JSR     R7,WHYFO        ;SEE IF AN ERROR BIT IS SET
3951                                                                  ;OR BOTH MXF IN RHCS2 AND SC IN
3952                                                                  ;RHCS1 HAS AN OPEN BETWEEN IT AND THE BUS
3953  024010  000411                          BR      8$              ;SET UP TO TEST AGAIN
3954  024012  104011                  4$:     ERROR   11              ;SC BIT WAS SET BY EITHER ATTN OR
3955  024014  004737  007234                  JSR     R7,WHYFO        ;FIND WHAT ERROR BIT IS SET
3956                                                                  ;MCPE ERROR OR SC IS SHORTED TO +5 VOLTS
3957  024020  000405                          BR      8$              ;SETUP TO TEST AGAIN
3958  024022  104033                  6$:     ERROR   33              ;TRE WAS SET BY OTHER THAN MXF
3959  024024  004737  007234                  JSR     R7,WHYFO        ;FIND ERROR BIT THAT SET TRE
3960  024030  000401                          BR      8$              ;SETUP TO TEST AGAIN
3961  024032  104013                  7$:     ERROR   13              ;TRE HAS AN OPEN GOING TO THE BUS
3962  024034  032737  041400  177570  8$:     BIT     #SW14!SW9!SW8,@#177570  ;ANY LOOPING BEEING DONE
3963  024042  001003                          BNE     21$             ;YES,LOAD TRE NO MATTER WHAT
3964  024044  105737  001103                  TSTB    $ERFLG          ;WAS THERE AN ERROR
3965  024050  001010                          BNE     9$              ;SKIP TRE CHECK
3966  024052  112777  000100  157304  21$:    MOVB    #TREB,@RHCS1B   ;LOAD TRE
3967  024060  032777  001000  157252          BIT     #MXF,@RHCS2     ;DID ERROR CLEAR
3968  024066  001401                          BEQ     9$              ;YES EXIT TEST
3969  024070  104050                          ERROR   50              ;LOADING TRE DID NOT CLEAR ERROR
3970  024072  004737  006602          9$:     JSR     R7,CLEER        ;SEE IF ERRORS ARE CLEARED
3971  024076  004737  050130                  JSR     R7,ERRTST
3972  024102                          FROG:
3973                                  ;;*****************************************************************
3974                                  ;*TEST 31        MCPE AND SC ERROR TET
3975                                          ;*THIS TEST CHECKS THAT MCPE CAN BE SET IN RHCS1
3976                                          ;*AND THAT MCPE SETS SC IN RHCS1.................
3977                                  ;;*****************************************************************
3978  024102  000004                  TST31:  SCOPE
3979  024104  012777  000007  157226          MOV     #7,@RHCS2       ;SETUP UNIT NO.
3980  024112  012777  000010  157234          MOV     #ICPA,@RHMR1    ;INVERT CONTROL PARITY
3981  024120  013777  001162  157222          MOV     $REGO,@RHTDB    ;TRANSFER INFO TO TESTER
3982  024126  013777  001162  157214          MOV     $REGO,@RHTDB    ;DO IT FOR SECOND TIME
3983  024134  005037  003446                  CLR     BITCNT          ;CLEAR BIT COUNTER
3984  024140  032777  000200  157162  18$:    BIT     #RDY,@RHCS1     ;IS RDY SET
3985  024146  001015                          BNE     MCPET           ;BIT IS SET
3986  024150  005237  003446                  INC     BITCNT          ;COUNT UP
3987  024154  001371                          BNE     18$             ;NOT FINISHED COUNTING
3988  024156  005037  003446                  CLR     BITCNT          ;GET READY TO DO IT AGAIN
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  3989  024162  032777  000200  157140  19$:    BIT     #RDY,@RHCS1             ;IS IT SET YET?
  3990  024170  001004                          BNE     MCPE1                   ;YES
  3991  024172  005237  003446                  INC     BITCNT                  ;COUNT UP
  3992  024176  001401                          BEQ     MCPE1                   ;BIT IS NOT GOING TO SET
  3993  024200  000770                          BR      19$
  3994  024202                          MCPE1:
  3995  024202  017737  157122  003420          MOV     @RHCS1,CS1              ;SAVE RHCS1
  3996  024210  017737  157116  003444          MOV     @RHWC,WC                ;SAVE WORD COUNT
  3997  024216  017737  157112  003414          MOV     @RHBA,BA                ;SAVE BUS ADDRESS
  3998  024224  005701                          TST     R1                      ;IS IT AN RH11
  3999  024226  001406                          BEQ     87$                     ;NO IT'S A 70
  4000  024230  005037  003416                  CLR     BAE                     ;CLEAR BAE
  4001  024234  005037  003424                  CLR     CS3                     ;CLEAR CS3
  4002  024240  000137  024260                  JMP     86$                     ;CONTINUE
  4003  024244  017737  157110  003416  87$:    MOV     @RHBAE,BAE              ;SAVE BUS ADDRESS EXTENSION
  4004  024252  017737  157104  003424          MOV     @RHCS3,CS3              ;SAVE RHCS3
  4005  024260  017737  157054  003422  86$:    MOV     @RHCS2,CS2              ;SAVE CS2
  4006  024266  017737  157050  003432          MOV     @RHST,DS1               ;SAVE TESTER STATUS
  4007  024274  017737  157044  003436          MOV     @RHER,ER1               ;SAVE ERROR REGISTER
  4008  024302  017737  157042  003442          MOV     @RHTDB,TDR              ;SAVE TESTER DATA REG.
  4009  024310  017737  157022  003440          MOV     @RHMR2,TC               ;SAVE MR2 TESTER REG.
  4010  024316  032777  000200  157004          BIT     #RDY,@RHCS1             ;IS READY SET
  4011  024324  001003                          BNE     MPETST                  ;YES,TEST MCPE
  4012  024326  104102                          ERROR   102                     ;READY IS NOT SET
  4013  024330  004737  007234                  JSR     R7,WHYFO                ;ANY ERRORS SET
  4014  024334  032777  020000  156766  MPETST: BIT     #MCPE,@RHCS1            ;IS MCPE SET
  4015  024342  001425                          BEQ     1$
  4016  024344  032777  100000  156756          BIT     #SC,@RHCS1              ;IS SC SET
  4017  024352  001416                          BEQ     22$                     ;SC NOT SET
  4018  024354  012737  040000  004124          MOV     #TRE,$CS1               ;GET READY TO TEST FOR SHORTS
  4019  024362  012737  177400  004126          MOV     #MPE!MXF!PGE!NEM!NED!UPE!WCE!DLT,$CS2
  4020  024370  012737  177777  004122          MOV     #-1,BEFORE
  4021  024376  004737  007234                  JSR     R7,WHYFO                ;SEE IF ANY SHORTS
  4022  024402  005037  004122                  CLR     BEFORE
  4023  024406  000406                          BR      ERR30                   ;GET OUT OF TEST
  4024  024410  104130                  22$:    ERROR   130                     ;MCPE ERROR OK BUT SC DID
  4025                                                                          ;NOT SET SC HAS OPEN TO
  4026                                                                          ;BUS OR MCPE GOING TO OR
  4027                                                                          ;GATE FOR SC WAS NOT SEEN
  4028  024412  000137  024424                  JMP     ERR30
  4029  024416  104131                  1$:     ERROR   131                     ;MCPE DID NOT SET
  4030  024420  004737  007234                  JSR     R7,WHYFO                ;WAS THERE ANOTHER ERROR
  4031  024424  004737  006602          ERR30:  JSR     R7,CLEER                ;CLEAR ERRORS
  4032  024430  004737  050130                  JSR     R7,ERRTST               ;WAS THERE AN ERROR
  4033
  4034                                  ;;*****************************************************************
  4035                                  ;*TEST 32        DOUBLE TRANSFER TEST,1 WORD FROM AN ADDRESS BASE 4
  4036                                          ;*THIS TEST CHECKS THAT A ONE WORD TRANSFER
  4037                                          ;*FROM AN ADDRESS DIVISIBLE BY 4 WILL NOT SET
  4038                                          ;*DBL IN RHCS3.....RH70 ONLY.................
  4039                                  ;;*****************************************************************
  4040  024434  000004                  TST32:  SCOPE
  4041  024436  005701                          TST     R1                      ;IS IN AN RH11
  4042  024440  100532                          BMI     TST33           ;;GET OUT OF TEST
  4043  024442  012777  177777  156662          MOV     #-1,@RHWC               ;SET UP WC FOR ONE WORD
  4044  024450  012777  004000  156656          MOV     #EVENAD,@RHBA           ;SETUP BUS ADDRESS
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 4045  024456  012777  000000  156674          MOV     #ZERO,@RHBAE            ;SETUP BUS ADDRESS EXTENSION
 4046  024464  012777  000007  156646          MOV     #7,@RHCS2               ;DEVICE 7
 4047  024472  012777  000061  156630          MOV     #WRITEO,@RHCS1          ;TELL IT TO WRITEO
 4048  024500  005037  003446                  CLR     BITCNT                  ;CLEAR BIT COUNTER
 4049  024504  032777  000200  156616  18$:    BIT     #RDY,@RHCS1            ;IS RDY SET
 4050  024512  001015                          BNE     3$                      ;BIT IS SET
 4051  024514  005237  003446                  INC     BITCNT                  ;COUNT UP
 4052  024520  001371                          BNE     18$                     ;NOT FINISHED COUNTING
 4053  024522  005037  003446                  CLR     BITCNT                  ;GET READY TO DO IT AGAIN
 4054  024526  032777  000200  156574  19$:    BIT     #RDY,@RHCS1            ;IS IT SET YET?
 4055  024534  001004                          BNE     3$                      ;YES
 4056  024536  005237  003446                  INC     BITCNT                  ;COUNT UP
 4057  024542  001401                          BEQ     3$                      ;BIT IS NOT GOING TO SET
 4058  024544  000770                          BR      19$
 4059  024546                          3$:
 4060  024546  017737  156556  003420          MOV     @RHCS1,CS1              ;SAVE RHCS1
 4061  024554  017737  156552  003444          MOV     @RHWC,WC                ;SAVE WORD COUNT
 4062  024562  017737  156546  003414          MOV     @RHBA,BA                ;SAVE BUS ADDRESS
 4063  024570  005701                          TST     R1                      ;IS IT AN RH11
 4064  024572  001406                          BEQ     87$                     ;NO IT'S A 70
 4065  024574  005037  003416                  CLR     BAE                     ;CLEAR BAE
 4066  024600  005037  003424                  CLR     CS3                     ;CLEAR CS3
 4067  024604  000137  024624                  JMP     86$                     ;CONTINUE
 4068  024610  017737  156544  003416  87$:    MOV     @RHBAE,BAE              ;SAVE BUS ADDRESS EXTENSION
 4069  024616  017737  156540  003424          MOV     @RHCS3,CS3              ;SAVE RHCS3
 4070  024624  017737  156510  003422  86$:    MOV     @RHCS2,CS2              ;SAVE CS2
 4071  024632  017737  156504  003432          MOV     @RHST,DS1               ;SAVE TESTER STATUS
 4072  024640  017737  156500  003436          MOV     @RHER,ER1               ;SAVE ERROR REGISTER
 4073  024646  017737  156476  003442          MOV     @RHTDB,TDR              ;SAVE TESTER DATA REG.
 4074  024654  017737  156456  003440          MOV     @RHMR2,TC               ;SAVE MR2 TESTER REG.
 4075  024662  032777  000200  156440          BIT     #RDY,@RHCS1            ;IS READY SET
 4076  024670  001003                          BNE     1$                      ;RDY SET CONT. TEST
 4077  024672  104102                          ERROR   102                     ;READY DID NOT SET
 4078  024674  004737  007234                  JSR     R7,WHYFO                ;ANY ERRORS SET
 4079  024700  032777  002000  156454  1$:     BIT     #DBL,@RHCS3            ;IS DOUBLE SET
 4080  024706  001403                          BEQ     2$                      ;DBL SET
 4081  024710  104125                          ERROR   125                     ;DBL DID SET ON A 1 WORD TRANSFER
 4082  024712  004737  007234                  JSR     R7,WHYFO                ;TELL WHY NOT
 4083  024716  004737  006602          2$:     JSR     R7,CLEER                ;CLEAR ERRORS
 4084  024722  004737  050130                  JSR     R7,ERRTST
 4085                                  ;;*****************************************************************
 4086                                  ;*TEST 33       DOUBLES TEST FOR TWO WORD BASE 4 ADDRESS
 4087                                          ;*THIS TEST CHECKS THAT DOUBLE WILL SET FOR A
 4088                                          ;*TWO WORD TRANSFER STARTING FROM AN ADDRESS
 4089                                          ;*DIVISABLE BY 4.......RH70 ONLY.............
 4090                                  ;;*****************************************************************
 4091  024726  000004                  TST33:  SCOPE
 4092  024730  005701                          TST     R1                              ;IS IT AN 11 OR A 70
 4093  024732  100524                          BMI     TST34           ;;GET OUT OF TEST
 4094  024734  012777  177776  156370          MOV     #-2,@RHWC                       ;SETUP WORD COUNT FOR DOUBLE TRANSFER
 4095  024742  012777  004000  156364          MOV     #EVENAD,@RHBA                   ;CORRECT BA
 4096  024750  012777  000061  156352          MOV     #WRITEO,@RHCS1                  ;TELL IT TO WRITE
 4097  024756  005037  003446                  CLR     BITCNT                          ;CLEAR BIT COUNTER
 4098  024762  032777  000200  156340  18$:    BIT     #RDY,@RHCS1                    ;IS RDY SET
 4099  024770  001015                          BNE     DBLWDS                          ;BIT IS SET
 4100  024772  005237  003446                  INC     BITCNT                          ;COUNT UP
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4:121  025176  001371                          BNE     18$                     ;NOT FINISHED COUNTING
4:122  025200  005037  003446                  CLR     BITCNT                  ;GET READY TO DO IT AGAIN
4:123  025204  032777  000200  156316  19$:    BIT     #RDY,@RHCS1             ;IS IT SET YET?
4:124  025212  001004                          BNE     DBLWDS                  ;YES
4:125  025214  005237  003446                  INC     BITCNT                  ;COUNT UP
4:126  025220  001401                          BEQ     DBLWDS                  ;BIT IS NOT GOING TO SET
4:127  025222  000770                          BR      19$
4:128  025224                          DBLWDS:
4:129  025224  017737  156300  003420          MOV     @RHCS1,CS1              ;SAVE RHCS1
4:130  025232  017737  156274  003444          MOV     @RHWC,WC                ;SAVE WORD COUNT
4:131  025240  017737  156270  003414          MOV     @RHBA,BA                ;SAVE BUS ADDRESS
4:132  025246  005701                          TST     R1                      ;IS IT AN RH11
4:133  025250  001406                          BEQ     B7$                     ;NO IT'S A 70
4:134  025252  005037  003416                  CLR     BAE                     ;CLEAR BAE
4:135  025256  005037  003424                  CLR     CS3                     ;CLEAR CS3
4:136  025262  000137  025102                  JMP     B6$                     ;CONTINUE
4:137  025266  017737  156266  003416  B7$:    MOV     @RHBAE,BAE              ;SAVE BUS ADDRESS EXTENSION
4:138  025274  017737  156262  003424          MOV     @RHCS3,CS3              ;SAVE RHCS3
4:139  025302  017737  156232  003422  B6$:    MOV     @RHCS2,CS2              ;SAVE CS2
4:140  025310  017737  156226  003432          MOV     @RHST,DS1               ;SAVE TESTER STATUS
4:141  025316  017737  156222  003436          MOV     @RHER,ER1               ;SAVE ERROR REGISTER
4:142  025324  017737  156220  003442          MOV     @RHTDB,TDR              ;SAVE TESTER DATA REG.
4:143  025332  017737  156200  003440          MOV     @RHMR2,TC               ;SAVE MR2 TESTER REG.
4:144  025340  032777  000200  156162          BIT     #RDY,@RHCS1             ;IS READY SET
4:145  025346  001003                          BNE     FOOEY                   ;RDY IS SET
4:146  025350  104102                          ERROR   102                     ;RDY DID NOT SET
4:147  025352  004737  007234                  JSR     R7,WHYFO                ;ANY ERRORS SET
4:148  025356  032777  002000  156176  FOOEY:  BIT     #DBL,@RHCS3             ;IS DOUBLE SET
4:149  025364  001003                          BNE     ER1R                    ;DBL IS SET
4:150  025366  104127                          ERROR   127                     ;DBL DID NOT SET IN RHCS3
4:151  025370  004737  007234                  JSR     R7,WHYFO                ;ANY OTHER ERROR SET
4:152  025374  004737  006602          ER1R:   JSR     R7,CLEER                ;CLEAR ERRORS
4:153  025400  004737  050130                  JSR     R7,ERRTST
4:154                                  ;;**********************************************************************
4:155                                  ;*TEST 34        DOUBLE TEST ,3 WORD TRANSFER FROM A BASE 4 ADDRESS
4:156                                          ;*THIS TEST CHECKS THAT DBL WILL NOT SET
4:157                                          ;*IN RHCS3 AFTER A 3 WORD TRANSFER STARTING
4:158                                          ;*FROM AN ADDRESS DIVISABLE BY 4
4:159                                          ;*..............RH70 ONLY.....................
4:160                                  ;;**********************************************************************
4:161  025404  000004                  TST34:  SCOPE
4:162  025406  005701                          TST     R1                      ;IS IT AN 11 OR A 70
4:163  025410  100524                          BMI     TST35           ::GET OUT OF TEST
4:164  025412  012777  177775  156112          MOV     #-3,@RHWC               ;SET UP FOR A 3 WORD TRANSFER
4:165  025420  012777  004000  156106          MOV     #EVENAD,@RHBA           ;CORRECT BA
4:166  025426  012777  000061  156074          MOV     #WRITE0,@RHCS1          ;TELL IT TO WRITE
4:167  025434  005037  003446                  CLR     BITCNT                  ;CLEAR BIT COUNTER
4:168  025440  032777  000200  156062  18$:    BIT     #RDY,@RHCS1             ;IS RDY SET
4:169  025446  001015                          BNE     THREE                   ;BIT IS SET
4:170  025450  005237  003446                  INC     BITCNT                  ;COUNT UP
4:171  025454  001371                          BNE     18$                     ;NOT FINISHED COUNTING
4:172  025456  005037  003446                  CLR     BITCNT                  ;GET READY TO DO IT AGAIN
4:173  025462  032777  000200  156040  19$:    BIT     #RDY,@RHCS1             ;IS IT SET YET?
4:174  025470  001004                          BNE     THREE                   ;YES
4:175  025472  005237  003446                  INC     BITCNT                  ;COUNT UP
4:176  025476  001401                          BEQ     THREE                   ;BIT IS NOT GOING TO SET
```

```
 4157  025300  000770                          BR      19$
 4158  025302                          THREE:
 4159  025302  017737  156022  003420          MOV     @RHCS1,CS1              ;SAVE RHCS1
 4160  025310  017737  156016  003444          MOV     @RHWC,WC                ;SAVE WORD COUNT
 4161  025316  017737  156012  003414          MOV     @RHBA,BA                ;SAVE BUS ADDRESS
 4162  025324  005701                          TST     R1                      ;IS IT AN RH11
 4163  025326  001406                          BEQ     87$                     ;NO IT'S A 70
 4164  025330  005037  003416                  CLR     BAE                     ;CLEAR BAE
 4165  025334  005037  003424                  CLR     CS3                     ;CLEAR CS3
 4166  025340  000137  025360                  JMP     86$                     ;CONTINUE
 4167  025344  017737  156010  003416  87$:    MOV     @RHBAE,BAE              ;SAVE BUS ADDRESS EXTENSION
 4168  025352  017737  156004  003424          MOV     @RHCS3,CS3              ;SAVE RHCS3
 4169  025360  017737  155754  003422  86$:    MOV     @RHCS2,CS2              ;SAVE CS2
 4170  025366  017737  155750  003432          MOV     @RHST,DS1               ;SAVE TESTER STATUS
 4171  025374  017737  155744  003436          MOV     @RHER,ER1               ;SAVE ERROR REGISTER
 4172  026402  017737  155742  003442          MOV     @RHTDB,TDR              ;SAVE TESTER DATA REG.
 4173  026410  017737  155722  003440          MOV     @RHMR2,TC               ;SAVE MR2 TESTER REG.
 4174  025416  032777  000200  155704          BIT     #RDY,@RHCS1             ;IS READY SET
 4175  025424  001003                          BNE     ERRIP                   ;RDY IS SET
 4176  025426  104102                          ERROR   102                     ;RDY DID NOT SET
 4177  025430  004737  007234                  JSR     R7,WHYFO                ;ANY ERRORS SET
 4178  025434  032777  002000  155720  ERRIP:  BIT     #DBL,@RHCS3             ;IS DOUBLE SET
 4179  025442  001403                          BEQ     ERPIP                   ;DBL IS SET
 4180  025444  104126                          ERROR   126                     ;DOUBLE SET ON A 3 WORD TRANSFER
 4181  025446  004737  007234                  JSR     R7,WHYFO                ;SEE IF ANY ERROR BITS ARE SET
 4182  025452  004737  006602          ERPIP:  JSR     R7,CLEER                ;CLEAR ERRORS
 4183  025456  004737  050130                  JSR     R7,ERRTST
 4184                                  ;;**************************************************************
 4185                                  ;*TEST 35        DOUBLE TEST ,4 WORDS FROM A BASE 4 ADDRESS
 4186                                          ;*THIS TEST CHECKS THAT DBL WILL SET IN RHCS3
 4187                                          ;*AFTER A 4 WORD TRANSFER STARTING WITH AN
 4188                                          ;*ADDRESS DIVISABLE BY 4**********************
 4189                                          ;*.............RH70 ONLY.........................
 4190                                  ;;**************************************************************
 4191  025462  000004                  TST35:  SCOPE
 4192  025464  005701                          TST     R1                      ;IS IT AN 11 OR A 70
 4193  025466  100524                          BMI     TST36           ;;GET OUT OF TEST
 4194  025470  012777  177774  155634          MOV     #-4,@RHWC               ;SET UP FOR 4 WORD TRANSFER
 4195  025476  012777  004000  155630          MOV     #EVENAD,@RHBA           ;CORRECT BA
 4196  025504  012777  000061  155616          MOV     #WRITE0,@RHCS1          ;TELL IT TO WRITE
 4197  025512  005037  003446                  CLR     BITCNT                  ;CLEAR BIT COUNTER
 4198  025516  032777  000200  155604  18$:    BIT     #RDY,@RHCS1             ;IS RDY SET
 4199  025524  001015                          BNE     DBLED                   ;BIT IS SET
 4200  025526  005237  003446                  INC     BITCNT                  ;COUNT UP
 4201  025532  001371                          BNE     18$                     ;NOT FINISHED COUNTING
 4202  025534  005037  003446                  CLR     BITCNT                  ;GET READY TO DO IT AGAIN
 4203  025540  032777  000200  155562  19$:    BIT     #RDY,@RHCS1             ;IS IT SET YET?
 4204  025546  001004                          BNE     DBLED                   ;YES
 4205  025550  005237  003446                  INC     BITCNT                  ;COUNT UP
 4206  025554  001401                          BEQ     DBLED                   ;BIT IS NOT GOING TO SET
 4207  025556  000770                          BR      19$
 4208  025560                          DBLED:
 4209  025560  017737  155544  003420          MOV     @RHCS1,CS1              ;SAVE RHCS1
 4210  025566  017737  155540  003444          MOV     @RHWC,WC                ;SAVE WORD COUNT
 4211  025574  017737  155534  003414          MOV     @RHBA,BA                ;SAVE BUS ADDRESS
 4212  025602  005701                          TST     R1                      ;IS IT AN RH11
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 4213  025604  001406                          BEQ     87$                     ;NO IT'S A 70
 4214  025606  005037  003416                  CLR     BAE                     ;CLEAR BAE
 4215  025612  005037  003424                  CLR     CS3                     ;CLEAR CS3
 4216  025616  000137  025636                  JMP     86$                     ;CONTINUE
 4217  025622  017737  155532  003416  97$:    MOV     @RHBAE,BAE              ;SAVE BUS ADDRESS EXTENSION
 4218  025630  017737  155526  003424          MOV     @RHCS3,CS3              ;SAVE RHCS3
 4219  025636  017737  155476  003422  86$:    MOV     @RHCS2,CS2              ;SAVE CS2
 4220  025644  017737  155472  003432          MOV     @RHST,DS1               ;SAVE TESTER STATUS
 4221  025652  017737  155466  003436          MOV     @RHER,ER1               ;SAVE ERROR REGISTER
 4222  025660  017737  155464  003442          MOV     @RHTDB,TDR              ;SAVE TESTER DATA REG.
 4223  025666  017737  155444  003440          MOV     @RHMR2,TC               ;SAVE MR2 TESTER REG.
 4224  025674  032777  000200  155426          BIT     #RDY,@RHCS1             ;IS READY SET
 4225  025702  001003                          BNE     DAYAMS                  ;RDY IS SET
 4226  025704  104102                          ERROR   102                     ;RDY DID NOT SET
 4227  025706  004737  007234                  JSR     R7,WHYFO                ;WHAT ERRORS ARE SET
 4228  025712  032777  002000  155442  DAYAMS: BIT     #DBL,@RHCS3             ;IS DOUBLE SET
 4229  025720  001003                          BNE     ERR29                   ;TEST IS OK
 4230  025722  104124                          ERROR   124                     ;DOUBLE DID NOT SET AFTER A 4 WORD
 4231  025724  004737  007234                  JSR     R7,WHYFO                ;SEE IF ANY ERROR ARE SET
 4232  025730  004737  006602          ERR29:  JSR     R7,CLEER                ;CLEAR ERRORS
 4233  025734  004737  050130                  JSR     R7,ERRTST
 4234
 4235
 4236                                  ;;**************************************************************
 4237                                  ;*TEST 36        DOUBLE TEST 1WORD TRANSFER READ
 4238                                          ;*THESE TEST CHECK DBL IN RHCS3 WITHREAD FWD AND REV
 4239                                          ;*WRITE FWD AND REV AND WITH BAI SET IN RHCS2
 4240                                          ;*OPERATION BEING PREFORMED WILL BE PRINTED OUT
 4241                                          ;*IN ERROR MESSAGE.
 4242                                          ;*.................RH70 ONLY.....................
 4243                                  ;;**************************************************************
 4244  025740  000004                  TST36:  SCOPE
 4245  025742  005701                          TST     R1                      ;IS IN AN RH11
 4246  025744  100532                          BMI     TST37           ;;GET OUT OF TEST
 4247  025746  012777  177777  155356          MOV     #-1,@RHWC               ;SET UP WC FOR ONE WORD
 4248  025754  012777  004000  155352          MOV     #EVENAD,@RHBA           ;SETUP BUS ADDRESS
 4249  025762  012777  000000  155370          MOV     #ZERO,@RHBAE            ;SETUP BUS ADDRESS EXTENSION
 4250  025770  012777  000007  155342          MOV     #7,@RHCS2               ;DEVICE 7
 4251  025776  012777  000071  155324          MOV     #READO,@RHCS1           ;TELL IT TO READO
 4252  026004  005037  003446                  CLR     BITCNT                  ;CLEAR BIT COUNTER
 4253  026010  032777  000200  155312  18$:    BIT     #RDY,@RHCS1             ;IS RDY SET
 4254  026016  001015                          BNE     3$                      ;BIT IS SET
 4255  026020  005237  003446                  INC     BITCNT                  ;COUNT UP
 4256  026024  001371                          BNE     18$                     ;NOT FINISHED COUNTING
 4257  026026  005037  003446                  CLR     BITCNT  -               ;GET READY TO DO IT AGAIN
 4258  026032  032777  000200  155270  19$:    BIT     #RDY,@RHCS1             ;IS IT SET YET?
 4259  026040  001004                          BNE     3$                      ;YES
 4260  026042  005237  003446                  INC     BITCNT                  ;COUNT UP
 4261  026046  001401                          BEQ     3$                      ;BIT IS NOT GOING TO SET
 4262  026050  000770                          BR      19$
 4263  026052                          3$:
 4264  026052  017737  155252  003420          MOV     @RHCS1,CS1              ;SAVE RHCS1
 4265  026060  017737  155246  003444          MOV     @RHWC,WC                ;SAVE WORD COUNT
 4266  026066  017737  155242  003414          MOV     @RHBA,BA                ;SAVE BUS ADDRESS
 4267  026074  005701                          TST     R1                      ;IS IT AN RH11
 4268  026076  001406                          BEQ     87$                     ;NO IT'S A 70
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 4269  026100  005037  003416                    CLR     BAE                     ;CLEAR BAE
 4270  026104  005037  003424                    CLR     CS3                     ;CLEAR CS3
 4271  026110  000137  026130                    JMP     86$                     ;CONTINUE
 4272  026114  017737  155240  003416  87$:      MOV     @RHBAE,BAE              ;SAVE BUS ADDRESS EXTENSION
 4273  026122  017737  155234  003424            MOV     @RHCS3,CS3              ;SAVE RHCS3
 4274  026130  017737  155204  003422  86$:      MOV     @RHCS2,CS2              ;SAVE CS2
 4275  026136  017737  155200  003432            MOV     @RHST,DS1               ;SAVE TESTER STATUS
 4276  026144  017737  155174  003436            MOV     @RHER,ER1               ;SAVE ERROR REGISTER
 4277  026152  017737  155172  003442            MOV     @RHTDB,TDR              ;SAVE TESTER DATA REG.
 4278  026160  017737  155152  003440            MOV     @RHMR2,TC               ;SAVE MR2 TESTER REG.
 4279  026166  032777  000200  155134            BIT     #RDY,@RHCS1             ;IS READY SET
 4280  026174  001003                            BNE     1$                      ;RDY SET CONT. TEST
 4281  026176  104102                            ERROR   102                     ;READY DID NOT SET
 4282  026200  004737  007234                    JSR     R7,WHYFO                ;ANY ERRORS SET
 4283  026204  032777  002000  155150  1$:       BIT     #DBL,@RHCS3             ;IS DOUBLE SET
 4284  026212  001403                            BEQ     2$                      ;DBL SET
 4285  026214  104154                            ERROR   154                     ;DBL DID SET ON A 1 WORD TRANSFER
 4286  026216  004737  007234                    JSR     R7,WHYFO                ;TELL WHY NOT
 4287  026222  004737  006602            2$:     JSR     R7,CLEER                ;CLEAR ERRORS
 4288  026226  004737  050130                    JSR     R7,ERRTST
 4289                                    ;;*****************************************************************
 4290                                    ;*TEST 37        DOUBLE TEST WITH 2 WORD TRANSFER AND BAI SET
 4291                                            ;*THESE TEST CHECK DBL IN RHCS3 WITHREAD FWD AND REV
 4292                                            ;*WRITE FWD AND REV AND WITH BAI SET IN RHCS2
 4293                                            ;*OPERATION BEING PREFORMED WILL BE PRINTED OUT
 4294                                            ;*IN ERROR MESSAGE.
 4295                                            ;*.................RH70 ONLY.....................
 4296                                    ;;*****************************************************************
 4297  026232  000004                    *ST37:  SCOPE
 4298  026234  005701                            TST     R1                      ;IS IN AN RH11
 4299  026236  100532                            BMI     TST40           ;;GET OUT OF TEST
 4300  026240  012777  177776  155064            MOV     #-2,@RHWC               ;SET UP WC FOR TWO WORD
 4301  026246  012777  004000  155060            MOV     #EVENAD,@RHBA           ;SETUP BUS ADDRESS
 4302  026254  012777  000000  155076            MOV     #ZERO,@RHBAE            ;SETUP BUS ADDRESS EXTENSION
 4303  026262  012777  000017  155050            MOV     #7!BAI,@RHCS2           ;DEVICE 7
 4304  026270  012777  000061  155032            MOV     #WRITEO,@RHCS1          ;TELL IT TO WRITEO
 4305  026276  005037  003446                    CLR     BITCNT                  ;CLEAR BIT COUNTER
 4306  026302  032777  000200  155020  18$:      BIT     #RDY,@RHCS1             ;IS RDY SET
 4307  026310  001015                            BNE     3$                      ;BIT IS SET
 4308  026312  005237  003446                    INC     BITCNT                  ;COUNT UP
 4309  026316  001371                            BNE     18$                     ;NOT FINISHED COUNTING
 4310  026320  005037  003446                    CLR     BITCNT                  ;GET READY TO DO IT AGAIN
 4311  026324  032777  000200  154776  19$:      BIT     #RDY,@RHCS1             ;IS IT SET YET?
 4312  026332  001004                            BNE     3$                      ;YES
 4313  026334  005237  003446                    INC     BITCNT                  ;COUNT UP
 4314  026340  001401                            BEQ     3$                      ;BIT IS NOT GOING TO SET
 4315  026342  000770                            BR      19$
 4316  026344                            3$:
 4317  026344  017737  154760  003420            MOV     @RHCS1,CS1              ;SAVE RHCS1
 4318  026352  017737  154754  003444            MOV     @RHWC,WC                ;SAVE WORD COUNT
 4319  026360  017737  154750  003414            MOV     @RHBA,BA                ;SAVE BUS ADDRESS
 4320  026366  005701                            TST     R1                      ;IS IT AN RH11
 4321  026370  001406                            BEQ     87$                     ;NO IT'S A 70
 4322  026372  005037  003416                    CLR     BAE                     ;CLEAR BAE
 4323  026376  005037  003424                    CLR     CS3                     ;CLEAR CS3
 4324  026402  000137  026422                    JMP     86$                     ;CONTINUE
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 4325  026406  017737  154746  003416  87$:    MOV     @RHBAE,BAE              ;SAVE BUS ADDRESS EXTENSION
 4326  026414  017737  154742  003424          MOV     @RHCS3,CS3              ;SAVE RHCS3
 4327  026422  017737  154712  003422  86$:    MOV     @RHCS2,CS2              ;SAVE CS2
 4328  026430  017737  154706  003432          MOV     @RHST,DS1               ;SAVE TESTER STATUS
 4329  026436  017737  154702  003436          MOV     @RHER,ER1               ;SAVE ERROR REGISTER
 4330  026444  017737  154700  003442          MOV     @RHTDB,TDR              ;SAVE TESTER DATA REG.
 4331  026452  017737  154660  003440          MOV     @RHMR2,TC               ;SAVE MR2 TESTER REG.
 4332  026460  032777  000200  154642          BIT     #RDY,@RHCS1             ;IS READY SET
 4333  026466  001003                          BNE     1$                      ;RDY SET CONT. TEST
 4334  026470  104102                          ERROR   102                     ;READY DID NOT SET
 4335  026472  004737  007234                  JSR     R7,WHYFO                ;ANY ERRORS SET
 4336  026476  032777  002000  154656  1$:     BIT     #DBL,@RHCS3             ;IS DOUBLE SET
 4337  026504  001403                          BEQ     2$                      ;DBL SET
 4338  026506  104153                          ERROR   153                     ;DBL DID SET ON A 2 WORD TRANSFER
 4339  026510  004737  007234                  JSR     R7,WHYFO                ;TELL WHY NOT
 4340  026514  004737  006602          2$:     JSR     R7,CLEER                ;CLEAR ERRORS
 4341  026520  004737  050130                  JSR     R7,ERRTST
 4342                                  ;;**************************************************************
 4343                                  ;*TEST 40       DBL TEST 2 WORD TRANSFER WITH BAI AND WRITE REV
 4344                                  ;*THESE TEST CHECK DBL IN RHCS3 WITHREAD FWD AND REV
 4345                                  ;*WRITE FWD AND REV AND WITH BAI SET IN RHCS2
 4346                                  ;*OPERATION BEING PREFORMED WILL BE PRINTED OUT
 4347                                  ;*IN ERROR MESSAGE.
 4348                                  ;*.................RH70 ONLY.....................
 4349                                  ;;**************************************************************
 4350  026524  000004                  TST40:  SCOPE
 4351  026526  005701                          TST     R1                      ;IS IN AN RH11
 4352  026530  100532                          BMI     TST41           ;;GET OUT OF TEST
 4353  026532  012777  177776  154572          MOV     #-2,@RHWC               ;SET UP WC FOR TWO WORD
 4354  026540  012777  004000  154566          MOV     #EVENAD,@RHBA           ;SETUP BUS ADDRESS
 4355  026546  012777  000000  154604          MOV     #ZERO,@RHBAE            ;SETUP BUS ADDRESS EXTENSION
 4356  026554  012777  000017  154556          MOV     #7!BAI,@RHCS2           ;DEVICE 7
 4357  026562  012777  000067  154540          MOV     #WRITE6,@RHCS1          ;TELL IT TO WRITE6
 4358  026570  005037  003446                  CLR     BITCNT                  ;CLEAR BIT COUNTER
 4359  026574  032777  000200  154526  18$:     BIT     #RDY,@RHCS1             ;IS RDY SET
 4360  026602  001015                          BNE     3$                      ;BIT IS SET
 4361  026604  005237  003446                  INC     BITCNT                  ;COUNT UP
 4362  026610  001371                          BNE     18$                     ;NOT FINISHED COUNTING
 4363  026612  005037  003446                  CLR     BITCNT                  ;GET READY TO DO IT AGAIN
 4364  026616  032777  000200  154504  19$:     BIT     #RDY,@RHCS1             ;IS IT SET YET?
 4365  026624  001004                          BNE     3$                      ;YES
 4366  026626  005237  003446                  INC     BITCNT                  ;COUNT UP
 4367  026632  001401                          BEQ     3$                      ;BIT IS NOT GOING TO SET
 4368  026634  000770                          BR      19$
 4369  026636                          3$:
 4370  026636  017737  154466  003420          MOV     @RHCS1,CS1              ;SAVE RHCS1
 4371  026644  017737  154462  003444          MOV     @RHWC,WC                ;SAVE WORD COUNT
 4372  026652  017737  154456  003414          MOV     @RHBA,BA                ;SAVE BUS ADDRESS
 4373  026660  005701                          TST     R1                      ;IS IT AN RH11
 4374  026662  001406                          BEQ     87$                     ;NO IT'S A 70
 4375  026664  005037  003416                  CLR     BAE                     ;CLEAR BAE
 4376  026670  005037  003424                  CLR     CS3                     ;CLEAR CS3
 4377  026674  000137  026714                  JMP     86$                     ;CONTINUE
 4378  026700  017737  154454  003416  87$:     MOV     @RHBAE,BAE              ;SAVE BUS ADDRESS EXTENSION
 4379  026706  017737  154450  003424          MOV     @RHCS3,CS3              ;SAVE RHCS3
 4380  026714  017737  154420  003422  86$:     MOV     @RHCS2,CS2              ;SAVE CS2
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 4381  026722  017737  154414  003432          MOV     @RHST,DS1               ;SAVE TESTER STATUS
 4382  026730  017737  154410  003436          MOV     @RHER,ER1               ;SAVE ERROR REGISTER
 4383  026736  017737  154406  003442          MOV     @RHTDB,TDR              ;SAVE TESTER DATA REG.
 4384  026744  017737  154366  003440          MOV     @RHMR2,TC               ;SAVE MR2 TESTER REG.
 4385  026752  032777  000200  154350          BIT     #RDY,@RHCS1             ;IS READY SET
 4386  026760  001003                          BNE     1$                      ;RDY SET CONT. TEST
 4387  026762  104102                          ERROR   102                     ;READY DID NOT SET
 4388  026764  004737  007234                  JSR     R7,WHYFO                ;ANY ERRORS SET
 4389  026770  032777  002000  154364  1$:     BIT     #DBL,@RHCS3             ;IS DOUBLE SET
 4390  026776  001403                          BEQ     2$                      ;DBL SET
 4391  027000  104155                          ERROR   155                     ;DBL DID SET ON A 2 WORD TRANSFER
 4392  027002  004737  007234                  JSR     R7,WHYFO                ;TELL WHY NOT
 4393  027006  004737  006602          2$:     JSR     R7,CLEER                ;CLEAR ERRORS
 4394  027012  004737  050130                  JSR     R7,ERRTST
 4395                                  ;;**************************************************************
 4396                                  ;*TEST 41        DBL TEST 2 WORD TRANSFER ODD ADD.
 4397                                  ;*THESE TEST CHECK DBL IN RHCS3 WITHREAD FWD AND REV
 4398                                  ;*WRITE FWD AND REV AND WITH BAI SET IN RHCS2
 4399                                  ;*OPERATION BEING PREFORMED WILL BE PRINTED OUT
 4400                                  ;*IN ERROR MESSAGE.
 4401                                  ;*.................RH70 ONLY.....................
 4402                                  ;;**************************************************************
 4403  027016  000004                  TST41:  SCOPE
 4404  027020  005701                          TST     R1                      ;IS IN AN RH11
 4405  027022  100532                          BMI     TST42           ;;GET OUT OF TEST
 4406  027024  012777  177776  154300          MOV     #-2,@RHWC               ;SET UP WC FOR TWO WORD
 4407  027032  012777  004002  154274          MOV     #ODDAD,@RHBA            ;SETUP BUS ADDRESS
 4408  027040  012777  000C00  154312          MOV     #ZERO,@RHBAE            ;SETUP BUS ADDRESS EXTENSION
 4409  027046  012777  000007  154264          MOV     #7,@RHCS2               ;DEVICE 7
 4410  027054  012777  000061  154246          MOV     #WRITEO,@RHCS1          ;TELL IT TO WRITEO
 4411  027062  005037  003446                  CLR     BITCNT                  ;CLEAR BIT COUNTER
 4412  027066  032777  000200  154234  18$:     BIT     #RDY,@RHCS1             ;IS RDY SET
 4413  027074  001015                          BNE     3$                      ;BIT IS SET
 4414  027076  005237  003446                  INC     BITCNT                  ;COUNT UP
 4415  027102  001371                          BNE     18$                     ;NOT FINISHED COUNTING
 4416  027104  005037  003446                  CLR     BITCNT                  ;GET READY TO DO IT AGAIN
 4417  027110  032777  000200  154212  19$:     BIT     #RDY,@RHCS1             ;IS IT SET YET?
 4418  027116  001004                          BNE     3$                      ;YES
 4419  027120  005237  003446                  INC     BITCNT                  ;COUNT UP
 4420  027124  001401                          BEQ     3$                      ;BIT IS NOT GOING TO SET
 4421  027126  000770                          BR      19$
 4422  027130                          3$:
 4423  027130  017737  154174  003420          MOV     @RHCS1,CS1              ;SAVE RHCS1
 4424  027136  017737  154170  003444          MOV     @RHWC,WC                ;SAVE WORD COUNT
 4425  027144  017737  154164  003414          MOV     @RHBA,BA                ;SAVE BUS ADDRESS
 4426  027152  005701                          TST     R1                      ;IS IT AN RH11
 4427  027154  001406                          BEQ     87$                     ;NO IT'S A 70
 4428  027156  005037  003416                  CLR     BAE                     ;CLEAR BAE
 4429  027162  005037  003424                  CLR     CS3                     ;CLEAR CS3
 4430  027166  000137  027206                  JMP     86$                     ;CONTINUE
 4431  027172  017737  154162  003416  87$:     MOV     @RHBAE,BAE              ;SAVE BUS ADDRESS EXTENSION
 4432  027200  017737  154156  003424          MOV     @RHCS3,CS3              ;SAVE RHCS3
 4433  027206  017737  154126  003422  86$:     MOV     @RHCS2,CS2              ;SAVE CS2
 4434  027214  017737  154122  003432          MOV     @RHST,DS1               ;SAVE TESTER STATUS
 4435  027222  017737  154116  003436          MOV     @RHER,ER1               ;SAVE ERROR REGISTER
 4436  027230  017737  154114  003442          MOV     @RHTDB,TDR              ;SAVE TESTER DATA REG.
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4437  027236  017737  154074  003440          MOV     @RHMR2,TC               ;SAVE MR2 TESTER REG.
4438  027244  032777  000200  154056          BIT     #RDY,@RHCS1             ;IS READY SET
4439  027252  001003                          BNE     1$                      ;RDY SET CONT. TEST
4440  027254  104102                          ERROR   102                     ;READY DID NOT SET
4441  027256  004737  007234                  JSR     R7,WHYFO                ;ANY ERRORS SET
4442  027262  032777  002000  154072  1$:     BIT     #DBL,@RHCS3             ;IS DOUBLE SET
4443  027270  001403                          BEQ     2$                      ;DBL SET
4444  027272  104156                          ERROR   156                     ;DBL DID SET ON A 2 WORD TRANSFER
4445  027274  004737  007234                  JSR     R7,WHYFO                ;TELL WHY NOT
4446  027300  004737  006602          2$:     JSR     R7,CLEER                ;CLEAR ERRORS
4447  027304  004737  050130                  JSR     R7,ERRTST
4448                                  ;;**************************************************************
4449                                  ;*TEST 42        DBL TEST EVEN ADD. WRITE FWD
4450                                          ;*THESE TEST CHECK DBL IN RHCS3 WITHREAD FWD AND REV
4451                                          ;*WRITE FWD AND REV AND WITH BAI SET IN RHCS2
4452                                          ;*OPERATION BEING PREFORMED WILL BE PRINTED OUT
4453                                          ;*IN ERROR MESSAGE.
4454                                          ;*.................RH70 ONLY.....................
4455                                  ;;**************************************************************
4456  027310  000004                  TST42:  SCOPE
4457  027312  005701                          TST     R1                      ;IS IN AN RH11
4458  027314  100532                          BMI     TST43           ;;GET OUT OF TEST
4459  027316  012777  177776  154006          MOV     #-2,@RHWC               ;SET UP WC FOR TWO WORD
4460  027324  012777  004000  154002          MOV     #EVENAD,@RHBA           ;SETUP BUS ADDRESS
4461  027332  012777  000000  154020          MOV     #ZERO,@RHBAE            ;SETUP BUS ADDRESS EXTENSION
4462  027340  012777  000007  153772          MOV     #7,@RHCS2               ;DEVICE 7
4463  027346  012777  000067  153754          MOV     #WRITE6,@RHCS1          ;TELL IT TO WRITE6
4464  027354  005037  003446                  CLR     BITCNT                  ;CLEAR BIT COUNTER
4465  027360  032777  000200  153742  18$:     BIT     #RDY,@RHCS1             ;IS RDY SET
4466  027366  001015                          BNE     3$                      ;BIT IS SET
4467  027370  005237  003446                  INC     BITCNT                  ;COUNT UP
4468  027374  001371                          BNE     18$                     ;NOT FINISHED COUNTING
4469  027376  005037  003446                  CLR     BITCNT                  ;GET READY TO DO IT AGAIN
4470  027402  032777  000200  153720  19$:     BIT     #RDY,@RHCS1             ;IS IT SET YET?
4471  027410  001004                          BNE     3$                      ;YES
4472  027412  005237  003446                  INC     BITCNT                  ;COUNT UP
4473  027416  001401                          BEQ     3$                      ;BIT IS NOT GOING TO SET
4474  027420  000770                          BR      19$
4475  027422                          3$:
4476  027422  017737  153702  003420          MOV     @RHCS1,CS1              ;SAVE RHCS1
4477  027430  017737  153676  003444          MOV     @RHWC,WC                ;SAVE WORD COUNT
4478  027436  017737  153672  003414          MOV     @RHBA,BA                ;SAVE BUS ADDRESS
4479  027444  005701                          TST     R1                      ;IS IT AN RH11
4480  027446  001406                          BEQ     87$                     ;NO IT'S A 70
4481  027450  005037  003416                  CLR     BAE                     ;CLEAR BAE
4482  027454  005037  003424                  CLR     CS3                     ;CLEAR CS3
4483  027460  000137  027500                  JMP     86$                     ;CONTINUE
4484  027464  017737  153670  003416  87$:     MOV     @RHBAE,BAE              ;SAVE BUS ADDRESS EXTENSION
4485  027472  017737  153664  003424          MOV     @RHCS3,CS3              ;SAVE RHCS3
4486  027500  017737  153634  003422  86$:     MOV     @RHCS2,CS2              ;SAVE CS2
4487  027506  017737  153630  003432          MOV     @RHST,DS1               ;SAVE TESTER STATUS
4488  027514  017737  153624  003436          MOV     @RHER,ER1               ;SAVE ERROR REGISTER
4489  027522  017737  153622  003442          MOV     @RHTDB,TDR              ;SAVE TESTER DATA REG.
4490  027530  017737  153602  003440          MOV     @RHMR2,TC               ;SAVE MR2 TESTER REG.
4491  027536  032777  000200  153564          BIT     #RDY,@RHCS1             ;IS READY SET
4492  027544  001003                          BNE     1$                      ;RDY SET CONT. TEST
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 4493  027546  104102                          ERROR   102                     ;READY DID NOT SET
 4494  027550  004737  007234                  JSR     R7,WHYFO                ;ANY ERRORS SET
 4495  027554  032777  002000  153600  1$:     BIT     #DBL,@RHCS3             ;IS DOUBLE SET
 4496  027562  001403                          BEQ     2$                      ;DBL SET
 4497  027564  104157                          ERROR   157                     ;DBL DID SET ON A 2 WORD TRANSFER
 4498  027566  004737  007234                  JSR     R7,WHYFO                ;TELL WHY NOT
 4499  027572  004737  006602          2$:     JSR     R7,CLEER                ;CLEAR ERRORS
 4500  027576  004737  050130                  JSR     R7,ERRTST
 4501                                  ;;**************************************************************
 4502                                  ;*TEST 43        DBL TEST 2 WORD ODD ADD. WRITE REV
 4503                                          ;*THESE TEST CHECK DBL IN RHCS3 WITHREAD FWD AND REV
 4504                                          ;*WRITE FWD AND REV AND WITH BAI SET IN RHCS2
 4505                                          ;*OPERATION BEING PREFORMED WILL BE PRINTED OUT
 4506                                          ;*IN ERROR MESSAGE.
 4507                                          ;*.................RH70 ONLY.....................
 4509                                  ;;**************************************************************
 4509  027602  000004                  TST43:  SCOPE
 4510  027604  005701                          TST     R1                      ;IS IN AN RH11
 4511  027606  100532                          BMI     TST44           ;;GET OUT OF TEST
 4512  027610  012777  177776  153514          MOV     #-2,@RHWC               ;SET UP WC FOR TWO WORD
 4513  027616  012777  004002  153510          MOV     #ODDAD,@RHBA            ;SETUP BUS ADDRESS
 4514  027624  012777  000000  153526          MOV     #ZERO,@RHBAE            ;SETUP BUS ADDRESS EXTENSION
 4515  027632  012777  000007  153500          MOV     #7,@RHCS2               ;DEVICE 7
 4516  027640  012777  000067  153462          MOV     #WRITE6,@RHCS1          ;TELL IT TO WRITE6
 4517  027646  005037  003446                  CLR     BITCNT                  ;CLEAR BIT COUNTER
 4518  027652  032777  000200  153450  18$:     BIT     #RDY,@RHCS1             ;IS RDY SET
 4519  027660  001015                          BNE     3$                      ;BIT IS SET
 4520  027662  005237  003446                  INC     BITCNT                  ;COUNT UP
 4521  027666  001371                          BNE     18$                     ;NOT FINISHED COUNTING
 4522  027670  005037  003446                  CLR     BITCNT                  ;GET READY TO DO IT AGAIN
 4523  027674  032777  000200  153426  19$:     BIT     #RDY,@RHCS1             ;IS IT SET YET?
 4524  027702  001004                          BNE     3$                      ;YES
 4525  027704  005237  003446                  INC     BITCNT                  ;COUNT UP
 4526  027710  001401                          BEQ     3$                      ;BIT IS NOT GOING TO SET
 4527  027712  000770                          BR      19$
 4528  027714                          3$:
 4529  027714  017737  153410  003420          MOV     @RHCS1,CS1              ;SAVE RHCS1
 4530  027722  017737  153404  003444          MOV     @RHWC,WC                ;SAVE WORD COUNT
 4531  027730  017737  153400  003414          MOV     @RHBA,BA                ;SAVE BUS ADDRESS
 4532  027736  005701                          TST     R1                      ;IS IT AN RH11
 4533  027740  001406                          BEQ     87$                     ;NO IT'S A 70
 4534  027742  005037  003416                  CLR     BAE                     ;CLEAR BAE
 4535  027746  005037  003424                  CLR     CS3                     ;CLEAR CS3
 4536  027752  000137  027772                  JMP     86$                     ;CONTINUE
 4537  027756  017737  153376  003416  87$:     MOV     @RHBAE,BAE              ;SAVE BUS ADDRESS EXTENSION
 4538  027764  017737  153372  003424          MOV     @RHCS3,CS3              ;SAVE RHCS3
 4539  027772  017737  153342  003422  86$:     MOV     @RHCS2,CS2              ;SAVE CS2
 4540  030000  017737  153336  003432          MOV     @RHST,DS1               ;SAVE TESTER STATUS
 4541  030006  017737  153332  003436          MOV     @RHER,ER1               ;SAVE ERROR REGISTER
 4542  030014  017737  153330  003442          MOV     @RHTDB,TDR              ;SAVE TESTER DATA REG.
 4543  030022  017737  153310  003440          MOV     @RHMR2,TC               ;SAVE MR2 TESTER REG.
 4544  030030  032777  000200  153272          BIT     #RDY,@RHCS1             ;IS READY SET
 4545  030036  001003                          BNE     1$                      ;RDY SET CONT. TEST
 4546  030040  104102                          ERROR   102                     ;READY DID NOT SET
 4547  030042  004737  007234                  JSR     R7,WHYFO                ;ANY ERRORS SET
 4548  030046  032777  002000  153306  1$:     BIT     #DBL,@RHCS3             ;IS DOUBLE SET
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 4549  030054  001003                          BNE     2$                      ;DBL SET
 4550  030056  104160                          ERROR   160                     ;DBL DIDN'T SET ON A 2 WORD TRANSFER
 4551  030060  004737  007234                  JSR     R7,WHYFO                ;TELL WHY NOT
 4552  030064  004737  006602          2$:     JSR     R7,CLEER                ;CLEAR ERRORS
 4553  030070  004737  050130                  JSR     R7,ERRTST
 4554                                  ;;*****************************************************************
 4555                                  ;*TEST 44        DBL TEST 3 WORD ODD ADD. WRITE REV
 4556                                          ;*THESE TEST CHECK DBL IN RHCS3 WITHREAD FWD AND REV
 4557                                          ;*WRITE FWD AND REV AND WITH BAI SET IN RHCS2
 4558                                          ;*OPERATION BEING PREFORMED WILL BE PRINTED OUT
 4559                                          ;*IN ERROR MESSAGE.
 4560                                          ;*.................RH70 ONLY.....................
 4561                                  ;;*****************************************************************
 4562  030074  000004                  TST44:  SCOPE
 4563  030076  005701                          TST     R1                      ;IS IN AN RH11
 4564  030100  100532                          BMI     TST45           ;;GET OUT OF TEST
 4565  030102  012777  177775  153222          MOV     #-3,@RHWC               ;SET UP WC FOR THREE WORD
 4566  030110  012777  004002  153216          MOV     #ODDAD,@RHBA            ;SETUP BUS ADDRESS
 4567  030116  012777  000000  153234          MOV     #ZERO,@RHBAE            ;SETUP BUS ADDRESS EXTENSION
 4568  030124  012777  000007  153206          MOV     #7,@RHCS2               ;DEVICE 7
 4569  030132  012777  000067  153170          MOV     #WRITE6,@RHCS1          ;TELL IT TO WRITE6
 4570  030140  005037  003446                  CLR     BITCNT                  ;CLEAR BIT COUNTER
 4571  030144  032777  000200  153156  18$:     BIT     #RDY,@RHCS1             ;IS RDY SET
 4572  030152  001015                          BNE     3$                      ;BIT IS SET
 4573  030154  005237  003446                  INC     BITCNT                  ;COUNT UP
 4574  030160  001371                          BNE     18$                     ;NOT FINISHED COUNTING
 4575  030162  005037  003446                  CLR     BITCNT                  ;GET READY TO DO IT AGAIN
 4576  030166  032777  000200  153134  19$:     BIT     #RDY,@RHCS1             ;IS IT SET YET?
 4577  030174  001004                          BNE     3$                      ;YES
 4578  030176  005237  003446                  INC     BITCNT                  ;COUNT UP
 4579  030202  001401                          BEQ     3$                      ;BIT IS NOT GOING TO SET
 4580  030204  000770                          BR      19$
 4581  030206                          3$:
 4582  030206  017737  153116  003420          MOV     @RHCS1,CS1              ;SAVE RHCS1
 4583  030214  017737  153112  003444          MOV     @RHWC,WC                ;SAVE WORD COUNT
 4584  030222  017737  153106  003414          MOV     @RHBA,BA                ;SAVE BUS ADDRESS
 4585  030230  005701                          TST     R1                      ;IS IT AN RH11
 4586  030232  001406                          BEQ     87$                     ;NO IT'S A 70
 4587  030234  005037  003416                  CLR     BAE                     ;CLEAR BAE
 4588  030240  005037  003424                  CLR     CS3                     ;CLEAR CS3
 4589  030244  000137  030264                  JMP     86$                     ;CONTINUE
 4590  030250  017737  153104  003416  87$:     MOV     @RHBAE,BAE              ;SAVE BUS ADDRESS EXTENSION
 4591  030256  017737  153100  003424          MOV     @RHCS3,CS3              ;SAVE RHCS3
 4592  030264  017737  153050  003422  86$:     MOV     @RHCS2,CS2              ;SAVE CS2
 4593  030272  017737  153044  003432          MOV     @RHST,DS1               ;SAVE TESTER STATUS
 4594  030300  017737  153040  003436          MOV     @RHER,ER1               ;SAVE ERROR REGISTER
 4595  030306  017737  153036  003442          MOV     @RHTDB,TDR              ;SAVE TESTER DATA REG.
 4596  030314  017737  153016  003440          MOV     @RHMR2,TC               ;SAVE MR2 TESTER REG.
 4597  030322  032777  000200  153000          BIT     #RDY,@RHCS1             ;IS READY SET
 4598  030330  001003                          BNE     1$                      ;RDY SET CONT. TEST
 4599  030332  104102                          ERROR   102                     ;READY DID NOT SET
 4600  030334  004737  007234                  JSR     R7,WHYFO                ;ANY ERRORS SET
 4601  030340  032777  002000  153014  1$:     BIT     #DBL,@RHCS3             ;IS DOUBLE SET
 4602  030346  001403                          BEQ     2$                      ;DBL SET
 4603  030350  104161                          ERROR   161                     ;DBL DID SET ON A 3 WORD TRANSFER
 4604  030352  004737  007234                  JSR     R7,WHYFO                ;TELL WHY NOT
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4605  030356  004737  006602          2$:     JSR     R7,CLEER                ;CLEAR ERRORS
4606  030362  004737  050130                  JSR     R7,ERRTST
4607                                  ;;**********************************************************************
4608                                  ;*TEST 45        DBL TEST 2 WORD READ FWD
4609                                          ;*THESE TEST CHECK DBL IN RHCS3 WITHREAD FWD AND REV
4610                                          ;*WRITE FWD AND REV AND WITH BAI SET IN RHCS2
4611                                          ;*OPERATION BEING PREFORMED WILL BE PRINTED OUT
4612                                          ;*IN ERROR MESSAGE.
4613                                          ;*.................RH70 ONLY.........................
4614                                  ;;**********************************************************************
4615  030366  000004                  TST45:  SCOPE
4616  030370  005701                          TST     R1                      ;IS IN AN RH11
4617  030372  100532                          BMI     TST46           ;;GET OUT OF TEST
4618  030374  012777  177776  152730          MOV     #-2,@RHWC               ;SET UP WC FOR TWO WORD
4619  030402  012777  004000  152724          MOV     #EVENAD,@RHBA           ;SETUP BUS ADDRESS
4620  030410  012777  000000  152742          MOV     #ZERO,@RHBAE            ;SETUP BUS ADDRESS EXTENSION
4621  030416  012777  000007  152714          MOV     #7,@RHCS2               ;DEVICE 7
4622  030424  012777  000071  152676          MOV     #READO,@RHCS1           ;TELL IT TO READO
4623  030432  005037  003446                  CLR     BITCNT                  ;CLEAR BIT COUNTER
4624  030436  032777  000200  152664  18$:    BIT     #RDY,@RHCS1             ;IS RDY SET
4625  030444  001015                          BNE     3$                      ;BIT IS SET
4626  030446  005237  003446                  INC     BITCNT                  ;COUNT UP
4627  030452  001371                          BNE     18$                     ;NOT FINISHED COUNTING
4628  030454  005037  003446                  CLR     BITCNT                  ;GET READY TO DO IT AGAIN
4629  030460  032777  000200  152642  19$:    BIT     #RDY,@RHCS1             ;IS IT SET YET?
4630  030466  001004                          BNE     3$                      ;YES
4631  030470  005237  003446                  INC     BITCNT                  ;COUNT UP
4632  030474  001401                          BEQ     3$                      ;BIT IS NOT GOING TO SET
4633  030476  000770                          BR      19$
4634  030500                          3$:
4635  030500  017737  152624  003420          MOV     @RHCS1,CS1              ;SAVE RHCS1
4636  030506  017737  152620  003444          MOV     @RHWC,WC                ;SAVE WORD COUNT
4637  030514  017737  152614  003414          MOV     @RHBA,BA                ;SAVE BUS ADDRESS
4638  030522  005701                          TST     R1                      ;IS IT AN RH11
4639  030524  001406                          BEQ     87$                     ;NO IT'S A 70
4640  030526  005037  003416                  CLR     BAE                     ;CLEAR BAE
4641  030532  005037  003424                  CLR     CS3                     ;CLEAR CS3
4642  030536  000137  030556                  JMP     85$                     ;CONTINUE
4643  030542  017737  152612  003416  87$:    MOV     @RHBAE,BAE              ;SAVE BUS ADDRESS EXTENSION
4644  030550  017737  152606  003424          MOV     @RHCS3,CS3              ;SAVE RHCS3
4645  030556  017737  152556  003422  86$:    MOV     @RHCS2,CS2              ;SAVE CS2
4646  030564  017737  152552  003432          MOV     @RHST,DS1               ;SAVE TESTER STATUS
4647  030572  017737  152546  003436          MOV     @RHER,ER1               ;SAVE ERROR REGISTER
4648  030600  017737  152544  003442          MOV     @RHTDB,TDR              ;SAVE TESTER DATA REG.
4649  030606  017737  152524  003440          MOV     @RHMR2,TC               ;SAVE MR2 TESTER REG.
4650  030614  032777  000200  152506          BIT     #RDY,@RHCS1             ;IS READY SET
4651  030622  001003                          BNE     1$                      ;RDY SET CONT. TEST
4652  030624  104102                          ERROR   102                     ;READY DID NOT SET
4653  030626  004737  007234                  JSR     R7,WHYFO                ;ANY ERRORS SET
4654  030632  032777  002000  152522  1$:     BIT     #DBL,@RHCS3             ;IS DOUBLE SET
4655  030640  001003                          BNE     2$                      ;DBL SET
4656  030642  104162                          ERROR   162                     ;DBL DIDN'T SET ON A 2 WORD TRANSFER
4657  030644  004737  007234                  JSR     R7,WHYFO                ;TELL WHY NOT
4658  030650  004737  006602          2$:     JSR     R7,CLEER                ;CLEAR ERRORS
4659  030654  004737  050130                  JSR     R7,ERRTST
4660                                  ;;**********************************************************************
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                                        ;*TEST 46       DBL TEST 2 WORD ODD ADD. READ FWD
                                                ;*THESE TEST CHECK DBL IN RHCS3 WITHREAD FWD AND REV
                                                ;*WRITE FWD AND REV AND WITH BAI SET IN RHCS2
                                                ;*OPERATION BEING PREFORMED WILL BE PRINTED OUT
                                                :*IN ERROR MESSAGE.
                                                ;*.................RH70 ONLY.....................
                                        ;;**************************************************************
030660  000004                        TST46:  SCOPE
030662  005701                                TST     R1                      ;IS IN AN RH11
030664  100532                                BMI     TST47           ;;GET OUT OF TEST
030666  012777  177776  152436                MOV     #-2,@RHWC               ;SET UP WC FOR TWO WORD
030674  012777  004002  152432                MOV     #ODDAD,@RHBA            ;SETUP BUS ADDRESS
030702  012777  000000  152450                MOV     #ZERO,@RHBAE            ;SETUP BUS ADDRESS EXTENSION
030710  012777  000007  152422                MOV     #7,@RHCS2               ;DEVICE 7
030716  012777  000071  152404                MOV     #READO,@RHCS1           ;TELL IT TO READO
030724  005037  003446                        CLR     BITCNT                  ;CLEAR BIT COUNTER
030730  032777  000200  152372  18$:         BIT     #RDY,@RHCS1             ;IS RDY SET
030736  001015                                BNE     3$                      ;BIT IS SET
030740  005237  003446                        INC     BITCNT                  ;COUNT UP
030744  001371                                BNE     18$                     ;NOT FINISHED COUNTING
030746  005037  003446                        CLR     BITCNT                  ;GET READY TO DO IT AGAIN
030752  032777  000200  152350  19$:         BIT     #RDY,@RHCS1             ;IS IT SET YET?
030760  001004                                BNE     3$                      ;YES
030762  005237  003446                        INC     BITCNT                  ;COUNT UP
030766  001401                                BEQ     3$                      ;BIT IS NOT GOING TO SET
030770  000770                                BR      19$
030772                                3$:
030772  017737  152332  003420                MOV     @RHCS1,CS1              ;SAVE RHCS1
031000  017737  152326  003444                MOV     @RHWC,WC                ;SAVE WORD COUNT
031006  017737  152322  003414                MOV     @RHBA,BA                ;SAVE BUS ADDRESS
031014  005701                                TST     R1                      ;IS IT AN RH11
031016  001406                                BEQ     87$                     ;NO IT'S A 70
031020  005037  003416                        CLR     BAE                     ;CLEAR BAE
031024  005037  003424                        CLR     CS3                     ;CLEAR CS3
031030  000137  031050                        JMP     86$                     ;CONTINUE
031034  017737  152320  003416  87$:         MOV     @RHBAE,BAE              ;SAVE BUS ADDRESS EXTENSION
031042  017737  152314  003424                MOV     @RHCS3,CS3              ;SAVE RHCS3
031050  017737  152264  003422  86$:         MOV     @RHCS2,CS2              ;SAVE CS2
031056  017737  152260  003432                MOV     @RHST,DS1               ;SAVE TESTER STATUS
031064  017737  152254  003436                MOV     @RHER,ER1               ;SAVE ERROR REGISTER
031072  017737  152252  003442                MOV     @RHTDB,TDR              ;SAVE TESTER DATA REG.
031100  017737  152232  003440                MOV     @RHMR2,TC               ;SAVE MR2 TESTER REG.
031106  032777  000200  152214                BIT     #RDY,@RHCS1             ;IS READY SET
031114  001003                                BNE     1$                      ;RDY SET CONT. TEST
031116  104102                                ERROR   102                     ;READY DID NOT SET
031120  004737  007234                        JSR     R7,WHYFO                ;ANY ERRORS SET
031124  032777  002000  152230  1$:          BIT     #DBL,@RHCS3             ;IS DOUBLE SET
031132  001403                                BEQ     2$                      ;DBL SET
031134  104163                                ERROR   163                     ;DBL DID SET ON A 2 WORD TRANSFER
031136  004737  007234                        JSR     R7,WHYFO                ;TELL WHY NOT
031142  004737  006602                2$:     JSR     R7,CLEER                ;CLEAR ERRORS
031146  004737  050130                        JSR     R7,ERRTST
                                        ;;**************************************************************
                                        ;*TEST 47       DBL TEST 2 WORD EVEN ADD. READ REV
                                                ;*THESE TEST CHECK DBL IN RHCS3 WITHREAD FWD AND REV
                                                ;*WRITE FWD AND REV AND WITH BAI SET IN RHCS2
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                                        ;*OPERATION BEING PREFORMED WILL BE PRINTED OUT
                                        ;*IN ERROR MESSAGE.
                                        ;*.....................RH70 ONLY.....................
                                ;;**********************************************************
031152  000004                  TST47:  SCOPE
031154  005701                          TST     R1                      ;IS IN AN RH11
031156  100532                          BMI     TST50           ;;GET OUT OF TEST
031160  012777  177776  152144        MOV     #-2,@RHWC               ;SET UP WC FOR TWO WORD
031166  012777  004000  152140        MOV     #EVENAD,@RHBA           ;SETUP BUS ADDRESS
031174  012777  000000  152156        MOV     #ZERO,@RHBAE            ;SETUP BUS ADDRESS EXTENSION
031202  012777  000007  152130        MOV     #7,@RHCS2               ;DEVICE 7
031210  012777  000077  152112        MOV     #READ6,@RHCS1           ;TELL IT TO READ6
031216  005037  003446                CLR     BITCNT                  ;CLEAR BIT COUNTER
031222  032777  000200  152100  18$:  BIT     #RDY,@RHCS1             ;IS RDY SET
031230  001015                        BNE     3$                      ;BIT IS SET
031232  005237  003446                INC     BITCNT                  ;COUNT UP
031236  001371                        BNE     18$                     ;NOT FINISHED COUNTING
031240  005037  003446                CLR     BITCNT                  ;GET READY TO DO IT AGAIN
031244  032777  000200  152056  19$:  BIT     #RDY,@RHCS1             ;IS IT SET YET?
031252  001004                        BNE     3$                      ;YES
031254  005237  003446                INC     BITCNT                  ;COUNT UP
031260  001401                        BEQ     3$                      ;BIT IS NOT GOING TO SET
031262  000770                        BR      19$
031264                          3$:
031264  017737  152040  003420        MOV     @RHCS1,CS1              ;SAVE RHCS1
031272  017737  152034  003444        MOV     @RHWC,WC                ;SAVE WORD COUNT
031300  017737  152030  003414        MOV     @RHBA,BA                ;SAVE BUS ADDRESS
031306  005701                        TST     R1                      ;IS IT AN RH11
031310  001406                        BEQ     87$                     ;NO IT'S A 70
031312  005037  003416                CLR     BAE                     ;CLEAR BAE
031316  005037  003424                CLR     CS3                     ;CLEAR CS3
031322  000137  031342                JMP     86$                     ;CONTINUE
031326  017737  152026  003416  87$:  MOV     @RHBAE,BAE              ;SAVE BUS ADDRESS EXTENSION
031334  017737  152022  003424        MOV     @RHCS3,CS3              ;SAVE RHCS3
031342  017737  151772  003422  86$:  MOV     @RHCS2,CS2              ;SAVE CS2
031350  017737  151766  003432        MOV     @RHST,DS1               ;SAVE TESTER STATUS
031356  017737  151762  003436        MOV     @RHER,ER1               ;SAVE ERROR REGISTER
031364  017737  151760  003442        MOV     @RHTDB,TDR              ;SAVE TESTER DATA REG.
031372  017737  151740  003440        MOV     @RHMR2,TC               ;SAVE MR2 TESTER REG.
031400  032777  000200  151722        BIT     #RDY,@RHCS1             ;IS READY SET
031406  001003                        BNE     1$                      ;RDY SET CONT. TEST
031410  104102                        ERROR   102                     ;READY DID NOT SET
031412  004737  007234                JSR     R7,WHYFO                ;ANY ERRORS SET
031416  032777  002000  151736  1$:  BIT     #DBL,@RHCS3             ;IS DOUBLE SET
031424  001403                        BEQ     2$                      ;DBL SET
031426  104164                        ERROR   164                     ;DBL DID SET ON A 2 WORD TRANSFER
031430  004737  007234                JSR     R7,WHYFO                ;TELL WHY NOT
031434  004737  006602          2$:   JSR     R7,CLEER                ;CLEAR ERRORS
031440  004737  050130                JSR     R7,ERRTST
                                ;;**********************************************************
                                ;*TEST 50        DBL TEST 2 WORD ODD ADD. READ REV
                                        ;*THESE TEST CHECK DBL IN RHCS3 WITHREAD FWD AND REV
                                        ;*WRITE FWD AND REV AND WITH BAI SET IN RHCS2
                                        ;*OPERATION BEING PREFORMED WILL BE PRINTED OUT
                                        ;*IN ERROR MESSAGE.
                                        ;*.....................RH70 ONLY.....................
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4773                                    ;;*****************************************************************
4774  031444  000004                    TST50:  SCOPE
4775  031446  005701                            TST     R1                      ;IS IN AN RH11
4776  031450  100532                            BMI     TST51           ;;GET OUT OF TEST
4777  031452  012777  177776  151652            MOV     #-2,@RHWC               ;SET UP WC FOR TWO WORD
4778  031460  012777  004002  151646            MOV     #ODDAD,@RHBA            ;SETUP BUS ADDRESS
4779  031466  012777  000000  151664            MOV     #ZERO,@RHBAE            ;SETUP BUS ADDRESS EXTENSION
4780  031474  012777  000007  151636            MOV     #7,@RHCS2               ;DEVICE 7
4781  031502  012777  000077  151620            MOV     #READ6,@RHCS1           ;TELL IT TO READ6
4782  031510  005037  003446                    CLR     BITCNT                  ;CLEAR BIT COUNTER
4783  031514  032777  000200  151606  18$:     BIT     #RDY,@RHCS1             ;IS RDY SET
4784  031522  001015                            BNE     3$                      ;BIT IS SET
4785  031524  005237  003446                    INC     BITCNT                  ;COUNT UP
4786  031530  001371                            BNE     18$                     ;NOT FINISHED COUNTING
4787  031532  005037  003446                    CLR     BITCNT                  ;GET READY TO DO IT AGAIN
4788  031536  032777  000200  151564  19$:     BIT     #RDY,@RHCS1             ;IS IT SET YET?
4789  031544  001004                            BNE     3$                      ;YES
4790  031546  005237  003446                    INC     BITCNT                  ;COUNT UP
4791  031552  001401                            BEQ     3$                      ;BIT IS NOT GOING TO SET
4792  031554  000770                            BR      19$
4793  031556                            3$:
4794  031556  017737  151546  003420            MOV     @RHCS1,CS1              ;SAVE RHCS1
4795  031564  017737  151542  003444            MOV     @RHWC,WC                ;SAVE WORD COUNT
4796  031572  017737  151536  003414            MOV     @RHBA,BA                ;SAVE BUS ADDRESS
4797  031600  005701                            TST     R1                      ;IS IT AN RH11
4798  031602  001406                            BEQ     87$                     ;NO IT'S A 70
4799  031604  005037  003416                    CLR     BAE                     ;CLEAR BAE
4800  031610  005037  003424                    CLR     CS3                     ;CLEAR CS3
4801  031614  000137  031634                    JMP     86$                     ;CONTINUE
4802  031620  017737  151534  003416  87$:     MOV     @RHBAE,BAE              ;SAVE BUS ADDRESS EXTENSION
4803  031626  017737  151530  003424            MOV     @RHCS3,CS3              ;SAVE RHCS3
4804  031634  017737  151500  003422  86$:     MOV     @RHCS2,CS2              ;SAVE CS2
4805  031642  017737  151474  003432            MOV     @RHST,DS1               ;SAVE TESTER STATUS
4806  031650  017737  151470  003436            MOV     @RHER,ER1               ;SAVE ERROR REGISTER
4807  031656  017737  151466  003442            MOV     @RHTDB,TDR              ;SAVE TESTER DATA REG.
4808  031664  017737  151446  003440            MOV     @RHMR2,TC               ;SAVE MR2 TESTER REG.
4809  031672  032777  000200  151430            BIT     #RDY,@RHCS1             ;IS READY SET
4810  031700  001003                            BNE     1$                      ;RDY SET CONT. TEST
4811  031702  104102                            ERROR   102                     ;READY DID NOT SET
4812  031704  004737  007234                    JSR     R7,WHYFO                ;ANY ERRORS SET
4813  031710  032777  002000  151444  1$:      BIT     #DBL,@RHCS3             ;IS DOUBLE SET
4814  031716  001003                            BNE     2$                      ;DBL SET
4815  031720  104165                            ERROR   165                     ;DBL DIDN'T SET ON A 2 WORD TRANSFER
4816  031722  004737  007234                    JSR     R7,WHYFO                ;TELL WHY NOT
4817  031726  004737  006602            2$:     JSR     R7,CLEER                ;CLEAR ERRORS
4818  031732  004737  050130                    JSR     R7,ERRTST
4819                                    ;;*****************************************************************
4820                                    ;*TEST 51        DBL TEST 3 WORD EVEN ADD. READ FWD
4821                                            ;*THESE TEST CHECK DBL IN RHCS3 WITHREAD FWD AND REV
4822                                            ;*WRITE FWD AND REV AND WITH BAI SET IN RHCS2
4823                                            ;*OPERATION BEING PREFORMED WILL BE PRINTED OUT
4824                                            ;*IN ERROR MESSAGE.
4825                                            ;*.................RH70 ONLY.........................
4826                                    ;;*****************************************************************
4827  031736  000004                    TST51:  SCOPE
4828  031740  005701                            TST     R1                      ;IS IN AN RH11
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                                                BMI     TST52           ;;GET OUT OF TEST
                                                MOV     #-3,@RHWC               ;SET UP WC FOR THREE WORD
                                                MOV     #EVENAD,@RHBA           ;SETUP BUS ADDRESS
                                                MOV     #ZERO,@RHBAE            ;SETUP BUS ADDRESS EXTENSION
                                                MOV     #7,@RHCS2               ;DEVICE 7
                                                MOV     #READD,@RHCS1           ;TELL IT TO READD
                                                CLR     BITCNT                  ;CLEAR BIT COUNTER
                                        18$:    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     @RHDB,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$:     BIT     #DBL,@RHCS3             ;IS DOUBLE SET
                                                BEQ     2$                      ;DBL SET
                                                ERROR   166                     ;DBL DID SET ON A 3 WORD TRANSFER
                                                JSR     R7,WHYFO                ;TELL WHY NOT
                                        2$:     JSR     R7,CLEER                ;CLEAR ERRORS
                                                JSR     R7,ERRTST
                                        ;;**************************************************************
                                        ;*TEST 52        DBL TEST 3 WORD EVEN ADD. READ REV
                                                ;*THESE TEST CHECK DBL IN RHCS3 WITHREAD FWD AND REV
                                                ;*WRITE FWD AND REV AND WITH BAI SET IN RHCS2
                                                ;*OPERATION BEING PREFORMED WILL BE PRINTED OUT
                                                ;*IN ERROR MESSAGE.
                                                ;*.................RH70 ONLY.........................
                                        ;;**************************************************************
                                        TST52:  SCOPE
                                                TST     R1                      ;IS IN AN RH11
                                                BMI     TST53           ;;GET OUT OF TEST
                                                MOV     #-3,@RHWC               ;SET UP WC FOR THREE WORD
                                                MOV     #EVENAD,@RHBA           ;SETUP BUS ADDRESS
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 4885  032252  012777  000000  151100          MOV     #ZERO,@RHBAE            ;SETUP BUS ADDRESS EXTENSION
 4886  032260  012777  000007  151052          MOV     #7,@RHCS2               ;DEVICE 7
 4887  032266  012777  000077  151034          MOV     #READ6,@RHCS1           ;TELL IT TO READ6
 4888  032274  005037  003446                  CLR     BITCNT                  ;CLEAR BIT COUNTER
 4889  032300  032777  000200  151022  18$:    BIT     #RDY,@RHCS1             ;IS RDY SET
 4890  032306  001015                          BNE     3$                      ;BIT IS SET
 4891  032310  005237  003446                  INC     BITCNT                  ;COUNT UP
 4892  032314  001371                          BNE     18$                     ;NOT FINISHED COUNTING
 4893  032316  005037  003446                  CLR     BITCNT                  ;GET READY TO DO IT AGAIN
 4894  032322  032777  000200  151000  19$:    BIT     #RDY,@RHCS1             ;IS IT SET YET?
 4895  032330  001004                          BNE     3$                      ;YES
 4896  032332  005237  003446                  INC     BITCNT                  ;COUNT UP
 4897  032336  001401                          BEQ     3$                      ;BIT IS NOT GOING TO SET
 4898  032340  000770                          BR      19$
 4899  032342                          3$:
 4900  032342  017737  150762  003420          MOV     @RHCS1,CS1              ;SAVE RHCS1
 4901  032350  017737  150756  003444          MOV     @RHWC,WC                ;SAVE WORD COUNT
 4902  032356  017737  150752  003414          MOV     @RHBA,BA                ;SAVE BUS ADDRESS
 4903  032364  005701                          TST     R1                      ;IS IT AN RH11
 4904  032366  001406                          BEQ     87$                     ;NO IT'S A 70
 4905  032370  005037  003416                  CLR     BAE                     ;CLEAR BAE
 4906  032374  005037  003424                  CLR     CS3                     ;CLEAR CS3
 4907  032400  000137  032420                  JMP     86$                     ;CONTINUE
 4908  032404  017737  150750  003416  87$:    MOV     @RHBAE,BAE              ;SAVE BUS ADDRESS EXTENSION
 4909  032412  017737  150744  003424          MOV     @RHCS3,CS3              ;SAVE RHCS3
 4910  032420  017737  150714  003422  86$:    MOV     @RHCS2,CS2              ;SAVE CS2
 4911  032426  017737  150710  003432          MOV     @RHST,DS1               ;SAVE TESTER STATUS
 4912  032434  017737  150704  003436          MOV     @RHER,ER1               ;SAVE ERROR REGISTER
 4913  032442  017737  150702  003442          MOV     @RHTDB,TDR              ;SAVE TESTER DATA REG.
 4914  032450  017737  150662  003440          MOV     @RHMR2,TC               ;SAVE MR2 TESTER REG.
 4915  032456  032777  000200  150644          BIT     #RDY,@RHCS1             ;IS READY SET
 4916  032464  001003                          BNE     1$                      ;RDY SET CONT. TEST
 4917  032466  104102                          ERROR   102                     ;READY DID NOT SET
 4918  032470  004737  007234                  JSR     R7,WHYFO                ;ANY ERRORS SET
 4919  032474  032777  002000  150660  1$:     BIT     #DBL,@RHCS3             ;IS DOUBLE SET
 4920  032502  001003                          BNE     2$                      ;DBL SET
 4921  032504  104167                          ERROR   167                     ;DBL DIDN'T SET ON A 3 WORD TRANSFER
 4922  032506  004737  007234                  JSR     R7,WHYFO                ;TELL WHY NOT
 4923  032512  004737  006602          2$:     JSR     R7,CLEER                ;CLEAR ERRORS
 4924  032516  004737  050130                  JSR     R7,ERRTST
 4925                                  ;;*****************************************************************
 4926                                  ;*TEST 53        WCE EW ERROR TEST
 4927                                  ;*THIS TEST CHECKS THAT WCELO WILL SET IN
 4928                                  ;*RHCS3 AND THAT WCE SETS IN RHCS1
 4929                                  ;*IT ALSO CHECKS THAT WCEHI DOES NOT SET
 4930                                  ;*WITH WCELO IN RHCS3.....................
 4931                                  ;*.............RH70 ONLY...................
 4932                                  ;;*****************************************************************
 4933  032522  000004                  TST53:  SCOPE
 4934  032524  012737  000001  001212          MOV     #1,$TIMES       ;;DO 1 ITERATION
 4935  032532  005701                          TST     R1                      ;IS IT AN RH11
 4936  032534  001402                          BEQ     1$                      ;IT'S AN RH70
 4937  032536  000137  033306                  JMP     FANG                    ;IT'S AN RH11, EXIT TEST
 4938  032542  012777  000007  150570  1$:     MOV     #7,@RHCS2               ;SET DEVICE 7
 4939  032550  012777  000000  150602          MOV     #ZERO,@RHBAE            ;SETUP BUS ADDRESS EXT.
 4940  032556  012777  004000  150550          MOV     #EVENAD,@RHBA           ;SETUP BUS ADDRESS
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4941  032564  012777  177776  150540          MOV     #-2,@RHWC               ;FOR TWO WORD TRANSFER
4942  032572  012777  000061  150530          MOV     #WRITEO,@RHCS1          ;TELL IT TO WRITE
4943  032600  005037  003446                  CLR     BITCNT                  ;CLEAR BIT COUNTER
4944  032604  032777  000200  150516  18$:    BIT     #RDY,@RHCS1             ;IS RDY SET
4945  032612  001015                          BNE     MITE                    ;BIT IS SET
4946  032614  005237  003446                  INC     BITCNT                  ;COUNT UP
4947  032620  001371                          BNE     18$                     ;NOT FINISHED COUNTING
4948  032622  005037  003446                  CLR     BITCNT                  ;GET READY TO DO IT AGAIN
4949  032626  032777  000200  150474  19$:    BIT     #RDY,@RHCS1             ;IS IT SET YET?
4950  032634  001004                          BNE     MITE                    ;YES
4951  032636  005237  003446                  INC     BITCNT                  ;COUNT UP
4952  032642  001401                          BEQ     MITE                    ;BIT IS NOT GOING TO SET
4953  032644  000770                          BR      19$
4954  032646                          MITE:
4955  032646  017737  150456  003420          MOV     @RHCS1,CS1              ;SAVE RHCS1
4956  032654  017737  150452  003444          MOV     @RHWC,WC                ;SAVE WORD COUNT
4957  032662  017737  150446  003414          MOV     @RHBA,BA                ;SAVE BUS ADDRESS
4958  032670  005701                          TST     R1                      ;IS IT AN RH11
4959  032672  001406                          BEQ     87$                     ;NO IT'S A 70
4960  032674  005037  003416                  CLR     BAE                     ;CLEAR BAE
4961  032700  005037  003424                  CLR     CS3                     ;CLEAR CS3
4962  032704  000137  032724                  JMP     86$                     ;CONTINUE
4963  032710  017737  150444  003416  87$:    MOV     @RHBAE,BAE              ;SAVE BUS ADDRESS EXTENSION
4964  032716  017737  150440  003424          MOV     @RHCS3,CS3              ;SAVE RHCS3
4965  032724  017737  150410  003422  86$:    MOV     @RHCS2,CS2              ;SAVE CS2
4966  032732  017737  150404  003432          MOV     @RHST,DS1               ;SAVE TESTER STATUS
4967  032740  017737  150400  003436          MOV     @RHER,ER1               ;SAVE ERROR REGISTER
4968  032746  017737  150376  003442          MOV     @RHTDB,TDR              ;SAVE TESTER DATA REG.
4969  032754  017737  150356  003440          MOV     @RHMR2,TC               ;SAVE MR2 TESTER REG.
4970  032762  032777  000200  150340          BIT     #RDY,@RHCS1             ;IS READY SET
4971  032770  001003                          BNE     VOUS                    ;RDY IS SET
4972  032772  104102                          ERROR   102                     ;RDY DID NOT SET
4973  032774  004737  007234                  JSR     R7,WHYFO                ;ANY ERRORS SET
4974  033000  005137  004000          VOUS:   COM     EVENAD                  ;INVERT BITS FOR WCELO
4975  033004  012777  004000  150322          MOV     #EVENAD,@RHBA           ;FIX BUS ADDRESS
4976  033012  012777  177776  150312          MOV     #-2,@RHWC               ;FIX WORD COUNT
4977  033020  012777  000051  150302          MOV     #WRCHO,@RHCS1           ;TELL IT TO WRITE CHECK
4978  033026  005037  003446                  CLR     BITCNT                  ;CLEAR BIT COUNTER
4979  033032  032777  000200  150270  18$:    BIT     #RDY,@RHCS1             ;IS RDY SET
4980  033040  001015                          BNE     FAST                    ;BIT IS SET
4981  033042  005237  003446                  INC     BITCNT                  ;COUNT UP
4982  033046  001371                          BNE     18$                     ;NOT FINISHED COUNTING
4983  033050  005037  003446                  CLR     BITCNT                  ;GET READY TO DO IT AGAIN
4984  033054  032777  000200  150246  19$:    BIT     #RDY,@RHCS1             ;IS IT SET YET?
4985  033062  001004                          BNE     FAST                    ;YES
4986  033064  005237  003446                  INC     BITCNT                  ;COUNT UP
4987  033070  001401                          BEQ     FAST                    ;BIT IS NOT GOING TO SET
4988  033072  000770                          BR      19$
4989  033074                          FAST:
4990  033074  017737  150230  003420          MOV     @RHCS1,CS1              ;SAVE RHCS1
4991  033102  017737  150224  003444          MOV     @RHWC,WC                ;SAVE WORD COUNT
4992  033110  017737  150220  003414          MOV     @RHBA,BA                ;SAVE BUS ADDRESS
4993  033116  005701                          TST     R1                      ;IS IT AN RH11
4994  033120  001406                          BEQ     87$                     ;NO IT'S A 70
4995  033122  005037  003416                  CLR     BAE                     ;CLEAR BAE
4996  033126  005037  003424                  CLR     CS3                     ;CLEAR CS3
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 4997  033132  000137  033152                    JMP     B6$                     ;CONTINUE
 4998  033136  017737  150216  003416  B7$:      MOV     @RHBAE,BAE              ;SAVE BUS ADDRESS EXTENSION
 4999  033144  017737  150212  003424            MOV     @RHCS3,CS3              ;SAVE RHCS3
 5000  033152  017737  150162  003422  B6$:      MOV     @RHCS2,CS2              ;SAVE CS2
 5001  033160  017737  150156  003432            MOV     @RHST,DS1               ;SAVE TESTER STATUS
 5002  033166  017737  150152  003436            MOV     @RHER,ER1               ;SAVE ERROR REGISTER
 5003  033174  017737  150150  003442            MOV     @RHTDB,TDR              ;SAVE TESTER DATA REG.
 5004  033202  017737  150130  003440            MOV     @RHMR2,TC               ;SAVE MR2 TESTER REG.
 5005  033210  032777  000200  150112            BIT     #RDY,@RHCS1             ;IS READY SET
 5006  033216  001003                            BNE     SUPER                   ;RDY IS SET
 5007  033220  104102                            ERROR   102                     ;RDY DID NOT SET
 5008  033222  004737  007234                    JSR     R7,WHYFO                ;ANY ERRORS SET
 5009  033226  032777  004000  150126  SUPER:    BIT     #WCELO,@RHCS3           ;IS WCELO SET
 5010  033234  001006                            BNE     RITEON                  ;WCELO IS SET
 5011  033236  104132                            ERROR   132                     ;WCELO DID NOT SET IN RHCS3
 5012  033240  004737  007234                    JSR     R7,WHYFO                ;ANY ERRORS SET
 5013  033244  105737  001103                    TSTB    SERFLG                  ;WAS THERE AN ERROR
 5014  033250  001005                            BNE     TWANG                   ;YES
 5015  033252  032777  010000  150102  RITEON:   BIT     #WCEHI,@RHCS3           ;IS WCEHI SET
 5016  033260  001406                            BEQ     TWANGY                  ;WCEHI DID NOT SET
 5017  033262  104133                            ERROR   133                     ;WCEHI SET WITH WCELO
 5018  033264  032777  040000  150046  TWANG:    BIT     #WCE,@RHCS2             ;DID WCE SET IN CS2
 5019  033272  001001                            BNE     TWANGY                  ;YES,IT SHOULD BE
 5020  033274  104134                            ERROR   134                     ;WCE DID NOT SET IN RHCS2
 5021  033276  004737  006602            TWANGY: JSR     R7,CLEER                ;CLEAR ERRORS
 5022  033302  004737  050130                    JSR     R7,ERRTST
 5023  033306                            FANG:
 5024                                    ;;**************************************************************
 5025                                    ;*TEST 54       WCE OW ERROR TEST (WCEHI)
 5026                                    ;*THIS TEST CHECKS THAT WCEHI SETS IN RHCS3
 5027                                    ;*AND THAT WCE SETS IN RHCS1 ,IT ALSO TESTS
 5028                                    ;*THAT WCELO DOES NOT SET WITH WCEHI.....
 5029                                    ;*.............RH70 ONLY.....................
 5030                                    ;;**************************************************************
 5031  033306  000004            TST54:  SCOPE
 5032  033310  005701                    TST     R1                              ;IS IT AN 11 OR A 70
 5033  033312  001402                    BEQ     1$                      ;IT'S AN RH70
 5034  033314  000137  034064            JMP     FANGY                   ;IT'S AN RH11, EXIT TEST
 5035  033320  012777  000007  150012  1$:       MOV     #7,@RHCS2               ;SET DEVICE 7
 5036  033326  012777  177776  147776            MOV     #-2,@RHWC               ;TWO WORD TRANSFER
 5037  033334  012777  004000  147772            MOV     #EVENAD,@RHBA           ;SETUP BUS ADDRESS
 5038  033342  013737  004002  004000            MOV     ODDAD,EVENAD                    ;DUP ODDAD
 5039  033350  012777  000061  147752            MOV     #WRITEO,@RHCS1          ;TELL IT TO WRITE
 5040  033356  005037  003446                    CLR     BITCNT                  ;CLEAR BIT COUNTER
 5041  033362  032777  000200  147740  18$:      BIT     #RDY,@RHCS1             ;IS RDY SET
 5042  033370  001015                            BNE     WCEOWT                  ;BIT IS SET
 5043  033372  005237  003446                    INC     BITCNT                  ;COUNT UP
 5044  033376  001371                            BNE     18$                     ;NOT FINISHED COUNTING
 5045  033400  005037  003446                    CLR     BITCNT                  ;GET READY TO DO IT AGAIN
 5046  033404  032777  000200  147716  19$:      BIT     #RDY,@RHCS1             ;IS IT SET YET?
 5047  033412  001004                            BNE     WCEOWT                  ;YES
 5048  033414  005237  003446                    INC     BITCNT                  ;COUNT UP
 5049  033420  001401                            BEQ     WCEOWT                  ;BIT IS NOT GOING TO SET
 5050  033422  000770                            BR      19$
 5051  033424                            WCEOWT:
 5052  033424  017737  147700  003420            MOV     @RHCS1,CS1              ;SAVE RHCS1
```

```
 5053  033432  017737  147674  003444          MOV     @RHWC,WC        ;SAVE WORD COUNT
 5054  033440  017737  147670  003414          MOV     @RHBA,BA        ;SAVE BUS ADDRESS
 5055  033446  005701                          TST     R1              ;IS IT AN RH11
 5056  033450  001406                          BEQ     87$             ;NO IT'S A 70
 5057  033452  005037  003416                  CLR     BAE             ;CLEAR BAE
 5058  033456  005037  003424                  CLR     CS3             ;CLEAR CS3
 5059  033462  000137  033502                  JMP     86$             ;CONTINUE
 5060  033466  017737  147666  003416  87$:    MOV     @RHBAE,BAE      ;SAVE BUS ADDRESS EXTENSION
 5061  033474  017737  147662  003424          MOV     @RHCS3,CS3      ;SAVE RHCS3
 5062  033502  017737  147632  003422  86$:    MOV     @RHCS2,CS2      ;SAVE CS2
 5063  033510  017737  147626  003432          MOV     @RHST,DS1       ;SAVE TESTER STATUS
 5064  033516  017737  147622  003436          MOV     @RHER,ER1       ;SAVE ERROR REGISTER
 5065  033524  017737  147620  003442          MOV     @RHTDB,TDR      ;SAVE TESTER DATA REG.
 5066  033532  017737  147600  003440          MOV     @RHMR2,TC       ;SAVE MR2 TESTER REG.
 5067  033540  032777  000200  147562          BIT     #RDY,@RHCS1     ;IS READY SET
 5068  033546  001003                          BNE     BEAU            ;RDY IS SET
 5069  033550  104102                          ERROR   102             ;RDY DID NOT SET
 5070  033552  004737  007234                  JSR     R7,WHYFO        ;ANY    ERRORS SET
 5071  033556  005137  004002          BEAJ:   COM     ODDAD           ;REVERSE BITS IN ODDAD
 5072  033562  012777  004000  147544          MOV     #EVENAD,@RHBA   ;CORRECT BUS ADDRESS
 5073  033570  012777  177776  147534          MOV     #-2,@RHWC       ;CORRECT WC
 5074  033576  012777  000051  147524          MOV     #WRCHO,@RHCS1   ;TELL IT TO WRITE CHECK
 5075  033604  005037  003446                  CLR     BITCNT          ;CLEAR BIT COUNTER
 5076  033610  032777  000200  147512  19$:    BIT     #RDY,@RHCS1     ;IS RDY SET
 5077  033616  001015                          BNE     WCEERR          ;BIT IS SET
 5078  033620  005237  003446                  INC     BITCNT          ;COUNT UP
 5079  033624  001371                          BNE     18$             ;NOT FINISHED COUNTING
 5080  033626  005037  003446                  CLR     BITCNT          ;GET READY TO DO IT AGAIN
 5081  033632  032777  000200  147470  19$:    BIT     #RDY,@RHCS1     ;IS IT SET YET?
 5082  033640  001004                          BNE     WCEERR          ;YES
 5083  033642  005237  003446                  INC     BITCNT          ;COUNT UP
 5084  033646  001401                          BEQ     WCEERR          ;BIT IS NOT GOING TO SET
 5085  033650  000770                          BR      19$
 5086  033652                          WCEERR:
 5087  033652  017737  147452  003420          MOV     @RHCS1,CS1      ;SAVE RHCS1
 5088  033660  017737  147446  003444          MOV     @RHWC,WC        ;SAVE WORD COUNT
 5089  033666  017737  147442  003414          MOV     @RHBA,BA        ;SAVE BUS ADDRESS
 5090  033674  005701                          TST     R1              ;IS IT AN RH11
 5091  033676  001406                          BEQ     87$             ;NO IT'S A 70
 5092  033700  005037  003416                  CLR     BAE             ;CLEAR BAE
 5093  033704  005037  003424                  CLR     CS3             ;CLEAR CS3
 5094  033710  000137  033730                  JMP     86$             ;CONTINUE
 5095  033714  017737  147440  003416  87$:    MOV     @RHBAE,BAE      ;SAVE BUS ADDRESS EXTENSION
 5096  033722  017737  147434  003424          MOV     @RHCS3,CS3      ;SAVE RHCS3
 5097  033730  017737  147404  003422  86$:    MOV     @RHCS2,CS2      ;SAVE CS2
 5098  033736  017737  147400  003432          MOV     @RHST,DS1       ;SAVE TESTER STATUS
 5099  033744  017737  147374  003436          MOV     @RHER,ER1       ;SAVE ERROR REGISTER
 5100  033752  017737  147372  003442          MOV     @RHTDB,TDR      ;SAVE TESTER DATA REG.
 5101  033760  017737  147352  003440          MOV     @RHMR2,TC       ;SAVE MR2 TESTER REG.
 5102  033766  032777  000200  147334          BIT     #RDY,@RHCS1     ;IS READY SET
 5103  033774  001003                          BNE     ERTIP           ;RDY IS SET
 5104  033776  104102                          ERROR   102             ;RDY DID NOT SET
 5105  034000  004737  007234                  JSR     R7,WHYFO        ;ANY ERRORS SET
 5106  034004  032777  010000  147350  ERTIP:  BIT     #WCEHI,@RHCS3   ;IS WCEHI SET
 5107  034012  001006                          BNE     BUSH            ;WCEHI IS SET
 5108  034014  104135                          ERROR   135             ;WCEHI DID NOT SET IN RHCS3
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MASSBUS RH70 AND RH11 DIAGNOSTIC
22RHBC.P11      754     WCE DW ERROR TEST (WCEHI)

 5109  034016  004737  007234                    JSR     R7,WHYFO                ;ANY OTHER ERRORS SET
 5110  034022  105737  001103                    TSTB    $ERFLG                  ;WAS THERE AN ERROR
 5111  034026  001012                            BNE     LEAGUE                  ;YES
 5112  034030  032777  004000  147324  BUSH:     BIT     #WCELO,@RHCS3           ;IS WCELO SET
 5113  034036  001406                            BEQ     LEAGUE                  ;NO,WCELO IS OK
 5114  034040  104137                            ERROR   137                     ;WCELO SET WITH WCEHI
 5115  034042  032777  040000  147270  LEFOUT:   BIT     #WCE,@RHCS2             ;DID WCE SET
 5116  034050  001001                            BNE     LEAGUE                  ;WCE IS SET IN RHCS2
 5117  034052  104136                            ERROR   136                     ;WCE DID NOT SET IN RHCS2
 5118  034054  004737  006602          LEAGUE:   JSR     R7,CLEER                ;CLEAR ERRORS
 5119  034060  004737  050130                    JSR     R7,ERRTST
 5120  034064                          FANGY:
 5121                                  ;;**********************************************************************
 5122                                  ;*TEST 55        INTERUPT ENABLE TEST
 5123                                          ;*THIS TEST VERIFYS THAT IE WILL SET IN RHCS1
 5124                                          ;*AND IT WILL CAUSE AN INTERUPT WHEN RDY IS SET
 5125                                  ;;**********************************************************************
 5126  034064  000004                  $ST55:    SCOPE
 5127  034066  012777  000007  147244            MOV     #7,@RHCS2               ;SETUP UNIT NUMBER
 5128  034074  012777  004000  147232            MOV     #EVENAD,@RHBA           ;SETUP BUS ADDRESS
 5129  034102  005701                            TST     R1                      ;RH11 OR RH70 ?
 5130  034104  100403                            BMI     READY                   ;ITS AN RH11
 5131  034106  012777  000000  147244            MOV     #ZERO,@RHBAE            ;ZERO THE BAE
 5132  034114  012777  034376  147264  READY:    MOV     #IETST,@VECADD          ;SET UP VECTOR ADDRESS
 5133  034122  012737  000340  177776            MOV     #340,PS                 ;SET PRIORTY 7
 5134  034130  012777  177777  147174            MOV     #-1,@RHWC               ;SET FOR ONE WORD
 5135  034136  012777  000161  147164            MOV     #WRITED!IE,@RHCS1               ;TELL IT TO WRITE
 5136  034144  032777  000100  147156            BIT     #IE,@RHCS1              ;IS IE SET
 5137  034152  001001                            BNE     2$                      ;YES CONTINUE TEST
 5138  034154  104174                            ERROR   174                     ;IE WILL NOT SET
 5139  034156  005037  177776          2$:       CLR     @#177776
 5140  034162  005037  003446                    CLR     BITCNT                  ;CLEAR BIT COUNTER
 5141  034166  032777  000200  147134  18$:      BIT     #RDY,@RHCS1             ;IS RDY SET
 5142  034174  001015                            BNE     TSTIE                   ;BIT IS SET
 5143  034176  005237  003446                    INC     BITCNT                  ;COUNT UP
 5144  034202  001371                            BNE     18$                     ;NOT FINISHED COUNTING
 5145  034204  005037  003446                    CLR     BITCNT                  ;GET READY TO DO IT AGAIN
 5146  034210  032777  000200  147112  19$:      BIT     #RDY,@RHCS1             ;IS IT SET YET?
 5147  034216  001004                            BNE     TSTIE                   ;YES
 5148  034220  005237  003446                    INC     BITCNT                  ;COUNT UP
 5149  034224  001401                            BEQ     TSTIE                   ;BIT IS NOT GOING TO SET
 5150  034226  000770                            BR      19$
 5151  034230                          TSTIE:
 5152  034230  017737  147074  003420            MOV     @RHCS1,CS1              ;SAVE RHCS1
 5153  034236  017737  147070  003444            MOV     @RHWC,WC                ;SAVE WORD COUNT
 5154  034244  017737  147064  003414            MOV     @RHBA,BA                ;SAVE BUS ADDRESS
 5155  034252  005701                            TST     R1                      ;IS IT AN RH11
 5156  034254  001406                            BEQ     87$                     ;NO IT'S A 70
 5157  034256  005037  003416                    CLR     BAE                     ;CLEAR BAE
 5158  034262  005037  003424                    CLR     CS3                     ;CLEAR CS3
 5159  034266  000137  034306                    JMP     86$                     ;CONTINUE
 5160  034272  017737  147062  003416  87$:      MOV     @RHBAE,BAE              ;SAVE BUS ADDRESS EXTENSION
 5161  034300  017737  147056  003424            MOV     @RHCS3,CS3              ;SAVE RHCS3
 5162  034306  017737  147026  003422  86$:      MOV     @RHCS2,CS2              ;SAVE CS2
 5163  034314  017737  147022  003432            MOV     @RHST,DS1               ;SAVE TESTER STATUS
 5164  034322  017737  147016  003436            MOV     @RHER,ER1               ;SAVE ERROR REGISTER
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 5165  034330  017737  147014  003442          MOV     @RHTDB.TDR              ;SAVE TESTER DATA REG.
 5166  034336  017737  146774  003440          MOV     @RHMR2,TC               ;SAVE MR2 TESTER REG.
 5167  034344  032777  000200  146756          BIT     #RDY,@RHCS1             ;IS READY SET ?
 5168  034352  001003                          BNE     1$                      ;YES
 5169  034354  104102                          ERROR   !02                     ;READY DID NOT SET
 5170  034356  000137  034410                  JMP     SPLIT                   ;EXIT TEST
 5171  034362  105737  001103          1$:     TSTB    $ERFLG                  ;WAS IE SET
 5172  034366  001010                          BNE     SPLIT                   ;NO,EXIT TEST
 5173  034370  104173                          ERROR   173                     ;RDY DID NOT CAUSE AN INTERUPT
 5174  034372  000137  034410                  JMP     SPLIT                   ;EXIT TEST
 5175  034376  022626                  IETST:  CMP     (SP)+,(SP)+             ;CORRECT STACK
 5176  034400  105737  001103                  TSTB    $ERFLG                  ;DID IE SET
 5177  034404  001401                          BEQ     SPLIT                   ;YES,EXIT TEST
 5178  034406  104175                          ERROR   175                     ;IE HAS OPEN GOING TO BUS
 5179  034410  004737  006602          SPLIT:  JSR     R7,CLEER                ;CLEAR ERRORS
 5180  034414  004737  050130                  JSR     R7,ERRTST
 5181                                  ;;**************************************************************
 5182                                  ;*TEST 56        READ OPERATIONAL TEST (NORMAL) #1
 5183                                          ;*THESE TESTS VERIFY ALL READ AND WRITE CODES
 5184                                          ;*WHETHER IT BE A READ REV. OR FWD OR A WRITE REV. OR FWD
 5185                                          ;*DURING THESE TESTS THE TESTER TIMING IS MARGINED AND
 5186                                          ;*NO ERRORS SHOULD OCCUR
 5187                                  ;;**************************************************************
 5188  034420  000004                  TST56:  SCOPE
 5189  034422  012777  000007  146710          MOV     #7,@RHCS2               ;SETUP UNIT SEVEN
 5190  034430  012777  177777  146674          MOV     #-1,@RHWC               ;FOR ONE WORD
 5191  034436  012777  004100  146670          MOV     #RBUF,@RHBA             ;SRTUP BA
 5192  034444  012737  000000  004100          MOV     #ZERO,RBUF              ;SETUP DATA
 5193  034452  012777  125252  146670          MOV     #0AB,@RHTDB             ;SETUP TESTER DB
 5194  034460  005701                          TST     R1                      ;IS IT AN 11 OR A 70
 5195  034462  100403                          BMI     1$                      ;IT'S AN RH11
 5196  034464  012777  000000  146666          MOV     #ZERO,@RHBAE            ;ZERO BAE
 5197  034472  012777  000071  146630  1$:     MOV     #READO,@RHCS1           ;TELL IT TO READO
 5198  034500  005037  003446                  CLR     BITCNT                  ;CLEAR BIT COUNTER
 5199  034504  032777  000200  146616  18$:    BIT     #RDY,@RHCS1             ;IS RDY SET
 5200  034512  001015                          BNE     2$                      ;BIT IS SET
 5201  034514  005237  003446                  INC     BITCNT                  ;COUNT UP
 5202  034520  001371                          BNE     18$                     ;NOT FINISHED COUNTING
 5203  034522  005037  003446                  CLR     BITCNT                  ;GET READY TO DO IT AGAIN
 5204  034526  032777  000200  146574  19$:    BIT     #RDY,@RHCS1             ;IS IT SET YET?
 5205  034534  001004                          BNE     2$                      ;YES
 5206  034536  005237  003446                  INC     BITCNT                  ;COUNT UP
 5207  034542  001401                          BEQ     2$                      ;BIT IS NOT GOING TO SET
 5208  034544  000770                          BR      19$
 5209  034546                          2$:
 5210  034546  017737  146556  003420          MOV     @RHCS1,CS1              ;SAVE RHCS1
 5211  034554  017737  146552  003444          MOV     @RHWC,WC                ;SAVE WORD COUNT
 5212  034562  017737  146546  003414          MOV     @RHBA,BA                ;SAVE BUS ADDRESS
 5213  034570  005701                          TST     R1                      ;IS IT AN RH11
 5214  034572  001406                          BEQ     87$                     ;NO IT'S A 70
 5215  034574  005037  003416                  CLR     BAE                     ;CLEAR BAE
 5216  034600  005037  003424                  CLR     CS3                     ;CLEAR CS3
 5217  034604  000137  034624                  JMP     86$                     ;CONTINUE
 5218  034610  017737  146544  003416  87$:    MOV     @RHBAE,BAE              ;SAVE BUS ADDRESS EXTENSION
 5219  034616  017737  146540  003424          MOV     @RHCS3,CS3              ;SAVE RHCS3
 5220  034624  017737  146510  003422  86$:    MOV     @RHCS2,CS2              ;SAVE CS2
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 5221  034632  017737  146504  003432          MOV     @RHST,DS1               ;SAVE TESTER STATUS
 5222  034640  017737  146500  003436          MOV     @RHER,ER1               ;SAVE ERROR REGISTER
 5223  034646  017737  146476  003442          MOV     @RHTDB,TDR              ;SAVE TESTER DATA REG.
 5224  034654  017737  146456  003440          MOV     @RHMR2,TC               ;SAVE MR2 TESTER REG.
 5225  034662  017737  146462  001162          MOV     @RHTDB,$REGD                    ;GET DATA
 5226  034670  032777  000200  146432          BIT     #RDY,@RHCS1             ;IS OR SET
 5227  034676  001003                          BNE     3$                      ;YES RDY IS SET
 5228  034700  104102                          ERROR   102                     ;READY DID NOT SET
 5229  034702  004737  007234                  JSR     R7,WHYFO                ;ARE ANY ERRORS SET
 5230  034706  023777  004100  146434  3$:     CMP     RBUF,@RHTDB             ;DID INFO GET WRITTEN OR READ
 5231  034714  001407                          BEQ     4$                      ;INFO GOT LOADED
 5232  034716  005737  004100                  TST     RBUF                    ;DOES RBUF = 0
 5233  034722  001403                          BEQ     5$                      ;YES INFO DID NOT LOAD
 5234  034724  104147                          ERROR   147                     ;ALL BITS DID NOT LOAD DURING
 5235                                                                          ;AN READO OPERATION
 5236  034726  000137  034734                  JMP     4$                      ;EXIT TEST
 5237  034732  104150                  5$:     ERROR   150                     ;READO OPERATION DID NOT WORK
 5238                                                                          ;NO BITS WHERE LOADED TO RBLF
 5239  034734  004737  007234          4$:     JSR     R7,WHYFO                ;ANY ERRORS SET
 5240  034740  105737  001103                  TSTB    $ERFLG                  ;ANY ERRORS ?
 5241  034744  001402                          BEQ     6$                      ;NO,EXIT TEST
 5242  034746  104146                          ERROR   146                     ;PRINT REGISTERS
 5243  034750  104170                          ERROR   170
 5244  034752  004737  006602          6$:     JSR     R7,CLEER                ;CLEAR ERRORS
 5245  034756  004737  050130                  JSR     R7,ERRTST
 5246                                  ;;**************************************************************
 5247                                  ;*TEST 57        RH OPERATIONAL WRITE TEST #1
 5248                                  ;*THESE TESTS VERIFY ALL READ AND WRITE CODES
 5249                                  ;*WHETHER IT BE A READ REV. OR FWD OR A WRITE REV. OR FWD
 5250                                  ;*DURING THESE TESTS THE TESTER TIMING IS MARGINED AND
 5251                                  ;*NO ERRORS SHOULD OCCUR
 5252                                  ;;**************************************************************
 5253  034762  000004                  TST57:  SCOPE
 5254  034764  012777  000007  146346          MOV     #7,@RHCS2               ;SETUP UNIT SEVEN
 5255  034772  012737  125252  004000          MOV     #0AB,EVENAD             ;SETUP INFORMATION
 5256  035000  012777  000003  146346          MOV     #DMD!MCLK,@RHMR1                ;SETUP DIAG. MODE
 5257  035006  012777  177777  146316          MOV     #-1,@RHWC               ;FOR ONE WORD
 5258  035014  005701                          TST     R1                      ;IS IT A 11 OR 70
 5259  035016  100403                          BMI     1$                      ;IT'S AN 11
 5260  035020  012777  000000  146332          MOV     #ZERO,@RHBAE            ;ZERO BAE
 5261  035026  012777  004000  146300  1$:     MOV     #EVENAD,@RHBA           ;SETUP BA
 5262  035034  012777  000061  146266          MOV     #WRITEO,@RHCS1          ;TELL IT TO WRITETO
 5263  035042  012777  000001  146304          MOV     #DMD,@RHMR1             ;MANIPULATE CLOCK
 5264  035050  005037  003446                  CLR     BITCNT                  ;CLEAR LOOP COUNTER
 5265  035054  005237  003446          2$:     INC     BITCNT                  ;INCREMENT LOOP COUNTER
 5266  035060  022737  000015  003446          CMP     #15,BITCNT              ;IS IT THIRD LOOP FOR 5USEC WAIT
 5267  035066  001372                          BNE     2$                      ;NO LOOP AGAIN
 5268  035070  012777  000003  146256          MOV     #DMD!MCLK,@RHMR1                ;START CHANGING CLOCK
 5269  035076  012777  000001  146250          MOV     #DMD,@RHMR1             ;CHANGE CLOCK AGAIN
 5270  035104  012777  000003  146242          MOV     #DMD!MCLK,@RHMR1                ;CHANGE CLOCK AGAIN
 5271  035112  012777  000001  146234          MOV     #DMD,@RHMR1             ;CHANGE CLOCK AGAIN
 5272  035120  012777  000000  146226          MOV     #ZERO,@RHMR1            ;GET OUT OF DIAG MODE
 5273  035126  005037  003446                  CLR     BITCNT                  ;CLEAR BIT COUNTER
 5274  035132  032777  000200  146170  18$:     BIT     #RDY,@RHCS1             ;IS RDY SET
 5275  035140  001015                          BNE     7$                      ;BIT IS SET
 5276  035142  005237  003446                  INC     BITCNT                  ;COUNT UP
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 5277  035146  001371                                  BNE     18$                     ;NOT FINISHED COUNTING
 5278  035150  005037  003446                          CLR     BITCNT                  ;GET READY TO DO IT AGAIN
 5279  035154  032777  000200  146146  19$:           BIT     #RDY,@RHCS1             ;IS IT SET YET?
 5280  035162  001004                                  BNE     7$                      ;YES
 5281  035164  005237  003446                          INC     BITCNT                  ;COUNT UP
 5282  035170  001401                                  BEQ     7$                      ;BIT IS NOT GOING TO SET
 5283  035172  000770                                  BR      19$
 5284  035174                                  7$:
 5285  035174  017737  146130  003423                  MOV     @RHCS1,CS1              ;SAVE RHCS1
 5286  035202  017737  146124  003444                  MOV     @RHWC,WC                ;SAVE WORD COUNT
 5287  035210  017737  146120  003414                  MOV     @RHBA,BA                ;SAVE BUS ADDRESS
 5288  035216  005701                                  TST     R1                      ;IS IT AN RH11
 5289  035220  001406                                  BEQ     87$                     ;NO IT'S A 70
 5290  035222  005037  003416                          CLR     BAE                     ;CLEAR BAE
 5291  035226  005037  003424                          CLR     CS3                     ;CLEAR CS3
 5292  035232  000137  035252                          JMP     86$                     ;CONTINUE
 5293  035236  017737  146116  003416  87$:           MOV     @RHBAE,BAE              ;SAVE BUS ADDRESS EXTENSION
 5294  035244  017737  146112  003424                  MOV     @RHCS3,CS3              ;SAVE RHCS3
 5295  035252  017737  146062  003422  86$:           MOV     @RHCS2,CS2              ;SAVE CS2
 5296  035260  017737  146056  003432                  MOV     @RHST,DS1               ;SAVE TESTER STATUS
 5297  035266  017737  146052  003436                  MOV     @RHER,ER1               ;SAVE ERROR REGISTER
 5298  035274  017737  146050  003442                  MOV     @RHTDB,TDR              ;SAVE TESTER DATA REG.
 5299  035302  017737  146030  003440                  MOV     @RHMR2,TC               ;SAVE MR2 TESTER REG.
 5300  035310  017737  146034  001162                  MOV     @RHTDB,$REGO                    ;GET DATA
 5301  035316  032777  000200  146004                  BIT     #RDY,@RHCS1             ;IS READY SET
 5302  035324  001001                                  BNE     8$                      ;YES,CONTINUE TEST
 5303  035326  104102                                  ERROR   102                     ;READY DID NOT SET
 5304  035330  022777  177777  145774  8$:           CMP     #-1,@RHWC               ;DID WC INCREMENT
 5305  035336  001001                                  BNE     3$                      ;YES,CONT TEST
 5306  035340  104140                                  ERROR   140                     ;WRITETO OPERATION DID NOT INC WC
 5307  035342  022777  004002  145764  3$:           CMP     #ODDAD,@RHBA            ;DID BA INCREMENT
 5308  035350  001401                                  BEQ     4$                      ;YES CONT TEST
 5309  035352  104141                                  ERROR   141                     ;BA DID NOT INCREMENT AFTER AN WRITETO OPERATION
 5310  035354  023777  004000  145766  4$:           CMP     EVENAD,@RHTDB           ;DID INFO WRITETO TESTER
 5311  035362  001401                                  BEQ     5$                      ;YES,CONT
 5312  035364  104142                                  ERROR   142                     ;INFO DID NOT WRITETO TESTER
 5313  035366  004737  007234          5$:           JSR     R7,WHYFO                ;ARE ANY ERROR BITS SET
 5314  035372  105737  001103                          TSTB    $ERFLG                  ;WAS THER AN ERROR
 5315  035376  001402                                  BEQ     6$                      ;NO EXIT TEST
 5316  035400  104146                                  ERROR   146                     ;THESE ARE THE CONTENTS OF ALL RH70 REG.
 5317  035402  104170                                  ERROR   170                     ;THIS IS TO COMMPLETE ERROR PRINTOUT
 5318  035404  004737  006602          6$:           JSR     R7,CLEER                ;CLEER ERRORS IF ANY
 5319  035410  004737  050130                          JSR     R7,ERRTST
 5320                                          ;;**************************************************************
 5321                                          ;*TEST 60       READ OPERATIONAL TEST (NORMAL) #2
 5322                                                  ;*THESE TESTS VERIFY ALL READ AND WRITE CODES
 5323                                                  ;*WHETHER IT BE A READ REV. OR FWD OR A WRITE REV. OR FWD
 5324                                                  ;*DURING THESE TESTS THE TESTER TIMING IS MARGINED AND
 5325                                                  ;*NO ERRORS SHOULD OCCUR
 5326                                          ;;**************************************************************
 5327  035414  000004                          TST60:  SCOPE
 5328  035416  012777  000007  145714                  MOV     #7,@RHCS2               ;SETUP UNIT SEVEN
 5329  035424  012777  177777  145700                  MOV     #-1,@RHWC               ;FOR ONE WORD
 5330  035432  012777  004100  145674                  MOV     #RBUF,@RHBA             ;SRTUP BA
 5331  035440  012737  000000  004100                  MOV     #ZERO,RBUF              ;SETUP DATA
 5332  035446  012777  125252  145674                  MOV     #OAB,@RHTDB             ;SETUP TESTER DB
```

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5333  035454  005701                          TST     R1              ;IS IT AN 11 OR A 70
5334  035456  100403                          BMI     1$              ;IT'S AN RH11
5335  035460  012777  000000  145672          MOV     #ZERO,@RHBAE    ;ZERO BAE
5336  035466  012777  000073  145634  1$:     MOV     #READ2,@RHCS1   ;TELL IT TO READ2
5337  035474  005037  003446                  CLR     BITCNT          ;CLEAR BIT COUNTER
5338  035500  032777  000200  145622  18$:    BIT     #RDY,@RHCS1     ;IS RDY SET
5339  035506  001015                          BNE     2$              ;BIT IS SET
5340  035510  005237  003446                  INC     BITCNT          ;COUNT UP
5341  035514  001371                          BNE     18$             ;NOT FINISHED COUNTING
5342  035516  005037  003446                  CLR     BITCNT          ;GET READY TO DO IT AGAIN
5343  035522  032777  000200  145600  19$:    BIT     #RDY,@RHCS1     ;IS IT SET YET?
5344  035530  001004                          BNE     2$              ;YES
5345  035532  005237  003446                  INC     BITCNT          ;COUNT UP
5346  035536  001401                          BEQ     2$              ;BIT IS NOT GOING TO SET
5347  035540  000770                          BR      19$
5348  035542                          2$:
5349  035542  017737  145562  003420          MOV     @RHCS1,CS1      ;SAVE RHCS1
5350  035550  017737  145556  003444          MOV     @RHWC,WC        ;SAVE WORD COUNT
5351  035556  017737  145552  003414          MOV     @RHBA,BA        ;SAVE BUS ADDRESS
5352  035564  005701                          TST     R1              ;IS IT AN RH11
5353  035566  001406                          BEQ     87$             ;NO IT'S A 70
5354  035570  005037  003416                  CLR     BAE             ;CLEAR BAE
5355  035574  005037  003424                  CLR     CS3             ;CLEAR CS3
5356  035600  000137  035620                  JMP     86$             ;CONTINUE
5357  035604  017737  145550  003416  87$:    MOV     @RHBAE,BAE      ;SAVE BUS ADDRESS EXTENSION
5358  035612  017737  145544  003424          MOV     @RHCS3,CS3      ;SAVE RHCS3
5359  035620  017737  145514  003422  86$:    MOV     @RHCS2,CS2      ;SAVE CS2
5360  035626  017737  145510  003432          MOV     @RHST,DS1       ;SAVE TESTER STATUS
5361  035634  017737  145504  003436          MOV     @RHER,ER1       ;SAVE ERROR REGISTER
5362  035642  017737  145502  003442          MOV     @RHTDB,TDR      ;SAVE TESTER DATA REG.
5363  035650  017737  145462  003440          MOV     @RHMR2,TC       ;SAVE MR2 TESTER REG.
5364  035656  017737  145466  001162          MOV     @RHTDB,$REGO                    ;GET DATA
5365  035664  032777  000200  145436          BIT     #RDY,@RHCS1     ;IS OR SET
5366  035672  001003                          BNE     3$              ;YES RDY IS SET
5367  035674  104102                          ERROR   102             ;READY DID NOT SET
5368  035676  004737  007234                  JSR     R7,WHYFO        ;ARE ANY ERRORS SET
5369  035702  023777  004100  145440  3$:     CMP     RBUF,@RHTDB     ;DID INFO GET WRITTEN OR READ
5370  035710  001407                          BEQ     4$              ;INFO GOT LOADED
5371  035712  005737  004100                  TST     RBUF            ;DOES RBUF = 0
5372  035716  001403                          BEQ     5$              ;YES INFO DID NOT LOAD
5373  035720  104147                          ERROR   147             ;ALL BITS DID NOT LOAD DURING
5374                                                                  ;AN READ2 OPERATION
5375  035722  000137  035730                  JMP     4$              ;EXIT TEST
5376  035726  104150                  5$:     ERROR   150             ;READ2 OPERATION DID NOT WORK
5377                                                                  ;NO BITS WHERE LOADED TO RBUF
5378  035730  004737  007234          4$:     JSR     R7,WHYFO        ;ANY ERRORS SET
5379  035734  105737  001103                  TSTB    $ERFLG          ;ANY ERRORS ?
5380  035740  001402                          BEQ     6$              ;NO,EXIT TEST
5381  035742  104146                          ERROR   146             ;PRINT REGISTERS
5382  035744  104170                          ERROR   170
5383  035746  004737  006602          6$:     JSR     R7,CLEER        ;CLEAR ERRORS
5384  035752  004737  050130                  JSR     R7,ERRTST
5385                                  ;;*****************************************************************
5386                                  ;*TEST 61        READ OPERATIONAL TEST #1
5387                                          ;*THESE TESTS VERIFY ALL READ AND WRITE CODES
5388                                          ;*WHETHER IT BE A READ REV. OR FWD OR A WRITE REV. OR FWD
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                                                ;*DURING THESE TESTS THE TESTER TIMING IS MARGINED AND
                                                ;*NO ERRORS SHOULD OCCUR
                                        ;;**************************************************************
035756  000004                  TSTE1:  SCOPE
035760  012777  000007  145352          MOV     #7,@RHCS2               ;SETUP UNIT SEVEN
035766  012777  052525  145354          MOV     #AB,@RHTDB              ;SETUP INFORMATION
035774  012777  000003  145352          MOV     #DMD!MCLK,@RHMR1                ;SETUP DIAG. MODE
036002  012777  177777  145322          MOV     #-1,@RHWC               ;FOR ONE WORD
036010  005701                          TST     R1                      ;IS IT A 11 OR 70
036012  100403                          BMI     1$                      ;IT'S AN 11
036014  012777  000000  145336          MOV     #ZERO,@RHBAE            ;ZERO BAE
036022  012777  004000  145304  1$:     MOV     #EVENAD,@RHBA           ;SETUP BA
036030  012777  000071  145272          MOV     #READ0,@RHCS1           ;TELL IT TO READFROM
036036  012777  000001  145310          MOV     #DMD,@RHMR1             ;MANIPULATE CLOCK
036044  005037  003446                  CLR     BITCNT                  ;CLEAR LOOP COUNTER
036050  005237  003446          2$:     INC     BITCNT                  ;INCREMENT LOOP COUNTER
036054  022737  000015  003446          CMP     #15,BITCNT              ;IS IT THIRD LOOP FOR 5USEC WAIT
036062  001372                          BNE     2$                      ;NO LOOP AGAIN
036064  012777  000003  145262          MOV     #DMD!MCLK,@RHMR1                ;START CHANGING CLOCK
036072  012777  000001  145254          MOV     #DMD,@RHMR1             ;CHANGE CLOCK AGAIN
036100  012777  000003  145246          MOV     #DMD!MCLK,@RHMR1                ;CHANGE CLOCK AGAIN
036106  012777  000001  145240          MOV     #DMD,@RHMR1             ;CHANGE CLOCK AGAIN
036114  012777  000000  145232          MOV     #ZERO,@RHMR1            ;GET OUT OF DIAG MODE
036122  005037  003446                  CLR     BITCNT                  ;CLEAR BIT COUNTER
036126  032777  000200  145174  18$:     BIT     #RDY,@RHCS1             ;IS RDY SET
036134  001015                          BNE     7$                      ;BIT IS SET
036136  005237  003446                  INC     BITCNT                  ;COUNT UP
036142  001371                          BNE     18$                     ;NOT FINISHED COUNTING
036144  005037  003446                  CLR     BITCNT                  ;GET READY TO DO IT AGAIN
036150  032777  000200  145152  19$:     BIT     #RDY,@RHCS1             ;IS IT SET YET?
036156  001004                          BNE     7$                      ;YES
036160  005237  003446                  INC     BITCNT                  ;COUNT UP
036164  001401                          BEQ     7$                      ;BIT IS NOT GOING TO SET
036166  000770                          BR      19$
036170                          7$:
036170  017737  145134  003420          MOV     @RHCS1,CS1              ;SAVE RHCS1
036176  017737  145130  003444          MOV     @RHWC,WC                ;SAVE WORD COUNT
036204  017737  145124  003414          MOV     @RHBA,BA                ;SAVE BUS ADDRESS
036212  005701                          TST     R1                      ;IS IT AN RH11
036214  001406                          BEQ     87$                     ;NO IT'S A 70
036216  005037  003416                  CLR     BAE                     ;CLEAR BAE
036222  005037  003424                  CLR     CS3                     ;CLEAR CS3
036226  000137  036246                  JMP     86$                     ;CONTINUE
036232  017737  145122  003416  87$:     MOV     @RHBAE,BAE              ;SAVE BUS ADDRESS EXTENSION
036240  017737  145116  003424          MOV     @RHCS3,CS3              ;SAVE RHCS3
036246  017737  145066  003422  86$:     MOV     @RHCS2,CS2              ;SAVE CS2
036254  017737  145062  003432          MOV     @RHST,DS1               ;SAVE TESTER STATUS
036262  017737  145056  003436          MOV     @RHER,ER1               ;SAVE ERROR REGISTER
036270  017737  145054  003442          MOV     @RHTDB,TDR              ;SAVE TESTER DATA REG.
036276  017737  145034  003440          MOV     @RHMR2,TC               ;SAVE MR2 TESTER REG.
036304  017737  145040  001162          MOV     @RHTDB,$REG0                    ;GET DATA
036312  032777  000200  145010          BIT     #RDY,@RHCS1             ;IS READY SET
036320  001001                          BNE     8$                      ;YES,CONTINUE TEST
036322  104102                          ERROR   102                     ;READY DID NOT SET
036324  022777  177777  145000  8$:     CMP     #-1,@RHWC               ;DID WC INCREMENT
036332  001001                          BNE     3$                      ;YES,CONT TEST
```

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 5445  036334  104143                          ERROR   143                     ;READFROM OPERATION DID NOT INC WC
 5446  036336  022777  004002  144770  3$:     CMP     #ODDAD,@RHBA            ;DID BA INCREMENT
 5447  036344  001401                          BEQ     4$                      ;YES CONT TEST
 5448  036346  104144                          ERROR   144                     ;BA DID NOT INCREMENT AFTER AN READFROM OPERATIO
 5449  036350  023777  004000  144772  4$:     CMP     EVENAD,@RHTDB           ;DID INFO READFROM TESTER
 5450  036356  001401                          BEQ     5$                      ;YES,CONT
 5451  036360  104145                          ERROR   145                     ;INFO DID NOT READFROM TESTER
 5452  036362  004737  007234          5$:     JSR     R7,WHYFO                ;ARE ANY ERROR BITS SET
 5453  036366  105737  001103                  TSTB    $ERFLG                  ;WAS THER AN ERROR
 5454  036372  001402                          BEQ     6$                      ;NO EXIT TEST
 5455  036374  104146                          ERROR   146                     ;THESE ARE THE CONTENTS OF ALL RH70 REG.
 5456  036376  104170                          ERROR   170                     ;THIS IS TO COMMPLETE ERROR PRINTOUT
 5457  036400  004737  006602          6$:     JSR     R7,CLEER                ;CLEER ERRORS IF ANY
 5458  036404  004737  050130                  JSR     R7,ERRTST
 5459                                  ;;*****************************************************************
 5460                                  ;*TEST 62        READ OPERATIONAL TEST (NORMAL) #3
 5461                                          ;*THESE TESTS VERIFY ALL READ AND WRITE CODES
 5462                                          ;*WHETHER IT BE A READ REV. OR FWD OR A WRITE REV. OR FWD
 5463                                          ;*DURING THESE TESTS THE TESTER TIMING IS MARGINED AND
 5464                                          ;*NO ERRORS SHOULD OCCUR
 5465                                  ;;*****************************************************************
 5466  036410  000004                  TST62:  SCOPE
 5467  036412  012777  000007  144720          MOV     #7,@RHCS2               ;SETUP UNIT SEVEN
 5468  036420  012777  177777  144704          MOV     #-1,@RHWC               ;FOR ONE WORD
 5469  036426  012777  004100  144700          MOV     #RBUF,@RHBA             ;SRTUP BA
 5470  036434  012737  000000  004100          MOV     #ZERO,RBUF              ;SETUP DATA
 5471  036442  012777  125252  144700          MOV     #OAB,@RHTDB             ;SETUP TESTER DB
 5472  036450  005701                          TST     R1                      ;IS IT AN 11 OR A 70
 5473  036452  100403                          BMI     1$                      ;IT'S AN RH11
 5474  036454  012777  000000  144676          MOV     #ZERO,@RHBAE            ;ZERO BAE
 5475  036462  012777  000075  144640  1$:     MOV     #READ4,@RHCS1           ;TELL IT TO READ4
 5476  036470  005037  003446                  CLR     BITCNT                  ;CLEAR BIT COUNTER
 5477  036474  032777  000200  144626  18$:    BIT     #RDY,@RHCS1             ;IS RDY SET
 5478  036502  001015                          BNE     2$                      ;BIT IS SET
 5479  036504  005237  003446                  INC     BITCNT                  ;COUNT UP
 5480  036510  001371                          BNE     18$                     ;NOT FINISHED COUNTING
 5481  036512  005037  003446                  CLR     BITCNT                  ;GET READY TO DO IT AGAIN
 5482  036516  032777  000200  144604  19$:    BIT     #RDY,@RHCS1             ;IS IT SET YET?
 5483  036524  001004                          BNE     2$                      ;YES
 5484  036526  005237  003446                  INC     BITCNT                  ;COUNT UP
 5485  036532  001401                          BEQ     2$                      ;BIT IS NOT GOING TO SET
 5486  036534  000770                          BR      19$
 5487  036536                          2$:
 5488  036536  017737  144566  003420          MOV     @RHCS1,CS1              ;SAVE RHCS1
 5489  036544  017737  144562  003444          MOV     @RHWC,WC                ;SAVE WORD COUNT
 5490  036552  017737  144556  003414          MOV     @RHBA,BA                ;SAVE BUS ADDRESS
 5491  036560  005701                          TST     R1                      ;IS IT AN RH11
 5492  036562  001406                          BEQ     87$                     ;NO IT'S A 70
 5493  036564  005037  003416                  CLR     BAE                     ;CLEAR BAE
 5494  036570  005037  003424                  CLR     CS3                     ;CLEAR CS3
 5495  036574  000137  036614                  JMP     86$                     ;CONTINUE
 5496  036600  017737  144554  003416  87$:    MOV     @RHBAE,BAE              ;SAVE BUS ADDRESS EXTENSION
 5497  036606  017737  144550  003424          MOV     @RHCS3,CS3              ;SAVE RHCS3
 5498  036614  017737  144520  003422  86$:    MOV     @RHCS2,CS2              ;SAVE CS2
 5499  036622  017737  144514  003432          MOV     @RHST,DS1               ;SAVE TESTER STATUS
 5500  036630  017737  144510  003436          MOV     @RHER,ER1               ;SAVE ERROR REGISTER
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 5501  036636  017737  144506  003442          MOV     @RHTDB,TDR              ;SAVE TESTER DATA REG.
 5502  036644  017737  144466  003440          MOV     @RHMR2,TC               ;SAVE MR2 TESTER REG.
 5503  036652  017737  144472  001162          MOV     @RHTDB,$REGO                    ;GET DATA
 5504  036660  032777  000200  144442          BIT     #RDY,@RHCS1             ;IS OR SET
 5505  036666  001003                          BNE     3$                      ;YES RDY IS SET
 5506  036670  104102                          ERROR   102                     ;READY DID NOT SET
 5507  036672  004737  007234                  JSR     R7,WHYFO                ;ARE ANY ERRORS SET
 5508  036676  023777  004100  144444  3$:     CMP     RBUF,@RHTDB             ;DID INFO GET WRITTEN OR READ
 5509  036704  001407                          BEQ     4$                      ;INFO GOT LOADED
 5510  036706  005737  004100                  TST     RBUF                    ;DOES RBUF = 0
 5511  036712  001403                          BEQ     5$                      ;YES INFO DID NOT LOAD
 5512  036714  104147                          ERROR   147                     ;ALL BITS DID NOT LOAD DURING
 5513                                                                          ;AN READ OPERATION
 5514  036716  000137  036724                  JMP     4$                      ;EXIT TEST
 5515  036722  104150                  5$:     ERROR   150                     ;READ OPERATION DID NOT WORK
 5516                                                                          ;NO BITS WHERE LOADED TO RBUF
 5517  036724  004737  007234          4$:     JSR     R7,WHYFO                ;ANY ERRORS SET
 5518  036730  105737  001103                  TSTB    $ERFLG                  ;ANY ERRORS ?
 5519  036734  001402                          BEQ     6$                      ;NO,EXIT TEST
 5520  036736  104146                          ERROR   146                     ;PRINT REGISTERS
 5521  036740  104170                          ERROR   170
 5522  036742  004737  006602          6$:     JSR     R7,CLEER                ;CLEAR ERRORS
 5523  036746  004737  050130                  JSR     R7,ERRTST
 5524                                  ;;**************************************************************
 5525                                  ;*TEST 63        RH OPERATIONAL WRITE TEST #2
 5526                                          ;*THESE TESTS VERIFY ALL READ AND WRITE CODES
 5527                                          ;*WHETHER IT BE A READ REV. OR FWD OR A WRITE REV. OR FWD
 5528                                          ;*DURING THESE TESTS THE TESTER TIMING IS MARGINED AND
 5529                                          ;*NO ERRORS SHOULD OCCUR
 5530                                  ;;**************************************************************
 5531  036752  000004                  TST63:  SCOPE
 5532  036754  012777  000007  144356          MOV     #7,@RHCS2               ;SETUP UNIT SEVEN
 5533  036762  012737  125252  004000          MOV     #0AB,EVENAD             ;SETUP INFORMATION
 5534  036770  012777  001003  144356          MOV     #DMD!MCLK!SLKM,@RHMR1           ;SETUP DIAG. MODE
 5535  036776  012777  177777  144326          MOV     #-1,@RHWC               ;FOR ONE WORD
 5536  037004  005701                          TST     R1                      ;IS IT A 11 OR 70
 5537  037006  100403                          BMI     1$                      ;IT'S AN 11
 5538  037010  012777  000000  144342          MOV     #ZERO,@RHBAE            ;ZERO BAE
 5539  037016  012777  004000  144310  1$:     MOV     #EVENAD,@RHBA           ;SETUP BA
 5540  037024  012777  000063  144276          MOV     #WRITE2,@RHCS1          ;TELL IT TO WRITETO
 5541  037032  012777  001001  144314          MOV     #DMD!SLKM,@RHMR1                ;MANIPULATE CLOCK
 5542  037040  005037  003446                  CLR     BITCNT                  ;CLEAR LOOP COUNTER
 5543  037044  005237  003446          2$:     INC     BITCNT                  ;INCREMENT LOOP COUNTER
 5544  037050  022737  000015  003446          CMP     #15,BITCNT              ;IS IT THIRD LOOP FOR 5USEC WAIT
 5545  037056  001372                          BNE     2$                      ;NO LOOP AGAIN
 5546  037060  012777  001003  144266          MOV     #DMD!MCLK!SLKM,@RHMR1           ;START CHANGING CLOCK
 5547  037066  012777  001001  144260          MOV     #DMD!SLKM,@RHMR1                ;CHANGE CLOCK AGAIN
 5548  037074  012777  001003  144252          MOV     #DMD!MCLK!SLKM,@RHMR1           ;CHANGE CLOCK AGAIN
 5549  037102  012777  001001  144244          MOV     #DMD!SLKM,@RHMR1                ;CHANGE CLOCK AGAIN
 5550  037110  012777  000000  144236          MOV     #ZERO,@RHMR1            ;GET OUT OF DIAG MODE
 5551  037116  005037  003446                  CLR     BITCNT                  ;CLEAR BIT COUNTER
 5552  037122  032777  000200  144200  18$:     BIT     #RDY,@RHCS1             ;IS RDY SET
 5553  037130  0010'5                          BNE     7$                      ;BIT IS SET
 5554  037132  005237  003446                  INC     BITCNT                  ;COUNT UP
 5555  037136  001371                          BNE     18$                     ;NOT FINISHED COUNTING
 5556  037140  005037  003446                  CLR     BITCNT                  ;GET READY TO DO IT AGAIN
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005555  037144  032777  000200  144156  19$:    BIT     @RDY,@RHCS1             ;IS IT SET YET?
005556  037152  301004                          BNE     7$                      ;YES
005557  037154  005237  003446                  INC     BITCNT                  ;COUNT UP
005560  037160  001401                          BEQ     7$                      ;BIT IS NOT GOING TO SET
005561  037162  000770                          BR      19$
005562  037164                          7$:
005563  037164  017737  144140  003420          MOV     @RHCS1,CS1              ;SAVE RHCS1
005564  037172  017737  144134  003444          MOV     @RHWC,WC                ;SAVE WORD COUNT
005565  037200  017737  144130  003414          MOV     @RHBA,BA                ;SAVE BUS ADDRESS
005566  037206  005701                          TST     R1                      ;IS IT AN RH11
005567  037210  001406                          BEQ     87$                     ;NO IT'S A 70
005570  037212  005037  003416                  CLR     BAE                     ;CLEAR BAE
005571  037216  005037  003424                  CLR     CS3                     ;CLEAR CS3
005572  037222  000137  037242                  JMP     96$                     ;CONTINUE
005573  037226  017737  144126  003416  87$:    MOV     @RHBAE,BAE              ;SAVE BUS ADDRESS EXTENSION
005574  037234  017737  144122  003424          MOV     @RHCS3,CS3              ;SAVE RHCS3
005575  037242  017737  144072  003422  86$:    MOV     @RHCS2,CS2              ;SAVE CS2
005576  037250  017737  144066  003432          MOV     @RHST,DS1               ;SAVE TESTER STATUS
005577  037256  017737  144062  003436          MOV     @RHER,ER1               ;SAVE ERROR REGISTER
005600  037264  017737  144060  003442          MOV     @RHTDB,TDR              ;SAVE TESTER DATA REG.
005601  037272  017737  144040  003440          MOV     @RHMR2,TC               ;SAVE MR2 TESTER REG.
005602  037300  017737  144044  001162          MOV     @RHTDB,$REGO                    ;GET DATA
005603  037306  032777  000200  144014          BIT     @RDY,@RHCS1             ;IS READY SET
005604  037314  001001                          BNE     8$                      ;YES,CONTINUE TEST
005605  037316  104102                          ERROR   102                     ;READY DID NOT SET
005606  037320  022777  177777  144004  8$:     CMP     #-1,@RHWC               ;DID WC INCREMENT
005607  037326  001001                          BNE     3$                      ;YES,CONT TEST
005610  037330  104140                          ERROR   140                     ;WRITETO OPERATION DID NOT INC WC
005611  037332  022777  004002  143774  3$:     CMP     #ODDAD,@RHBA            ;DID BA INCREMENT
005612  037340  001401                          BEQ     4$                      ;YES CONT TEST
005613  037342  104141                          ERROR   141                     ;BA DID NOT INCREMENT AFTER AN WRITETO OPERATION
005614  037344  023777  004000  143776  4$:     CMP     EVENAD,@RHTDB           ;DID INFO WRITETO TESTER
005615  037352  001401                          BEQ     5$                      ;YES,CONT
005616  037354  104142                          ERROR   142                     ;INFO DID NOT WRITETO TESTER
005617  037356  004737  007234          5$:     JSR     R7,WHYFO                ;ARE ANY ERROR BITS SET
005620  037362  105737  001103                  TSTB    $ERPFLG                 ;WAS THER AN ERROR
005621  037366  001402                          BEQ     6$                      ;NO EXIT TEST
005622  037370  104146                          ERROR   146                     ;THESE ARE THE CONTENTS OF ALL RH70 REG.
005623  037372  104170                          ERROR   170                     ;THIS IS TO COMMPLETE ERROR PRINTOUT
005624  037374  004737  006602          6$:     JSR     R7,CLEER                ;CLEER ERRORS IF ANY
005625  037400  004737  050130                  JSR     R7,ERRTST
005626                          ;;**************************************************************
005627                          ;*TEST 64        READ OPERATIONAL TEST (NORMAL) #4
005630                          ;*THESE TESTS VERIFY ALL READ AND WRITE CODES
005631                          ;*WHETHER IT BE A READ REV. OR FWD OR A WRITE REV. OR FWD
005632                          ;*DURING THESE TESTS THE TESTER TIMING IS MARGINED AND
005633                          ;*NO ERRORS SHOULD OCCUR
005634                          ;;**************************************************************
005635  037404  000004          TST64:  SCOPE
005636  037406  012777  000007  143724          MOV     #7,@RHCS2               ;SETUP UNIT SEVEN
005637  037414  012777  177777  143710          MOV     #-1,@RHWC               ;FOR ONE WORD
005640  037422  012777  004100  143704          MOV     #RBUF,@RHBA             ;SETUP BA
005641  037430  012737  000000  004100          MOV     #ZERO,RBUF              ;SETUP DATA
005642  037436  012777  125252  143704          MOV     #OAB,@RHTDB             ;SETUP TESTER DB
005643  037444  005701                          TST     R1                      ;IS IT AN 11 OR A 70
005644  037446  100403                          BMI     1$                      ;IT'S AN RH11
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5613  037450  012777  000000  143702          MOV     #ZERO,@RHBAE            ;ZERO BAE
5614  037456  012777  000077  143644  1$:     MOV     #READ6,@RHCS1           ;TELL IT TO READ6
5615  037464  005037  003446                  CLR     BITCNT                  ;CLEAR BIT COUNTER
5616  037470  032777  000200  143632  18$:    BIT     #RDY,@RHCS1             ;IS RDY SET
5617  037476  001015                          BNE     2$                      ;BIT IS SET
5618  037500  005237  003446                  INC     BITCNT                  ;COUNT UP
5619  037504  001371                          BNE     18$                     ;NOT FINISHED COUNTING
5620  037506  005037  003446                  CLR     BITCNT                  ;GET READY TO DO IT AGAIN
5621  037512  032777  000200  143610  19$:    BIT     #RDY,@RHCS1             ;IS IT SET YET?
5622  037520  001004                          BNE     2$                      ;YES
5623  037522  005237  003446                  INC     BITCNT                  ;COUNT UP
5624  037526  001401                          BEQ     2$                      ;BIT IS NOT GOING TO SET
5625  037530  000770                          BR      19$
5626  037532                          2$:
5627  037532  017737  143572  003420          MOV     @RHCS1,CS1              ;SAVE RHCS1
5628  037540  017737  143566  003444          MOV     @RHWC,WC                ;SAVE WORD COUNT
5629  037546  017737  143562  003414          MOV     @RHBA,BA                ;SAVE BUS ADDRESS
5630  037554  005701                          TST     R1                      ;IS IT AN RH11
5631  037556  001406                          BEQ     87$                     ;NO IT'S A 70
5632  037560  005037  003416                  CLR     BAE                     ;CLEAR BAE
5633  037564  005037  003424                  CLR     CS3                     ;CLEAR CS3
5634  037570  000137  037610                  JMP     86$                     ;CONTINUE
5635  037574  017737  143560  003416  87$:    MOV     @RHBAE,BAE              ;SAVE BUS ADDRESS EXTENSION
5636  037602  017737  143554  003424          MOV     @RHCS3,CS3              ;SAVE RHCS3
5637  037610  017737  143524  003422  86$:    MOV     @RHCS2,CS2              ;SAVE CS2
5638  037616  017737  143520  003432          MOV     @RHST,DS1               ;SAVE TESTER STATUS
5639  037624  017737  143514  003436          MOV     @RHER,ER1               ;SAVE ERROR REGISTER
5640  037632  017737  143512  003442          MOV     @RHTDB,TDR              ;SAVE TESTER DATA REG.
5641  037640  017737  143472  003440          MOV     @RHMR2,TC               ;SAVE MR2 TESTER REG.
5642  037646  017737  143476  001162          MOV     @RHTDB,$REG0                    ;GET DATA
5643  037654  032777  000200  143446          BIT     #RDY,@RHCS1             ;IS OR SET
5644  037662  001003                          BNE     3$                      ;YES RDY IS SET
5645  037664  104102                          ERROR   102                     ;READY DID NOT SET
5646  037666  004737  007234                  JSR     R7,WHYFO                ;ARE ANY ERRORS SET
5647  037672  023777  004100  143450  3$:     CMP     RBUF,@RHTDB             ;DID INFO GET WRITTEN OR READ
5648  037700  001407                          BEQ     4$                      ;INFO GOT LOADED
5649  037702  005737  004100                  TST     RBUF                    ;DOES RBUF = 0
5650  037706  001403                          BEQ     5$                      ;YES INFO DID NOT LOAD
5651  037710  104115                          ERROR   115                     ;ALL BITS DID NOT LOAD DURING
5652                                                                          ;AN READ6 OPERATION
5653  037712  000137  037720                  JMP     4$                      ;EXIT TEST
5654  037716  104107                  5$:     ERROR   107                     ;READ6 OPERATION DID NOT WORK
5655                                                                          ;NO BITS WHERE LOADED TO RBUF
5656  037720  004737  007234          4$:     JSR     R7,WHYFO                ;ANY ERRORS SET
5657  037724  105737  001103                  TSTB    $ERFLG                  ;ANY ERRORS ?
5658  037730  001402                          BEQ     6$                      ;NO,EXIT TEST
5659  037732  104146                          ERROR   146                     ;PRINT REGISTERS
5660  037734  104170                          ERROR   170
5661  037736  004737  006602          6$:     JSR     R7,CLEER                ;CLEAR ERRORS
5662  037742  004737  050130                  JSR     R7,ERRTST
5663                                  ;;*****************************************************************
5664                                  ;*TEST 65        RH OPERATIONAL READ TEST #2
5665                                          ;*THESE TESTS VERIFY ALL READ AND WRITE CODES
5666                                          ;*WHETHER IT BE A READ REV. OR FWD OR A WRITE REV. OR FWD
5667                                          ;*DURING THESE TESTS THE TESTER TIMING IS MARGINED AND
5668                                          ;*NO ERRORS SHOULD OCCUR
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 5669                                                ;;*****************************************************************
 5670  037746  000004                          TST65: SCOPE
 5671  037750  012777  000007  143362                 MOV     #7,@RHCS2               ;SETUP UNIT SEVEN
 5672  037756  012777  052525  143364                 MOV     #AB,@RHTDB              ;SETUP INFORMATION
 5673  037764  012777  001003  143362                 MOV     #DMD!MCLK!SLKM,@RHMR1           ;SETUP DIAG. MODE
 5674  037772  012777  177777  143332                 MOV     #-1,@RHWC               ;FOR ONE WORD
 5675  040000  005701                                 TST     R1                      ;IS IT A 11 OR 70
 5676  040002  100403                                 BMI     1$                      ;IT'S AN 11
 5677  040004  012777  000000  143346                 MOV     #ZERO,@RHBAE            ;ZERO BAE
 5678  040012  012777  004000  143314  1$:            MOV     #EVENAD,@RHBA           ;SETUP BA
 5679  040020  012777  000073  143302                 MOV     #READ2,@RHCS1           ;TELL IT TO READFROM
 5680  040026  012777  001001  143320                 MOV     #DMD!SLKM,@RHMR1                ;MANIPULATE CLOCK
 5681  040034  005037  003446                         CLR     BITCNT                  ;CLEAR LOOP COUNTER
 5682  040040  005237  003446                 2$:     INC     BITCNT                  ;INCREMENT LOOP COUNTER
 5683  040044  022737  000015  003446                 CMP     #15,BITCNT              ;IS IT THIRD LOOP FOR 5USEC WAIT
 5684  040052  001372                                 BNE     2$                      ;NO LOOP AGAIN
 5685  040054  012777  001003  143272                 MOV     #DMD!MCLK!SLKM,@RHMR1           ;START CHANGING CLOCK
 5686  040062  012777  001001  143264                 MOV     #DMD!SLKM,@RHMR1                ;CHANGE CLOCK AGAIN
 5687  040070  012777  001003  143256                 MOV     #DMD!MCLK!SLKM,@RHMR1           ;CHANGE CLOCK AGAIN
 5688  040076  012777  001001  143250                 MOV     #DMD!SLKM,@RHMR1                ;CHANGE CLOCK AGAIN
 5689  040104  012777  000000  143242                 MOV     #ZERO,@RHMR1            ;GET OUT OF DIAG MODE
 5690  040112  005037  003446                         CLR     BITCNT                  ;CLEAR BIT COUNTER
 5691  040116  032777  000200  143204  18$:          BIT     #RDY,@RHCS1             ;IS RDY SET
 5692  040124  001015                                 BNE     7$                      ;BIT IS SET
 5693  040126  005237  003446                         INC     BITCNT                  ;COUNT UP
 5694  040132  001371                                 BNE     18$                     ;NOT FINISHED COUNTING
 5695  040134  005037  003446                         CLR     BITCNT                  ;GET READY TO DO IT AGAIN
 5696  040140  032777  000200  143162  19$:          BIT     #RDY,@RHCS1             ;IS IT SET YET?
 5697  040146  001004                                 BNE     7$                      ;YES
 5698  040150  005237  003446                         INC     BITCNT                  ;COUNT UP
 5699  040154  001401                                 BEQ     7$                      ;BIT IS NOT GOING TO SET
 5700  040156  000770                                 BR      19$
 5701  040160                                  7$:
 5702  040160  017737  143144  003420                 MOV     @RHCS1,CS1              ;SAVE RHCS1
 5703  040166  017737  143140  003444                 MOV     @RHWC,WC                ;SAVE WORD COUNT
 5704  040174  017737  143134  003414                 MOV     @RHBA,BA                ;SAVE BUS ADDRESS
 5705  040202  005701                                 TST     R1                      ;IS IT AN RH11
 5706  040204  001406                                 BEQ     87$                     ;NO IT'S A 70
 5707  040206  005037  003416                         CLR     BAE                     ;CLEAR BAE
 5708  040212  005037  003424                         CLR     CS3                     ;CLEAR CS3
 5709  040216  000137  040236                         JMP     86$                     ;CONTINUE
 5710  040222  017737  143132  003416  87$:          MOV     @RHBAE,BAE              ;SAVE BUS ADDRESS EXTENSION
 5711  040230  017737  143126  003424                 MOV     @RHCS3,CS3              ;SAVE RHCS3
 5712  040236  017737  143076  003422  86$:          MOV     @RHCS2,CS2              ;SAVE CS2
 5713  040244  017737  143072  003432                 MOV     @RHST,DS1               ;SAVE TESTER STATUS
 5714  040252  017737  143066  003436                 MOV     @RHER,ER1               ;SAVE ERROR REGISTER
 5715  040260  017737  143064  003442                 MOV     @RHTDB,TDR              ;SAVE TESTER DATA REG.
 5716  040266  017737  143044  003440                 MOV     @RHMR2,TC               ;SAVE MR2 TESTER REG.
 5717  040274  017737  143050  001162                 MOV     @RHTDB,$REG0                    ;GET DATA
 5718  040302  032777  000200  143020                 BIT     #RDY,@RHCS1             ;IS READY SET
 5719  040310  001001                                 BNE     8$                      ;YES,CONTINUE TEST
 5720  040312  104102                                 ERROR   102                     ;READY DID NOT SET
 5721  040314  022777  177777  143010  8$:           CMP     #-1,@RHWC               ;DID WC INCREMENT
 5722  040322  001001                                 BNE     3$                      ;YES,CONT TEST
 5723  040324  104143                                 ERROR   143                     ;READFROM OPERATION DID NOT INC WC
 5724  040326  022777  004002  143000  3$:           CMP     #ODDAD,@RH3A            ;DID BA INCREMENT
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                                                BEQ     4$                      ;YES CONT TEST
                                                ERROR   144                     ;BA DID NOT INCREMENT AFTER AN READFROM OPERATIO
005727  040340  023777  004000  143002  4$:     CMP     EVENAD,@RHTDB           ;DID INFC READFROM TESTER
005728  040346  001401                          BEQ     5$                      ;YES,CONT
005729  040350  104145                          ERROR   145                     ;INFO DID NOT READFROM TESTER
005730  040352  004737  007234          5$:     JSR     R7,WHYFO                ;ARE ANY ERROR BITS SET
005731  040356  105737  001103                  TSTB    $ERFLG                  ;WAS THER AN ERROR
005732  040362  001402                          BEQ     6$                      ;NO EXIT TEST
005733  040364  104146                          ERROR   146                     ;THESE ARE THE CONTENTS OF ALL RH70 REG.
005734  040366  104170                          ERROR   170                     ;THIS IS TO COMMPLETE ERROR PRINTOUT
005735  040370  004737  006602          6$:     JSR     R7,CLEER                ;CLEER ERRORS IF ANY
005736  040374  004737  050130                  JSR     R7,ERRTST
005737                                          ;;*****************************************************************
005738                                          ;*TEST 66        WRITE OPERATIONAL TEST (NORMAL) #1
005739                                                  ;*THESE TESTS VERIFY ALL READ AND WRITE CODES
005740                                                  ;*WHETHER IT BE A READ REV. OR FWD OR A WRITE REV. OR FWD
005741                                                  ;*DURING THESE TESTS THE TESTER TIMING IS MARGINED AND
005742                                                  ;*NO ERRORS SHOULD OCCUR
005743                                          ;;*****************************************************************
005744  040400  000004                  TST66:  SCOPE
005745  040402  012777  000007  142730          MOV     #7,@RHCS2               ;SETUP UNIT SEVEN
005746  040410  012777  177777  142714          MOV     #-1,@RHWC               ;FOR ONE WORD
005747  040416  012777  004100  142710          MOV     #RBUF,@RHBA             ;SRTUP BA
005748  040424  012737  125252  004100          MOV     #0AB,RBUF               ;SETUP DATA
005749  040432  012777  000000  142710          MOV     #ZERO,@RHTDB            ;SETUP TESTER DB
005750  040440  005701                          TST     R1                      ;IS IT AN 11 OR A 70
005751  040442  100403                          BMI     1$                      ;IT'S AN RH11
005752  040444  012777  000000  142706          MOV     #ZERO,@RHBAE            ;ZERO BAE
005753  040452  012777  000061  142650  1$:     MOV     #WRITE0,@RHCS1          ;TELL IT TO WRITE0
005754  040460  005037  003446                  CLR     BITCNT                  ;CLEAR BIT COUNTER
005755  040464  032777  000200  142636  18$:    BIT     #RDY,@RHCS1             ;IS RDY SET
005756  040472  001015                          BNE     2$                      ;BIT IS SET
005757  040474  005237  003446                  INC     BITCNT                  ;COUNT UP
005758  040500  001371                          BNE     18$                     ;NOT FINISHED COUNTING
005759  040502  005037  003446                  CLR     BITCNT                  ;GET READY TO DO IT AGAIN
005760  040506  032777  000200  142614  19$:    BIT     #RDY,@RHCS1             ;IS IT SET YET?
005761  040514  001004                          BNE     2$                      ;YES
005762  040516  005237  003446                  INC     BITCNT                  ;COUNT UP
005763  040522  001401                          BEQ     2$                      ;BIT IS NOT GOING TO SET
005764  040524  000770                          BR      19$
005765  040526                          2$:
005766  040526  017737  142576  003420          MOV     @RHCS1,CS1              ;SAVE RHCS1
005767  040534  017737  142572  003444          MOV     @RHWC,WC                ;SAVE WORD COUNT
005768  040542  017737  142566  003414          MOV     @RHBA,BA                ;SAVE BUS ADDRESS
005769  040550  005701                          TST     R1                      ;IS IT AN RH11
005770  040552  001406                          BEQ     87$                     ;NO IT'S A 70
005771  040554  005037  003416                  CLR     BAE                     ;CLEAR BAE
005772  040560  005037  003424                  CLR     CS3                     ;CLEAR CS3
005773  040564  000137  040604                  JMP     86$                     ;CONTINUE
005774  040570  017737  142564  003416  87$:    MOV     @RHBAE,BAE              ;SAVE BUS ADDRESS EXTENSION
005775  040576  017737  142560  003424          MOV     @RHCS3,CS3              ;SAVE RHCS3
005776  040604  017737  142530  003422  86$:    MOV     @RHCS2,CS2              ;SAVE CS2
005777  040612  017737  142524  003432          MOV     @RHST,DS1               ;SAVE TESTER STATUS
005778  040620  017737  142520  003436          MOV     @RHER,ER1               ;SAVE ERROR REGISTER
005779  040626  017737  142516  003442          MOV     @RHTDB,TDR              ;SAVE TESTER DATA REG.
005780  040634  017737  142476  003440          MOV     @RHMR2,TC               ;SAVE MR2 TESTER REG.
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 5781  040642  017737  142502  001162          MOV     @RHTDB,$REG0                    ;GET DATA
 5782  040650  032777  000200  142452          BIT     #RDY,@RHCS1             ;IS OR SET
 5783  040656  001003                          BNE     3$                      ;YES RDY IS SET
 5784  040660  104102                          ERROR   102                     ;READY DID NOT SET
 5785  040662  004737  007234                  JSR     R7,WHYFO                ;ARE ANY ERRORS SET
 5786  040666  023777  004100  142454  3$:     CMP     RBUF,@RHTDB             ;DID INFO GET WRITTEN OR READ
 5787  040674  001407                          BEQ     4$                      ;INFO GOT LOADED
 5788  040676  005777  142446                  TST     @RHTDB                  ;DOES @RHTDB = 0
 5789  040702  001403                          BEQ     5$                      ;YES INFO DID NOT LOAD
 5790  040704  104151                          ERROR   151                     ;ALL BITS DID NOT LOAD DURING
 5791                                                                          ;AN WRITEO OPERATION
 5792  040706  000137  040714                  JMP     4$                      ;EXIT TEST
 5793  040712  104152                  5$:     ERROR   152                     ;WRITEO OPERATION DID NOT WORK
 5794                                                                          ;NO BITS WHERE LOADED TO @RHTDB
 5795  040714  004737  007234          4$:     JSR     R7,WHYFO                ;ANY ERRORS SET
 5796  040720  105737  001103                  TSTB    $ERFLG                  ;ANY ERRORS ?
 5797  040724  001402                          BEQ     6$                      ;NO,EXIT TEST
 5798  040726  104146                          ERROR   146                     ;PRINT REGISTERS
 5799  040730  104170                          ERROR   170
 5800  040732  004737  006602          6$:     JSR     R7,CLEER                ;CLEAR ERRORS
 5801  040736  004737  050130                  JSR     R7,ERRTST
 5802                                  ;;*****************************************************************
 5803                                  ;*TEST 67        RH OPERATIONAL WRITE TEST #3
 5804                                          ;*THESE TESTS VERIFY ALL READ AND WRITE CODES
 5805                                          ;*WHETHER IT BE A READ REV. OR FWD OR A WRITE REV. OR FWD
 5806                                          ;*DURING THESE TESTS THE TESTER TIMING IS MARGINED AND
 5807                                          ;*NO ERRORS SHOULD OCCUR
 5808                                  ;;*****************************************************************
 5809  040742  000004                  TST67:  SCOPE
 5810  040744  012777  000007  142366          MOV     #7,@RHCS2               ;SETUP UNIT SEVEN
 5811  040752  012737  125252  004000          MOV     #0AB,EVENAD             ;SETUP INFORMATION
 5812  040760  012777  003003  142366          MOV     #DMD!MCLK!SLKM!ISLK,@RHMR1              ;SETUP DIAG. MODE
 5813  040766  012777  177777  142336          MOV     #-1,@RHWC               ;FOR ONE WORD
 5814  040774  005701                          TST     R1                      ;IS IT A 11 OR 70
 5815  040776  100403                          BMI     1$                      ;IT'S AN 11
 5816  041000  012777  000000  142352          MOV     #ZERO,@RHBAE            ;ZERO BAE
 5817  041006  012777  004000  142320  1$:     MOV     #EVENAD,@RHBA           ;SETUP BA
 5818  041014  012777  000065  142306          MOV     #WRITE4,@RHCS1          ;TELL IT TO WRITETO
 5819  041022  012777  003001  142324          MOV     #DMD!SLKM!ISLK,@RHMR1           ;MANIPULATE CLOCK
 5820  041030  005037  003446                  CLR     BITCNT                  ;CLEAR LOOP COUNTER
 5821  041034  005237  003446          2$:     INC     BITCNT                  ;INCREMENT LOOP COUNTER
 5822  041040  022737  000015  003446          CMP     #15,BITCNT              ;IS IT THIRD LOOP FOR 5USEC WAIT
 5823  041046  001372                          BNE     2$                      ;NO LOOP AGAIN
 5824  041050  012777  003003  142276          MOV     #DMD!MCLK!SLKM!ISLK,@RHMR1              ;START CHANGING CLOCK
 5825  041056  012777  003001  142270          MOV     #DMD!SLKM!ISLK,@RHMR1           ;CHANGE CLOCK AGAIN
 5826  041064  012777  003003  142262          MOV     #DMD!MCLK!SLKM!ISLK,@RHMR1              ;CHANGE CLOCK AGAIN
 5827  041072  012777  003001  142254          MOV     #DMD!SLKM!ISLK,@RHMR1           ;CHANGE CLOCK AGAIN
 5828  041100  012777  000000  142246          MOV     #ZERO,@RHMR1            ;GET OUT OF DIAG MODE
 5829  041106  005037  003446                  CLR     BITCNT                  ;CLEAR BIT COUNTER
 5830  041112  032777  000200  142210  18$:     BIT     #RDY,@RHCS1             ;IS RDY SET
 5831  041120  001015                          BNE     7$                      ;BIT IS SET
 5832  041122  005237  003446                  INC     BITCNT                  ;COUNT UP
 5833  041126  001371                          BNE     18$                     ;NOT FINISHED COUNTING
 5834  041130  005037  003446                  CLR     BITCNT                  ;GET READY TO DO IT AGAIN
 5835  041134  032777  000200  142166  19$:     BIT     #RDY,@RHCS1             ;IS IT SET YET?
 5836  041142  001004                          BNE     7$                      ;YES
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 5837  041144  005237  003446                    INC     BITCNT                  ;COUNT UP
 5838  041150  001401                            BEQ     7$                      ;BIT IS NOT GOING TO SET
 5839  041152  000770                            BR      19$
 5840  041154                          7$:
 5841  041154  017737  142150  003420            MOV     @RHCS1,CS1              ;SAVE RHCS1
 5842  041162  017737  142144  003444            MOV     @RHWC,WC                ;SAVE WORD COUNT
 5843  041170  017737  142140  003414            MOV     @RHBA,BA                ;SAVE BUS ADDRESS
 5844  041176  005701                            TST     R1                      ;IS IT AN RH11
 5845  041200  001406                            BEQ     87$                     ;NO IT'S A 70
 5846  041202  005037  003416                    CLR     BAE                     ;CLEAR BAE
 5847  041206  005037  003424                    CLR     CS3                     ;CLEAR CS3
 5848  041212  000137  041232                    JMP     86$                     ;CONTINUE
 5849  041216  017737  142136  003416  87$:      MOV     @RHBAE,BAE              ;SAVE BUS ADDRESS EXTENSION
 5850  041224  017737  142132  003424            MOV     @RHCS3,CS3              ;SAVE RHCS3
 5851  041232  017737  142102  003422  86$:      MOV     @RHCS2,CS2              ;SAVE CS2
 5852  041240  017737  142076  003432            MOV     @RHST,DS1               ;SAVE TESTER STATUS
 5853  041246  017737  142072  003436            MOV     @RHER,ER1               ;SAVE ERROR REGISTER
 5854  041254  017737  142070  003442            MOV     @RHTDB,TDR              ;SAVE TESTER DATA REG.
 5855  041262  017737  142050  003440            MOV     @RHMR2,TC               ;SAVE MR2 TESTER REG.
 5856  041270  017737  142054  001162            MOV     @RHTDB,$REG0                    ;GET DATA
 5857  041276  032777  000200  142024            BIT     #RDY,@RHCS1             ;IS READY SET
 5858  041304  001001                            BNE     8$                      ;YES,CONTINUE TEST
 5859  041306  104102                            ERROR   102                     ;READY DID NOT SET
 5860  041310  022777  177777  142014  8$:       CMP     #-1,@RHWC               ;DID WC INCREMENT
 5861  041316  001001                            BNE     3$                      ;YES,CONT TEST
 5862  041320  104140                            ERROR   140                     ;WRITETO OPERATION DID NOT INC WC
 5863  041322  022777  004002  142004  3$:       CMP     #ODDAD,@RHBA            ;DID BA INCREMENT
 5864  041330  001401                            BEQ     4$                      ;YES CONT TEST
 5865  041332  104141                            ERROR   141                     ;BA DID NOT INCREMENT AFTER AN WRITETO OPERATION
 5866  041334  023777  004000  142006  4$:       CMP     EVENAD,@RHTDB           ;DID INFO WRITETO TESTER
 5867  041342  001401                            BEQ     5$                      ;YES,CONT
 5868  041344  104142                            ERROR   142                     ;INFO DID NOT WRITETO TESTER
 5869  041346  004737  007234            5$:     JSR     R7,WHYFO                ;ARE ANY ERROR BITS SET
 5870  041352  105737  001103                    TSTB    $ERFLG                  ;WAS THER AN ERROR
 5871  041356  001402                            BEQ     6$                      ;NO EXIT TEST
 5872  041360  104146                            ERROR   146                     ;THESE ARE THE CONTENTS OF ALL RH70 REG.
 5873  041362  104170                            ERROR   170                     ;THIS IS TO COMMPLETE ERROR PRINTOUT
 5874  041364  004737  006602            6$:     JSR     R7,CLEER                ;CLEER ERRORS IF ANY
 5875  041370  004737  050130                    JSR     R7,ERRTST
 5876                                  ;;*****************************************************************
 5877                                  ;*TEST 70        WRITE OPERATIONAL TEST (NORMAL) #2
 5878                                  ;*THESE TESTS VERIFY ALL READ AND WRITE CODES
 5879                                  ;*WHETHER IT BE A READ REV. OR FWD OR A WRITE REV. OR FWD
 5880                                  ;*DURING THESE TESTS THE TESTER TIMING IS MARGINED AND
 5881                                  ;*NO ERRORS SHOULD OCCUR
 5882                                  ;;*****************************************************************
 5883  041374  000004                  TST70:  SCOPE
 5884  041376  012777  000007  141734            MOV     #7,@RHCS2               ;SETUP UNIT SEVEN
 5885  041404  012777  177777  141720            MOV     #-1,@RHWC               ;FOR ONE WORD
 5886  041412  012777  004100  141714            MOV     #RBUF,@RHBA             ;SRTUP BA
 5887  041420  012737  125252  004100            MOV     #0AB,RBUF               ;SETUP DATA
 5888  041426  012777  000000  141714            MOV     #ZERO,@RHTDB            ;SETUP TESTER DB
 5889  041434  005701                            TST     R1                      ;IS IT AN 11 OR A 70
 5890  041436  100403                            BMI     1$                      ;IT'S AN RH11
 5891  041440  012777  000000  141712            MOV     #ZERO,@RHBAE            ;ZERO BAE
 5892  041446  012777  000063  141654  1$:       MOV     #WRITE2,@RHCS1          ;TELL IT TO WRITE2
```

```
5893  041454  005037  003446                  CLR     BITCNT                  ;CLEAR BIT COUNTER
5894  041460  032777  000200  141642  18$:    BIT     #RDY,@RHCS1             ;IS RDY SET
5895  041466  001015                          BNE     2$                      ;BIT IS SET
5896  041470  005237  003446                  INC     BITCNT                  ;COUNT UP
5897  041474  001371                          BNE     18$                     ;NOT FINISHED COUNTING
5898  041476  005037  003446                  CLR     BITCNT                  ;GET READY TO DO IT AGAIN
5899  041502  032777  000200  141620  19$:    BIT     #RDY,@RHCS1             ;IS IT SET YET?
5900  041510  001004                          BNE     2$                      ;YES
5901  041512  005237  003446                  INC     BITCNT                  ;COUNT UP
5902  041516  001401                          BEQ     2$                      ;BIT IS NOT GOING TO SET
5903  041520  000770                          BR      19$
5904  041522                          2$:
5905  041522  017737  141602  003420          MOV     @RHCS1,CS1              ;SAVE RHCS1
5906  041530  017737  141576  003444          MOV     @RHWC,WC                ;SAVE WORD COUNT
5907  041536  017737  141572  003414          MOV     @RHBA,BA                ;SAVE BUS ADDRESS
5908  041544  005701                          TST     R1                      ;IS IT AN RH11
5909  041546  001406                          BEQ     87$                     ;NO IT'S A 70
5910  041550  005037  003416                  CLR     BAE                     ;CLEAR BAE
5911  041554  005037  003424                  CLR     CS3                     ;CLEAR CS3
5912  041560  000137  041600                  JMP     86$                     ;CONTINUE
5913  041564  017737  141570  003416  87$:    MOV     @RHBAE,BAE              ;SAVE BUS ADDRESS EXTENSION
5914  041572  017737  141564  003424          MOV     @RHCS3,CS3              ;SAVE RHCS3
5915  041600  017737  141534  003422  86$:    MOV     @RHCS2,CS2              ;SAVE CS2
5916  041606  017737  141530  003432          MOV     @RHST,DS1               ;SAVE TESTER STATUS
5917  041614  017737  141524  003436          MOV     @RHER,ER1               ;SAVE ERROR REGISTER
5918  041622  017737  141522  003442          MOV     @RHTDB,TDR              ;SAVE TESTER DATA REG.
5919  041630  017737  141502  003440          MOV     @RHMR2,TC               ;SAVE MR2 TESTER REG.
5920  041636  017737  141506  001162          MOV     @RHTDB,$REG0                    ;GET DATA
5921  041644  032777  000200  141456          BIT     #RDY,@RHCS1             ;IS OR SET
5922  041652  001003                          BNE     3$                      ;YES RDY IS SET
5923  041654  104102                          ERROR   102                     ;READY DID NOT SET
5924  041656  004737  007234                  JSR     R7,WHYFO                ;ARE ANY ERRORS SET
5925  041662  023777  004100  141460  3$:     CMP     RBUF,@RHTDB             ;DID INFO GET WRITTEN OR READ
5926  041670  001407                          BEQ     4$                      ;INFO GOT LOADED
5927  041672  005777  141452                  TST     @RHTDB                  ;DOES @RHTDB = 0
5928  041676  001403                          BEQ     5$                      ;YES INFO DID NOT LOAD
5929  041700  104151                          ERROR   151                     ;ALL BITS DID NOT LOAD DURING
5930                                                                          ;AN WRITE2 OPERATION
5931  041702  000137  041710                  JMP     4$                      ;EXIT TEST
5932  041706  104152                  5$:     ERROR   152                     ;WRITE2 OPERATION DID NOT WORK
5933                                                                          ;NO BITS WHERE LOADED TO @RHTDB
5934  041710  004737  007234          4$:     JSR     R7,WHYFO                ;ANY ERRORS SET
5935  041714  105737  001103                  TSTB    $ERFLG                  ;ANY ERRORS ?
5936  041720  001402                          BEQ     6$                      ;NO,EXIT TEST
5937  041722  104146                          ERROR   146                     ;PRINT REGISTERS
5938  041724  104170                          ERROR   170
5939  041726  004737  006602          6$:     JSR     R7,CLEER                ;CLEAR ERRORS
5940  041732  004737  050130                  JSR     R7,ERRTST
5941                                  ;;**************************************************************
5942                                  ;*TEST 71        RH OPERATIONAL READ TEST #3
5943                                          ;*THESE TESTS VERIFY ALL READ AND WRITE CODES
5944                                          ;*WHETHER IT BE A READ REV. OR FWD OR A WRITE REV. OR FWD
5945                                          ;*DURING THESE TESTS THE TESTER TIMING IS MARGINED AND
5946                                          ;*NO ERRORS SHOULD OCCUR
5947                                  ;;**************************************************************
5948  041736  000004                  TST71:  SCOPE
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 5949  041740  012777  000007  141372          MOV     #7,@RHCS2               ;SETUP UNIT SEVEN
 5950  041746  012777  052525  141374          MOV     #AB,@RHTDB              ;SETUP INFORMATION
 5951  041754  012777  003003  141372          MOV     #DMD!SLKM!ISLK!MCLK,@RHMR1              ;SETUP DIAG. MODE
 5952  041762  012777  177777  141342          MOV     #-1,@RHWC               ;FOR ONE WORD
 5953  041770  005701                          TST     R1                      ;IS IT A 11 OR 70
 5954  041772  100403                          BMI     1$                      ;IT'S AN 11
 5955  041774  012777  000000  141356          MOV     #ZERO,@RHBAE            ;ZERO BAE
 5956  042002  012777  004000  141324  1$:     MOV     #EVENAD,@RHBA           ;SETUP BA
 5957  042010  012777  000075  141312          MOV     #READ4,@RHCS1           ;TELL IT TO READFROM
 5958  042016  012777  003001  141330          MOV     #DMD!SLKM!ISLK,@RHMR1           ;MANIPULATE CLOCK
 5959  042024  005037  003446                  CLR     BITCNT                  ;CLEAR LOOP COUNTER
 5960  042030  005237  003446          2$:     INC     BITCNT                  ;INCREMENT LOOP COUNTER
 5961  042034  022737  000015  003446          CMP     #15,BITCNT              ;IS IT THIRD LOOP FOR 5USEC WAIT
 5962  042042  001372                          BNE     2$                      ;NO LOOP AGAIN
 5963  042044  012777  003003  141302          MOV     #DMD!SLKM!ISLK!MCLK,@RHMR1              ;START CHANGING CLOCK
 5964  042052  012777  003001  141274          MOV     #DMD!SLKM!ISLK,@RHMR1           ;CHANGE CLOCK AGAIN
 5965  042060  012777  003003  141266          MOV     #DMD!SLKM!ISLK!MCLK,@RHMR1              ;CHANGE CLOCK AGAIN
 5966  042066  012777  003001  141260          MOV     #DMD!SLKM!ISLK,@RHMR1           ;CHANGE CLOCK AGAIN
 5967  042074  012777  000000  141252          MOV     #ZERO,@RHMR1            ;GET OUT OF DIAG MODE
 5968  042102  005037  003446                  CLR     BITCNT                  ;CLEAR BIT COUNTER
 5969  042106  032777  000200  141214  18$:     BIT     #RDY,@RHCS1             ;IS RDY SET
 5970  042114  001015                          BNE     7$                      ;BIT IS SET
 5971  042116  005237  003446                  INC     BITCNT                  ;COUNT UP
 5972  042122  001371                          BNE     18$                     ;NOT FINISHED COUNTING
 5973  042124  005037  003446                  CLR     BITCNT                  ;GET READY TO DO IT AGAIN
 5974  042130  032777  000200  141172  19$:     BIT     #RDY,@RHCS1             ;IS IT SET YET?
 5975  042136  001004                          BNE     7$                      ;YES
 5976  042140  005237  003446                  INC     BITCNT                  ;COUNT UP
 5977  042144  001401                          BEQ     7$                      ;BIT IS NOT GOING TO SET
 5978  042146  000770                          BR      19$
 5979  042150                          7$:
 5980  042150  017737  141154  003420          MOV     @RHCS1,CS1              ;SAVE RHCS1
 5981  042156  017737  141150  003444          MOV     @RHWC,WC                ;SAVE WORD COUNT
 5982  042164  017737  141144  003414          MOV     @RHBA,BA                ;SAVE BUS ADDRESS
 5983  042172  005701                          TST     R1                      ;IS IT AN RH11
 5984  042174  001406                          BEQ     87$                     ;NO IT'S A 70
 5985  042176  005037  003416                  CLR     BAE                     ;CLEAR BAE
 5986  042202  005037  003424                  CLR     CS3                     ;CLEAR CS3
 5987  042206  000137  042226                  JMP     86$                     ;CONTINUE
 5988  042212  017737  141142  003416  87$:     MOV     @RHBAE,BAE              ;SAVE BUS ADDRESS EXTENSION
 5989  042220  017737  141136  003424          MOV     @RHCS3,CS3              ;SAVE RHCS3
 5990  042226  017737  141106  003422  86$:     MOV     @RHCS2,CS2              ;SAVE CS2
 5991  042234  017737  141102  003432          MOV     @RHST,DS1               ;SAVE TESTER STATUS
 5992  042242  017737  141076  003436          MOV     @RHER,ER1               ;SAVE ERROR REGISTER
 5993  042250  017737  141074  003442          MOV     @RHTDB,TDR              ;SAVE TESTER DATA REG.
 5994  042256  017737  141054  003440          MOV     @RHMR2,TC               ;SAVE MR2 TESTER REG.
 5995  042264  017737  141060  001162          MOV     @RHTDB,$REGO                    ;GET DATA
 5996  042272  032777  000200  141030          BIT     #RDY,@RHCS1             ;IS READY SET
 5997  042300  001001                          BNE     8$                      ;YES,CONTINUE TEST
 5998  042302  104102                          ERROR   102                     ;READY DID NOT SET
 5999  042304  022777  177777  141020  8$:     CMP     #-1,@RHWC               ;DID WC INCREMENT
 6000  042312  001001                          BNE     3$                      ;YES,CONT TEST
 6001  042314  104143                          ERROR   143                     ;READFROM OPERATION DID NOT INC WC
 6002  042316  022777  004002  141010  3$:     CMP     #ODDAD,@RHBA            ;DID BA INCREMENT
 6003  042324  001401                          BEQ     4$                      ;YES CONT TEST
 6004  042326  104144                          ERROR   144                     ;BA DID NOT INCREMENT AFTER AN READFROM OPERATIO
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 6005  042330  023777  004000  141012  4$:   CMP     EVENAD,@RHTDB          ;DID INFO READFROM TESTER
 6006  042336  001401                        BEQ     5$                     ;YES,CONT
 6007  042340  104145                        ERROR   145                    ;INFO DID NOT READFROM TESTER
 6008  042342  004737  007234          5$:   JSR     R7,WHYFO               ;ARE ANY ERROR BITS SET
 6009  042346  105737  001103                TSTB    $ERFLG                 ;WAS THER AN ERROR
 6010  042352  001402                        BEQ     6$                     ;NO EXIT TEST
 6011  042354  104146                        ERROR   146                    ;THESE ARE THE CONTENTS OF ALL RH70 REG.
 6012  042356  104170                        ERROR   170                    ;THIS IS TO COMMPLETE ERROR PRINTOUT
 6013  042360  004737  006602          6$:   JSR     R7,CLEER               ;CLEER ERRORS IF ANY
 6014  042364  004737  050130                JSR     R7,ERRTST
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```
                                        ;;*****************************************************************
                                        ;*TEST 72        WRITE OPERATIONAL TEST (NORMAL) #3
                                        ;*THESE TESTS VERIFY ALL READ AND WRITE CODES
                                        ;*WHETHER IT BE A READ REV. OR FWD OR A WRITE REV. OR FWD
                                        ;*DURING THESE TESTS THE TESTER TIMING IS MARGINED AND
                                        ;*NO ERRORS SHOULD OCCUR
                                        ;;*****************************************************************
042370  000004                  ;ST72:  SCOPE
042372  012777  000007  140740          MOV     #7,@RHCS2               ;SETUP UNIT SEVEN
042400  012777  177777  140724          MOV     #-1,@RHWC               ;FOR ONE WORD
042406  012777  004100  140720          MOV     #RBUF,@RHBA             ;SRTUP BA
042414  012737  125252  004100          MOV     #0AB,RBUF               ;SETUP DATA
042422  012777  000000  140720          MOV     #ZERO,@RHTDB            ;SETUP TESTER DB
042430  005701                          TST     R1                      ;IS IT AN 11 OR A 70
042432  100403                          BMI     1$                      ;IT'S AN RH11
042434  012777  000000  140716          MOV     #ZERO,@RHBAE            ;ZERO BAE
042442  012777  000065  140660  1$:     MOV     #WRITE4,@RHCS1          ;TELL IT TO WRITE4
042450  005037  003446                  CLR     BITCNT                  ;CLEAR BIT COUNTER
042454  032777  000200  140646  18$:    BIT     #RDY,@RHCS1             ;IS RDY SET
042462  001015                          BNE     2$                      ;BIT IS SET
042464  005237  003446                  INC     BITCNT                  ;COUNT UP
042470  001371                          BNE     18$                     ;NOT FINISHED COUNTING
042472  005037  003446                  CLR     BITCNT                  ;GET READY TO DO IT AGAIN
042476  032777  000200  140624  19$:    BIT     #RDY,@RHCS1             ;IS IT SET YET?
042504  001004                          BNE     2$                      ;YES
042506  005237  003446                  INC     BITCNT                  ;COUNT UP
042512  001401                          BEQ     2$                      ;BIT IS NOT GOING TO SET
042514  000770                          BR      19$
042516                          2$:
042516  017737  140606  003420          MOV     @RHCS1,CS1              ;SAVE RHCS1
042524  017737  140602  003444          MOV     @RHWC,WC                ;SAVE WORD COUNT
042532  017737  140576  003414          MOV     @RHBA,BA                ;SAVE BUS ADDRESS
042540  005701                          TST     R1                      ;IS IT AN RH11
042542  001406                          BEQ     87$                     ;NO IT'S A 70
042544  005037  003416                  CLR     BAE                     ;CLEAR BAE
042550  005037  003424                  CLR     CS3                     ;CLEAR CS3
042554  000137  042574                  JMP     86$                     ;CONTINUE
042560  017737  140574  003416  87$:    MOV     @RHBAE,BAE              ;SAVE BUS ADDRESS EXTENSION
042566  017737  140570  003424          MOV     @RHCS3,CS3              ;SAVE RHCS3
042574  017737  140540  003422  86$:    MOV     @RHCS2,CS2              ;SAVE CS2
042602  017737  140534  003432          MOV     @RHST,DS1               ;SAVE TESTER STATUS
042610  017737  140530  003436          MOV     @RHER,ER1               ;SAVE ERROR REGISTER
042616  017737  140526  003442          MOV     @RHTDB,TDR              ;SAVE TESTER DATA REG.
042624  017737  140506  003440          MOV     @RHMR2,TC               ;SAVE MR2 TESTER REG.
042632  017737  140512  001162          MOV     @RHTDB,$REGO                    ;GET DATA
042640  032777  000200  140462          BIT     #RDY,@RHCS1             ;IS OR SET
042646  001003                          BNE     3$                      ;YES RDY IS SET
042650  104102                          ERROR   102                     ;READY DID NOT SET
042652  004737  007234                  JSR     R7,WHYF0                ;ARE ANY ERRORS SET
042656  023777  004100  140464  3$:     CMP     RBUF,@RHTDB             ;DID INFO GET WRITTEN OR READ
042664  001407                          BEQ     4$                      ;INFO GOT LOADED
042666  005777  140456                  TST     @RHTDB                  ;DOES @RHTDB = 0
042672  001403                          BEQ     5$                      ;YES INFO DID NOT LOAD
042674  104151                          ERROR   151                     ;ALL BITS DID NOT LOAD DURING
                                                                        ;AN WRITE4 OPERATION
042676  000137  042704                  JMP     4$                      ;EXIT TEST
```

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6071  042702  104152                  5$:     ERROR   152                     ;WRITE4 OPERATION DID NOT WORK
6072                                                                          ;NO BITS WHERE LOADED TO @RHTDB
6073  042704  004737  007234          4$:     JSR     R7,WHYFO                ;ANY ERRORS SET
6074  042710  105737  001103                  TSTB    $ERFLG                  ;ANY ERRORS ?
6075  042714  001402                          BEQ     6$                      ;NO,EXIT TEST
6076  042716  104146                          ERROR   146                     ;PRINT REGISTERS
6077  042720  104170                          ERROR   170
6078  042722  004737  006602          6$:     JSR     R7,CLEER                ;CLEAR ERRORS
6079  042726  004737  050130                  JSR     R7,ERRTST
6080                                  ;;**********************************************************************
6081                                  ;*TEST 73        RH OPERATIONAL WRITE TEST #4
6082                                          ;*THESE TESTS VERIFY ALL READ AND WRITE CODES
6083                                          ;*WHETHER IT BE A READ REV. OR FWD OR A WRITE REV. OR FWD
6084                                          ;*DURING THESE TESTS THE TESTER TIMING IS MARGINED AND
6085                                          ;*NO ERRORS SHOULD OCCUR
6086                                  ;;**********************************************************************
6087  042732  000004                  TST73:  SCOPE
6089  042734  012777  000007  140376          MOV     #7,@RHCS2               ;SETUP UNIT SEVEN
6089  042742  012737  125252  004000          MOV     #0AB,EVENAD             ;SETUP INFORMATION
6090  042750  012777  000003  140376          MOV     #DMD!MCLK,@RHMR1                ;SETUP DIAG. MODE
6091  042756  012777  177777  140346          MOV     #-1,@RHWC               ;FOR ONE WORD
6092  042764  005701                          TST     R1                      ;IS IT A 11 OR 70
6093  042766  100403                          BMI     1$                      ;IT'S AN 11
6094  042770  012777  000000  140362          MOV     #ZERO,@RHBAE            ;ZERO BAE
6095  042776  012777  004000  140330  1$:     MOV     #EVENAD,@RHBA           ;SETUP BA
6096  043004  012777  000067  140316          MOV     #WRITE6,@RHCS1          ;TELL IT TO WRITETO
6097  043012  012777  000001  140334          MOV     #DMD,@RHMR1             ;MANIPULATE CLOCK
6098  043020  005037  003446                  CLR     BITCNT                  ;CLEAR LOOP COUNTER
6099  043024  005237  003446          2$:     INC     BITCNT                  ;INCREMENT LOOP COUNTER
6100  043030  022737  000015  003446          CMP     #15,BITCNT              ;IS IT THIRD LOOP FOR 5USEC WAIT
6101  043036  001372                          BNE     2$                      ;NO LOOP AGAIN
6102  043040  012777  000003  140306          MOV     #DMD!MCLK,@RHMR1                ;START CHANGING CLOCK
6103  043046  012777  000001  140300          MOV     #DMD,@RHMR1             ;CHANGE CLOCK AGAIN
6104  043054  012777  000003  140272          MOV     #DMD!MCLK,@RHMR1                ;CHANGE CLOCK AGAIN
6105  043062  012777  000001  140264          MOV     #DMD,@RHMR1             ;CHANGE CLOCK AGAIN
6106  043070  012777  000000  140256          MOV     #ZERO,@RHMR1            ;GET OUT OF DIAG MODE
6107  043076  005037  003446                  CLR     BITCNT                  ;CLEAR BIT COUNTER
6108  043102  032777  000200  140220  18$:     BIT     #RDY,@RHCS1             ;IS RDY SET
6109  043110  001015                          BNE     7$                      ;BIT IS SET
6110  043112  005237  003446                  INC     BITCNT                  ;COUNT UP
6111  043116  001371                          BNE     18$                     ;NOT FINISHED COUNTING
6112  043120  005037  003446                  CLR     BITCNT                  ;GET READY TO DO IT AGAIN
6113  043124  032777  000200  140176  19$:     BIT     #RDY,@RHCS1             ;IS IT SET YET?
6114  043132  001004                          BNE     7$                      ;YES
6115  043134  005237  003446                  INC     BITCNT                  ;COUNT UP
6116  043140  001401                          BEQ     7$                      ;BIT IS NOT GOING TO SET
6117  043142  000770                          BR      19$
6118  043144                          7$:
6119  043144  017737  140160  003420          MOV     @RHCS1,CS1              ;SAVE RHCS1
6120  043152  017737  140154  003444          MOV     @RHWC,WC                ;SAVE WORD COUNT
6121  043160  017737  140150  003414          MOV     @RHBA,BA                ;SAVE BUS ADDRESS
6122  043166  005701                          TST     R1                      ;IS IT AN RH11
6123  043170  001406                          BEQ     87$                     ;NO IT'S A 70
6124  043172  005037  003416                  CLR     BAE                     ;CLEAR BAE
6125  043176  005037  003424                  CLR     CS3                     ;CLEAR CS3
6126  043202  000137  043222                  JMP     86$                     ;CONTINUE
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 6127  043206  017737  140146  003416  87$:    MOV     @RHBAE,BAE              ;SAVE BUS ADDRESS EXTENSION
 6128  043214  017737  140142  003424          MOV     @RHCS3,CS3              ;SAVE RHCS3
 6129  043222  017737  140112  003422  86$:    MOV     @RHCS2,CS2              ;SAVE CS2
 6130  043230  017737  140106  003432          MOV     @RHST,DS1               ;SAVE TESTER STATUS
 6131  043236  017737  140102  003436          MOV     @RHER,ER1               ;SAVE ERROR REGISTER
 6132  043244  017737  140100  003442          MOV     @RHTDB,TDR              ;SAVE TESTER DATA REG.
 6133  043252  017737  140060  003440          MOV     @RHMR2,TC               ;SAVE MR2 TESTER REG.
 6134  043260  017737  140064  001162          MOV     @RHTDB,$REGD                    ;GET DATA
 6135  043266  032777  000200  140034          BIT     #RDY,@RHCS1             ;IS READY SET
 6136  043274  001001                          BNE     8$                      ;YES,CONTINUE TEST
 6137  043276  104102                          ERROR   102                     ;READY DID NOT SET
 6138  043300  022777  177777  140024  8$:     CMP     #-1,@RHWC               ;DID WC INCREMENT
 6139  043306  001001                          BNE     3$                      ;YES,CONT TEST
 6140  043310  104140                          ERROR   140                     ;WRITETO OPERATION DID NOT INC WC
 6141  043312  022777  003776  140014  3$:     CMP     #EVENAD-2,@RHBA         ;DID BA INCREMENT
 6142  043320  001401                          BEQ     4$                      ;YES CONT TEST
 6143  043322  104141                          ERROR   141                     ;BA DID NOT INCREMENT AFTER AN WRITETO OPERATION
 6144  043324  023777  004000  140016  4$:     CMP     EVENAD,@RHTDB           ;DID INFO WRITETO TESTER
 6145  043332  001401                          BEQ     5$                      ;YES,CONT
 6146  043334  104142                          ERROR   142                     ;INFO DID NOT WRITETO TESTER
 6147  043336  004737  007234          5$:     JSR     R7,WHYFO                ;ARE ANY ERROR BITS SET
 6148  043342  105737  001103                  TSTB    $ERFLG                  ;WAS THER AN ERROR
 6149  043346  001402                          BEQ     6$                      ;NO EXIT TEST
 6150  043350  104146                          ERROR   146                     ;THESE ARE THE CONTENTS OF ALL RH70 REG.
 6151  043352  104170                          ERROR   170                     ;THIS IS TO COMMPLETE ERROR PRINTOUT
 6152  043354  004737  006602          6$:     JSR     R7,CLEER                ;CLEER ERRORS IF ANY
 6153  043360  004737  050130                  JSR     R7,ERRTST
 6154                                  ;;**************************************************************
 6155                                  ;*TEST 74        WRITE OPERATIONAL TEST (NORMAL) #4
 6156                                          ;*THESE TESTS VERIFY ALL READ AND WRITE CODES
 6157                                          ;*WHETHER IT BE A READ REV. OR FWD OR A WRITE REV. OR FWD
 6158                                          ;*DURING THESE TESTS THE TESTER TIMING IS MARGINED AND
 6159                                          ;*NO ERRORS SHOULD OCCUR
 6160                                  ;;**************************************************************
 6161  043364  000004                  TST74:  SCOPE
 6162  043366  012777  000007  137744          MOV     #7,@RHCS2               ;SETUP UNIT SEVEN
 6163  043374  012777  177777  137730          MOV     #-1,@RHWC               ;FOR ONE WORD
 6164  043402  012777  004100  137724          MOV     #RBUF,@RHBA             ;SRTUP BA
 6165  043410  012737  125252  004100          MOV     #OAB,RBUF               ;SETUP DATA
 6166  043416  012777  000000  137724          MOV     #ZERO,@RHTDB            ;SETUP TESTER DB
 6167  043424  005701                          TST     R1                      ;IS IT AN 11 OR A 70
 6168  043426  100403                          BMI     1$                      ;IT'S AN RH11
 6169  043430  012777  000000  137722          MOV     #ZERO,@RHBAE            ;ZERO BAE
 6170  043436  012777  000067  137664  1$:     MOV     #WRITE6,@RHCS1          ;TELL IT TO WRITE6
 6171  043444  005037  003446                  CLR     BITCNT                  ;CLEAR BIT COUNTER
 6172  043450  032777  000200  137652  18$:    BIT     #RDY,@RHCS1             ;IS RDY SET
 6173  043456  001015                          BNE     2$                      ;BIT IS SET
 6174  043460  005237  003446                  INC     BITCNT                  ;COUNT UP
 6175  043464  001371                          BNE     18$                     ;NOT FINISHED COUNTING
 6176  043466  005037  003446                  CLR     BITCNT                  ;GET READY TO DO IT AGAIN
 6177  043472  032777  000200  137630  19$:    BIT     #RDY,@RHCS1             ;IS IT SET YET?
 6178  043500  001004                          BNE     2$                      ;YES
 6179  043502  005237  003446                  INC     BITCNT                  ;COUNT UP
 6180  043506  001401                          BEQ     2$                      ;BIT IS NOT GOING TO SET
 6181  043510  000770                          BR      19$
 6182  043512                          2$:
```

```
 6183  043512  017737  137612  003420          MOV     @RHCS1,CS1              ;SAVE RHCS1
 6184  043520  017737  137606  003444          MOV     @RHWC,WC                ;SAVE WORD COUNT
 6185  043526  017737  137602  003414          MOV     @RHBA,BA                ;SAVE BUS ADDRESS
 6186  043534  005701                          TST     R1                      ;IS IT AN RH11
 6187  043536  001406                          BEQ     87$                     ;NO IT'S A 70
 6188  043540  005037  003416                  CLR     BAE                     ;CLEAR BAE
 6189  043544  005037  003424                  CLR     CS3                     ;CLEAR CS3
 6190  043550  000137  043570                  JMP     86$                     ;CONTINUE
 6191  043554  017737  137600  003416  87$:    MOV     @RHBAE,BAE              ;SAVE BUS ADDRESS EXTENSION
 6192  043562  017737  137574  003424          MOV     @RHCS3,CS3              ;SAVE RHCS3
 6193  043570  017737  137544  003422  86$:    MOV     @RHCS2,CS2              ;SAVE CS2
 6194  043576  017737  137540  003432          MOV     @RHST,DS1               ;SAVE TESTER STATUS
 6195  043604  017737  137534  003436          MOV     @RHER,ER1               ;SAVE ERROR REGISTER
 6196  043612  017737  137532  003442          MOV     @RHTDB,TDR              ;SAVE TESTER DATA REG.
 6197  043620  017737  137512  003440          MOV     @RHMR2,TC               ;SAVE MR2 TESTER REG.
 6198  043626  017737  137516  001162          MOV     @RHTDB,$REGO                    ;GET DATA
 6199  043634  032777  000200  137466          BIT     #RDY,@RHCS1             ;IS OR SET
 6200  043642  001003                          BNE     3$                      ;YES RDY IS SET
 6201  043644  104102                          ERROR   102                     ;READY DID NOT SET
 6202  043646  004737  007234                  JSR     R7,WHYFO                ;ARE ANY ERRORS SET
 6203  043652  023777  004100  137470  3$:     CMP     RBUF,@RHTDB             ;DID INFO GET WRITTEN OR READ
 6204  043660  001407                          BEQ     4$                      ;INFO GOT LOADED
 6205  043662  005777  137462                  TST     @RHTDB                  ;DOES @RHTDB = 0
 6206  043666  001403                          BEQ     5$                      ;YES INFO DID NOT LOAD
 6207  043670  104117                          ERROR   117                     ;ALL BITS DID NOT LOAD DURING
 6208                                                                          ;AN WRITE6 OPERATION
 6209  043672  000137  043700                  JMP     4$                      ;EXIT TEST
 6210  043676  104101                  5$:     ERROR   101                     ;WRITE6 OPERATION DID NOT WORK
 6211                                                                          ;NO BITS WHERE LOADED TO @RHTDB
 6212  043700  004737  007234          4$:     JSR     R7,WHYFO                ;ANY ERRORS SET
 6213  043704  105737  001103                  TSTB    $ERFLG                  ;ANY ERRORS ?
 6214  043710  001402                          BEQ     6$                      ;NO,EXIT TEST
 6215  043712  104146                          ERROR   146                     ;PRINT REGISTERS
 6216  043714  104170                          ERROR   170
 6217  043716  004737  006602          6$:     JSR     R7,CLEER                ;CLEAR ERRORS
 6218  043722  004737  050130                  JSR     R7,ERRTST
 6219                                          ;;*****************************************************************
 6220                                          ;*TEST 75       RH OPERATIONAL READ TEST #4
 6221                                          ;*THESE TESTS VERIFY ALL READ AND WRITE CODES
 6222                                          ;*WHETHER IT BE A READ REV. OR FWD OR A WRITE REV. OR FWD
 6223                                          ;*DURING THESE TESTS THE TESTER TIMING IS MARGINED AND
 6224                                          ;*NO ERRORS SHOULD OCCUR
 6225                                          ;;*****************************************************************
 6226  043726  000004          TST75:  SCOPE
 6227  043730  012777  000007  137402          MOV     #7,@RHCS2               ;SETUP UNIT SEVEN
 6228  043736  012777  052525  137404          MOV     #AB,@RHTDB              ;SETUP INFORMATION
 6229  043744  012777  000003  137402          MOV     #DMD!MCLK,@RHMR1                ;SETUP DIAG. MODE
 6230  043752  012777  177777  137352          MOV     #-1,@RHWC               ;FOR ONE WORD
 6231  043760  005701                          TST     R1                      ;IS IT A 11 OR 70
 6232  043762  100403                          BMI     1$                      ;IT'S AN 11
 6233  043764  012777  000000  137366          MOV     #ZERO,@RHBAE            ;ZERO BAE
 6234  043772  012777  004000  137334  1$:     MOV     #EVENAD,@RHBA           ;SETUP BA
 6235  044000  012777  000077  137322          MOV     #READ6,@RHCS1           ;TELL IT TO READFROM
 6236  044006  012777  000001  137340          MOV     #DMD,@RHMR1             ;MANIPULATE CLOCK
 6237  044014  005037  003446                  CLR     BITCNT                  ;CLEAR LOOP COUNTER
 6238  044020  005237  003446          2$:     INC     BITCNT                  ;INCREMENT LOOP COUNTER
```

```
 6239  044224  022737  000015  003446          CMP     #15.,BITCNT             ;IS IT THIRD LOOP FOR 915EC WAIT
 6240  044232  001372                          BNE     2$                      ;NO LOOP AGAIN
 6241  044234  012777  000003  137312          MOV     #DMC!MCLK,@RHMR1                ;START CHANGING CLOCK
 6242  044242  012777  000001  137304          MOV     #DMD,@RHMR1             ;CHANGE CLOCK AGAIN
 6243  044250  012777  000003  137276          MOV     #DMC!MCLK,@RHMR1                ;CHANGE CLOCK AGAIN
 6244  044256  012777  000001  137270          MOV     #DMD,@RHMR1             ;CHANGE CLOCK AGAIN
 6245  044264  012777  000000  137262          MOV     #ZERO,@RHMR1            ;GET OUT OF DIAG MODE
 6246  044272  005037  003446                  CLR     BITCNT                  ;CLEAR BIT COUNTER
 6247  044276  032777  000200  137224  18$:    BIT     #RDY,@RHCS1             ;IS RDY SET
 6248  044304  001015                          BNE     7$                      ;BIT IS SET
 6249  044306  005237  003446                  INC     BITCNT                  ;COUNT UP
 6250  044312  001371                          BNE     18$                     ;NOT FINISHED COUNTING
 6251  044314  005037  003446                  CLR     BITCNT                  ;GET READY TO DO IT AGAIN
 6252  044320  032777  000200  137202  19$:    BIT     #RDY,@RHCS1             ;IS IT SET YET?
 6253  044326  001004                          BNE     7$                      ;YES
 6254  044330  005237  003446                  INC     BITCNT                  ;COUNT UP
 6255  044334  001401                          BEQ     7$                      ;BIT IS NOT GOING TO SET
 6256  044336  000770                          BR      19$
 6257  044340                          7$:
 6258  044340  017737  137164  003420          MOV     @RHCS1,CS1              ;SAVE RHCS1
 6259  044346  017737  137160  003444          MOV     @RHWC,WC                ;SAVE WORD COUNT
 6260  044354  017737  137154  003414          MOV     @RHBA,BA                ;SAVE BUS ADDRESS
 6261  044362  005701                          TST     R1                      ;IS IT AN RH11
 6262  044364  001406                          BEQ     87$                     ;NO IT'S A 70
 6263  044366  005037  003416                  CLR     BAE                     ;CLEAR BAE
 6264  044372  005037  003424                  CLR     CS3                     ;CLEAR CS3
 6265  044376  000137  044216                  JMP     86$                     ;CONTINUE
 6266  044402  017737  137152  003416  87$:    MOV     @RHBAE,BAE              ;SAVE BUS ADDRESS EXTENSION
 6267  044410  017737  137146  003424          MOV     @RHCS3,CS3              ;SAVE RHCS3
 6268  044416  017737  137116  003422  86$:    MOV     @RHCS2,CS2              ;SAVE CS2
 6269  044424  017737  137112  003432          MOV     @RHST,DS1               ;SAVE TESTER STATUS
 6270  044432  017737  137106  003436          MOV     @RHER,ER1               ;SAVE ERROR REGISTER
 6271  044440  017737  137104  003442          MOV     @RHTDB,TDR              ;SAVE TESTER DATA REG.
 6272  044446  017737  137064  003440          MOV     @RHMR2,TC               ;SAVE MR2 TESTER REG.
 6273  044454  017737  137070  001162          MOV     @RHTDB,$REG0                    ;GET DATA
 6274  044462  032777  000200  137040          BIT     #RDY,@RHCS1             ;IS READY SET
 6275  044470  001001                          BNE     8$                      ;YES,CONTINUE TEST
 6276  044472  104102                          ERROR   102                     ;READY DID NOT SET
 6277  044474  022777  177777  137030  8$:     CMP     #-1,@RHWC               ;DID WC INCREMENT
 6278  044502  001001                          BNE     3$                      ;YES,CONT TEST
 6279  044504  104143                          ERROR   143                     ;READFROM OPERATION DID NOT INC WC
 6280  044506  022777  003776  137020  3$:     CMP     #EVENAD-2,@RHBA         ;DID BA INCREMENT
 6281  044514  001401                          BEQ     4$                      ;YES CONT TEST
 6282  044516  104144                          ERROR   144                     ;BA DID NOT INCREMENT AFTER AN READFROM OPERATIO
 6283  044520  023777  004000  137022  4$:     CMP     EVENAD,@RHTDB           ;DID INFO READFROM TESTER
 6284  044526  001401                          BEQ     5$                      ;YES,CONT
 6285  044530  104145                          ERROR   145                     ;INFO DID NOT READFROM TESTER
 6286  044532  004737  007234          5$:     JSR     R7,WHYFC                ;ARE ANY ERROR BITS SET
 6287  044536  105737  001103                  TSTB    $ERFLG                  ;WAS THER AN ERROR
 6288  044542  001402                          BEQ     6$                      ;NO EXIT TEST
 6289  044544  104146                          ERROR   146                     ;THESE ARE THE CONTENTS OF ALL RH70 REG.
 6290  044546  104170                          ERROR   170                     ;THIS IS TO COMMPLETE ERROR PRINTOUT
 6291  044550  004737  006602          6$:     JSR     R7,CLEER                ;CLEER ERRORS IF ANY
 6292  044554  004737  050130                  JSR     R7,ERRTST
 6293                                  ;;*****************************************************************
 6294                                  ;*TEST 76        LARGE TRANSFER TEST
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                                                ;THIS TEST DOES A 4K (OCTAL) WORD TRANSFER
                                                ;THE SECOND TIME THROUGH THE TEST SYNC CLOCK
                                                ;IS MARGINED TO MAKE SURE NO ERRORS OCCUR
                                        ;;*****************************************************************
044360  000004                        TS76:   SCOPE


044362  012777  000007  136750                MOV     #7,@RHCS2
044370  005037  177776                        CLR     @#PSW
044374  005037  003452                        CLR     PASS
044400  005037  003450                BLITZ:  CLR     LOOCNT                  ;CLEAR THE LOOP COUNTER
044404  005701                        1$:     TST     R1                      ;IS IT AN 11 OR 70
044406  100403                                BMI     1$                      ;IT IS AN 11
044410  012777  000000  136742                MOV     #ZERO,@RHBAE            ;IT'S A 70 ZERO THE BAE
044416  012777  005000  136710        1$:     MOV     #5000,@RHBA             ;SET THE BUS ADDRESS
044424  012777  174000  136700                MOV     #-4000,@RHWC
044432  012777  050254  136746                MOV     #BLKTST,@VECADD         ;USE IT IN INTERUPT MODE

044440  005701                                TST     R1
044442  001412                                BEQ     BLIP
044444  005737  003452                        TST     PASS
044450  001407                                BEQ     BLIP
044452  032737  000002  177570                BIT     #BIT1,@#177570
044460  001171                                BNE     BOTTOM
044462  004737  047544                        JSR     R7,DUPORT
044466  000434                                BR      RHNINT
044470  012777  000161  136632        BLIP:   MOV     #WRITEO!IE,@RHCS1       ;SET INTERUPT AND TELL IT TO WRITE

044476  005037  003446                        CLR     BITCNT                  ;CLEAR BIT COUNTER
044502  032777  000200  136620        18$:    BIT     #RDY,@RHCS1             ;IS RDY SET
044510  001015                                BNE     2$                      ;BIT IS SET
044512  005237  003446                        INC     BITCNT                  ;COUNT UP
044516  001371                                BNE     18$                     ;NOT FINISHED COUNTING
044520  005037  003446                        CLR     BITCNT                  ;GET READY TO DO IT AGAIN
044524  032777  000200  136576        19$:    BIT     #RDY,@RHCS1             ;IS IT SET YET?
044532  001004                                BNE     2$                      ;YES
044534  005237  003446                        INC     BITCNT                  ;COUNT UP
044540  001401                                BEQ     2$                      ;BIT IS NOT GOING TO SET
044542  000770                                BR      19$
044544                                  2$:
044544  032777  000200  136556                BIT     #RDY,@RHCS1             ;DID READY SET
044552  001001                                BNE     25$                     ;YES READY SET
044554  104102                                ERROR   102                     ;READY DID NOT SET
044556  104205                          25$:  ERROR   205                     ;IT DID NOT INTERUPT
044560                                  RHNINT:
044560  017737  136544  003420                MOV     @RHCS1,CS1              ;SAVE RHCS1
044566  017737  136540  003444                MOV     @RHWC,WC                ;SAVE WORD COUNT
044574  017737  136534  003414                MOV     @RHBA,BA                ;SAVE BUS ADDRESS
044602  005701                                TST     R1                      ;IS IT AN RH11
044604  001406                                BEQ     87$                     ;NO IT'S A 70
044606  005037  003416                        CLR     BAE                     ;CLEAR BAE
044612  005037  003424                        CLR     CS3                     ;CLEAR CS3
044616  000137  044636                        JMP     86$                     ;CONTINUE
044622  017737  136532  003416        87$:    MOV     @RHBAE,BAE              ;SAVE BUS ADDRESS EXTENSION
044630  017737  136526  003424                MOV     @RHCS3,CS3              ;SAVE RHCS3
044636  017737  136476  003422        86$:    MOV     @RHCS2,CS2              ;SAVE CS2
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 6351  044644  017737  136472  003432          MOV     @RHST,DS1               ;SAVE TESTER STATUS
 6352  044652  017737  136466  003436          MOV     @RHER,ER1               ;SAVE ERROR REGISTER
 6353  044660  017737  136464  003442          MOV     @RHTDB,TDR              ;SAVE TESTER DATA REG.
 6354  044666  017737  136444  003440          MOV     @RHMR2,TC               ;SAVE MR2 TESTER REG.
 6355  044674  032777  140000  136440  9$:     BIT     #ATA!ERR,@RHST          ;IS ATTEN OR ERROR SET
 6356  044702  001033                          BNE     3$                      ;YES THERE WAS A PROB_EM
 6357  044704  032777  000200  136416          BIT     #RDY,@RHCS1             ;DID RDY SET
 6358  044712  001001                          BNE     4$                      ;YES IT SET
 6359  044714  104102                          ERROR   102                     ;RDY DID NOT SET
 6360  044716  022777  015000  136410  4$:     CMP     #5000+<4000*2>,@RHBA    ;DID BA INC PROPER_Y
 6361  044724  001401                          BEQ     5$                      ;YES
 6362  044726  104203                          ERROR   203                     ;BA DID NOT INC PROPER_Y
 6363  044730  022777  015006  136412  5$:     CMP     #15006,@RHTDB   ;WAS CORRECT INFO WRITTEN
 6364  044736  001401                          BEQ     6$                      ;YES
 6365  044740  104204                          ERROR   204                     ;CORRECT INFO NOT IN RHTDB
 6366  044742  005777  136364          6$:     TST     @RHWC                   ;IS WC 0
 6367  044746  001401                          BEQ     7$                      ;YES
 6368  044750  104206                          ERROR   206                     ;RHWC IS NOT ZERO
 6369  044752  105737  001103          7$:     TSTB    $ERFLG                  ;WAS THERE ANY ERRORS
 6370  044756  001407                          BEQ     8$                      ;NO
 6371  044760  032777  002000  136342          BIT     #PSEL,@RHCS1
 6372  044766  001401                          BEQ     3$
 6373  044770  104207                          ERROR   207
 6374  044772  104146          3$:             ERROR   146                     ;OUTPUT THE REGISTERS
 6375  044774  104170                          ERROR   170
 6376  044776  005737  003450          8$:     TST     LOOCNT                  ;IS IT FIRST PASS IN TEST
 6377  045002  001007                          BNE     11$                     ;NO
 6378  045004  005237  003450                  INC     LOOCNT                  ;MAKE IT SECOND PASS
 6379  045010  012777  000017  136320          MOV     #SCLK!7,@RHMR2
 6380                                                                          ;SET THE SYNC CLOCK BIT AND 441 BLK SIZE
 6381  045016  000137  044404                  JMP     IN                      ;DO THE TEST AGAIN
 6382  045022  005037  003450          11$:    CLR     LOOCNT                  ;CLEAR THE COUNTER
 6383  045026  005737  003452                  TST     PASS
 6384  045032  001004                          BNE     BOTTOM
 6385  045034  005237  003452                  INC     PASS
 6386  045040  000137  044400                  JMP     BLITZ
 6387  045044  004737  007234          BOTTOM: JSR     R7,WHYFO                ;TO SEE WHY IT DIED
 6388  045050  004737  006602                  JSR     R7,CLEER                ;CLEAR THE REGISTERS
 6389  045054  004737  050130                  JSR     R7,ERRTST               ;UNDERLINE ERROR MESGES
 6390                                                                          ;IF NEEDED
 6391                                  ;;*****************************************************************
 6392                                  ;*TEST 77        HERE IS WHERE I HANDLE 4 RH'S
 6393                                          ;*THIS IS THE ROUTINE THAT ALLOWS THE
 6394                                          ;*THE DIAGNOSTIC TO TEST FOUR RH'S
 6395                                  ;;*****************************************************************
 6396  045060  000004                  TST77:  SCOPE
 6397
 6398  045062  005237  003376          ENDPAS: INC     DEVCNT                  ;INCREMENT THE DEVICE COUNT
 6399  045066  022737  000001  003376          CMP     #1,DEVCNT               ;IS IT DEVICE 2
 6400  045074  001552                          BEQ     CLEVER                  ;YES
 6401  045076  022737  000002  003376          CMP     #2,DEVCNT               ;IS IT DEVICE 3
 6402  045104  001002                          BNE     1$
 6403  045106  000137  045524                  JMP     ROTEEN                  ;YES
 6404  045112  022737  000003  003376  1$:     CMP     #3,DEVCNT               ;IS IT DEVICE 4
 6405  045120  001002                          BNE     2$                      ;NO CONTINUE SEARCH
 6406  045122  000137  045630                  JMP     IS                      ;YES
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  6407  045126  022737  000004  003376  2$:     CMP     #4,DEVCNT               ;HAVE WE TESTED ALL 4 RH'S
  6408  045134  001470                          BEQ     RESTAT                  ;YES
  6409  045136  104401  045144                  TYPE    ,65$            ;;TYPE ASCIZ STRING
  6410  045142  000421                          BR      64$             ;;GET OVER THE ASCIZ
  6411                                  ;;65$:  .ASCIZ  <15><12>/PROGRAM ERROR ON TESTING 4 RH'S/
  6412  045206                          64$:
  6413  045206  104401  045214                  TYPE    ,67$            ;;TYPE ASCIZ STRING
  6414  045212  000426                          BR      66$             ;;GET OVER THE ASCIZ
  6415                                  ;;67$:  .ASCIZ  <15><12>/RESTARTING TO TEST RH #1 AT BASE ADDRESS /
  6416  045270                          66$:
  6417  045270  013746  003366                  MOV     DEVIC1,-(SP)    ;;SAVE DEVIC1 FOR TYPEOUT
  6418  045274  104402                          TYPOC                   ;;GO TYPE--OCTAL ASCII(ALL DIGITS,
  6419  045276  013737  003366  003400          MOV     DEVIC1,DEVIC5           ;FOR REG. ADDRESS CREATION
  6420  045304  012777  005260  136076          MOV     #GIGO,@RETAIN           ;GET ADDRESS ERROR RETURN
  6421  045312  000137  045734                  JMP     CORREG                  ;CORRECT REG. ADDRESSES
  6422  045316  005037  003376          RESTAT: CLR     DEVCNT                  ;CLEAR DEVICE COUNTER
  6423  045322  005726                          TST     (SP)+                   ;CORRECT STACK
  6424  045324  013737  003366  003400          MOV     DEVIC1,DEVIC5           ;SET UP TO CREATE ADDRESSES
  6425  045332  104401  045340                  TYPE    ,65$            ;;TYPE ASCIZ STRING
  6426  045336  000421                          BR      64$             ;;GET OVER THE ASCIZ
  6427                                  ;;65$:  .ASCIZ  <15><12>/TESTING RH #1 AT BASE ADDRESS /
  6428  045402                          64$:
  6429  045402  013746  003366                  MOV     DEVIC1,-(SP)    ;;SAVE DEVIC1 FOR TYPEOUT
  6430  045406  104402                          TYPOC                   ;;GO TYPE--OCTAL ASCII(ALL DIGITS,
  6431  045410  012777  005260  135772          MOV     #GIGO,@RETAIN           ;SAVE RETURN ADDRESS
  6432  045416  000137  045734                  JMP     CORREG                  ;GO CREATE ADDRESSES
  6433  045422  005737  003370          CLEVER: TST     DEVIC2                  ;IS IT 0
  6434  045426  001733                          BEQ     RESTAT                  ;YES,END PASS
  6435  045430  013737  003370  003400          MOV     DEVIC2,DEVIC5           ;GET READY TO CONSTRUCT
  6436  045436  012746  005434                  MOV     #GIG01,-(SP)            ;SAVE RETURN ERROR ADDRESS
  6437  045442  104401  045450                  TYPE    ,65$            ;;TYPE ASCIZ STRING
  6438  045446  000421                          BR      64$             ;;GET OVER THE ASCIZ
  6439                                  ;;65$:  .ASCIZ  <15><12>/TESTING RH #2 AT BASE ADDRESS /
  6440  045512                          64$:
  6441  045512  013746  003370                  MOV     DEVIC2,-(SP)    ;;SAVE DEVIC2 FOR TYPEOUT
  6442  045516  104402                          TYPOC                   ;;GO TYPE--OCTAL ASCII(ALL DIGITS)
  6443  045520  000137  045734                  JMP     CORREG                  ;CREATE REG. ADDRESSES
  6444  045524  005737  003372          ROTEEN: TST     DEVIC3                  ;IS IT 0
  6445  045530  001672                          BEQ     RESTAT          ;YES ,END PASS
  6446  045532  013737  003372  003400          MOV     DEVIC3,DEVIC5           ;GET BASE ADDRESS
  6447  045540  012777  005574  135642          MOV     #GIG02,@RETAIN          ;SAVE RETURN ADDRESS
  6448  045546  104401  045554                  TYPE    ,65$            ;;TYPE ASCIZ STRING
  6449  045552  000421                          BR      64$             ;;GET OVER THE ASCIZ
  6450                                  ;;65$:  .ASCIZ  <15><12>/TESTING RH #3 AT BASE ADDRESS /
  6451  045616                          64$:
  6452  045616  013746  003372                  MOV     DEVIC3,-(SP)    ;;SAVE DEVIC3 FOR TYPEOUT
  6453  045622  104402                          TYPOC                   ;;GO TYPE--OCTAL ASCII(ALL DIGITS)
  6454  045624  000137  045734                  JMP     CORREG                  ;CORRECT REG. ADDRESSES
  6455  045630  005737  003374          IS:     TST     DEVIC4                  ;IS IT 0
  6456  045634  001630                          BEQ     RESTAT                  ;YES ,END PASS
  6457  045636  013737  003374  003400          MOV     DEVIC4,DEVIC5           ;GET BASE ADDRESS
  6458  045644  012777  005734  135536          MOV     #GIG03,@RETAIN          ;SAVE RETURN ADDRESS
  6459  045652  104401  045660                  TYPE    ,65$            ;;TYPE ASCIZ STRING
  6460  045656  000421                          BR      64$             ;;GET OVER THE ASCIZ
  6461                                  ;;65$:  .ASCIZ  <15><12>/TESTING RH #4 AT BASE ADDRESS /
  6462  045722                          64$:
```

```
                                                MOV     DEVIC4,-(SP)    ;;SAVE DEVIC4 FOR TYPEOUT
                                                TYPOC                   ;;GO TYPE--OCTAL ASCII(ALL DIGITS.
                                                JMP     CORREG          ;CORRECT REG. ADDRESSES
003402  CORREG: MOV     DEVICS,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
003402  AHEAD: MOV     DEVICS,@#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
                BR      66$             ;;GET OVER THE ASCIZ
;;67$:  .ASCIZ  /  TOTAL ERRORS SINCE LAST REPORT /
66$:
                MOV     $ERTTL,-(SP)    ;;SAVE $ERTTL FOR TYPEOUT
```

```
                                                        ;;TOTAL NUMBER OF ERRORS
046240  104405                          TYPDS           ;;GO TYPE--DECIMAL ASCII WITH SIGN
046242  104401  001223                  TYPE    $CRLF   ;;TYPE CARRIAGE RETURN, LINE FEED
046246  005037  001112                  CLR     $ERTTL  ;;CLEAR ERROR TOTAL
046252  013700  000042          $GET42: MOV     @#42,R0 ;;GET MONITOR ADDRESS
046256  001405                          BEQ     $DOAGN  ;;BRANCH IF NO MONITOR
046260  000005                          RESET           ;;CLEAR THE WORLD
046262  004710                  $ENDAD: JSR     PC,(R0) ;;GO TO MONITOR
046264  000240                          NOP             ;;SAVE ROOM
046266  000240                          NOP             ;;FOR
046270  000240                          NOP             ;;ACT11
046272                          $DOAGN:
046272  000137                          JMP     @(PC)+  ;;RETURN
046274  004166                  $RTNAD: .WORD   BEGIN2
046276    377     377     000   $ENJLL: .BYTE   -1,-1,0  ;;NULL CHARACTER STRING
046302                                  .EVEN

;;*****************************************************************
                        ;THIS IS THE WATBIT PROGRAM
;;*****************************************************************

046302  032737  020000  177570  WATBIT: BIT     #SW13,@#177570          ;SKIP ERROR PRINTOUT ?
046310  001155                          BNE     RITURN                  ;YES
046312  032737  000400  177570          BIT     BIT8,@#177570
046320  001151                          BNE     RITURN
046322  032737  000001  177570          BIT     BIT0,@#177570
046330  001145                          BNE     RITURN
046332  005037  003446                  CLR     BITCNT                  ;CLEAR BIT COUNTER
046336  013737  001162  001202          MOV     $REG0,$TMP2             ;SAVE GOOD DATA IN $REG0
046344  013737  001200  001204          MOV     $TMP1,$TMP3             ;SAVE CONTENTS OF BAD DATA
046352  043737  001162  001204          BIC     $REG0,$TMP3             ;WHERE EXTRA BITS SET ?
046360  005737  001204                  TST     $TMP3                   ;FIND OUT
046364  001447                          BEQ     NEXTST                  ;NO,FIND OUT WHAT BITS WHERE NOT SET
046366  104401  046374                  TYPE    ,65$            ;;TYPE ASCIZ STRING
046372  000427                          BR      64$             ;;GET OVER THE ASCIZ
                                ;;65$:  .ASCIZ  <15><12>/THESE ARE THE BIT NO. OF THE EXTRA BITS./<15><12>
046452                          64$:
046452  032737  000001  001204  MOAR:   BIT     #ONE,$TMP3              ;FIND THE EXTRA
046460  001076                          BNE     PRIBIT                  ;GO TO PRINT BIT NO.
046462  006037  001204          MOOR:   ROR     $TMP3                   ;SETUP FOR NEXT BIT
046466  022737  000017  003446          CMP     #17,BITCNT              ;IS IT BIT 15 LAST TESTED
046474  001403                          BEQ     NEXTST                  ;YES,SEE IF ANY BITS WHER NOT SET
046476  005237  003446                  INC     BITCNT                  ;NO NOT LAST BIT YET
046502  000763                          BR      MOAR                    ;GO TO TEST NEXT BIT
046504  005037  003446          NEXTST: CLR     BITCNT                  ;ZERO BIT COUNTER
046510  043737  001200  001202          BIC     $TMP1,$TMP2             ;FIND WHAT BITS WHER NOT SET
046516  005737  001202                  TST     $TMP2                   ;WAS ALL BITS SET THAT SHOULD HAVE BEEN
046522  001446                          BEQ     RETURN                  ;YES,AND TEST FINISHED
046524  104401  046532                  TYPE    ,65$            ;;TYPE ASCIZ STRING
046530  000426                          BR      64$             ;;GET OVER THE ASCIZ
                                ;;65$:  .ASCIZ  <15><12>/BIT NO. OF THE BITS THAT WHERE NOT SET/<15><12>
046606                          64$:
046606  032737  000001  001202  MORE2:  BIT     #ONE,$TMP2              ;FIND BIT NOT SET
046614  001014                          BNE     PRTBIT                  ;ERROR BIT FOUND
046616  006037  001202          MORE:   ROR     $TMP2                   ;SETUP TO FIND MORE
046622  022737  000017  003446          CMP     #17,BITCNT              ;WAS LAST BIT BIT 15
```

```
  6575  046630  001403                  BEQ     RETURN                  ;YES AND TEST FINISHED
  6576  046632  005237  003446          INC     BITCNT                  ;NO SETUP FOR NEXT BIT
  6577  046636  000763                  BR      MORE2                   ;CONTINUE TEST
  6578  046640  104401  001223  RETURN: TYPE    ,$CRLF
  6579  046644  000207          RITURN: RTS     R7                      ;RETURN TO MAIN PROG.
  6580  046646                  PRTBIT:
  6581  046646  013746  003446          MOV     BITCNT,-(SP)    ;;SAVE BITCNT FOR TYPEOUT
  6582  046652  104405                  TYPDS                   ;;GO TYPE--DECIMAL ASCII WITH SIGN
  6583  046654  000760                  BR      MORE                    ;LOOK FOR MORE
  6584  046656                  PRIBIT:
  6585  046656  013746  003446          MOV     BITCNT,-(SP)    ;;SAVE BITCNT FOR TYPEOUT
  6586  046662  104405                  TYPDS                   ;;GO TYPE--DECIMAL ASCII WITH SIGN
  6587  046664  000676                  BR      MOOR                    ;LOOK FOR MORE
  6588                          ;;**************************************************************
  6589                                  ;THIS ROUTINE HANDLES TIMEOUT ERRORS
  6590                          ;;**************************************************************
  6591
  6592  046666                  TIEOUT:
  6593  046666  104401  046674          TYPE    ,65$                    ;;TYPE ASCIZ STRING
  6594  046672  000434                  BR      64$                     ;;GET OVER THE ASCIZ
  6595                          ;;65$:  .ASCIZ  <15><12><12>/PROGRAM INSTRUCTION OR ADDRESS HAS CREATED A TIMEOUT/
  6596  046764                  64$:
  6597  046764  104401  046772          TYPE    ,67$                    ;;TYPE ASCIZ STRING
  6598  046770  000422                  BR      66$                     ;;GET OVER THE ASCIZ
  6599                          ;;67$:  .ASCIZ  <15><12>/ADDRESS WHICH CAUSED TIMEOUT WAS /
  6600  047036                  66$:
  6601  047036  012637  001206          MOV     (SP)+,$TMP4             ;MOVE ADDRESS TO STORAGE
  6602  047042  162737  000002  001206  SUB     #TWO,$TMP4              ;CORRECT ADDRESS
  6603  047050  013746  001206          MOV     $TMP4,-(SP)     ;;SAVE $TMP4 FOR TYPEOUT
  6604  047054  104402                  TYPOC                   ;;GO TYPE--OCTAL ASCII(ALL DIGITS)
  6605  047056  104401  047064          TYPE    ,69$                    ;;TYPE ASCIZ STRING
  6606  047062  000406                  BR      68$                     ;;GET OVER THE ASCIZ
  6607                          ;;69$:  .ASCIZ  <15><12>/PSW WAS /
  6608  047100                  68$:
  6609  047100  012637  001206          MOV     (SP)+,$TMP4             ;GET OLD PSW
  6610  047104  013746  001206          MOV     $TMP4,-(SP)     ;;SAVE $TMP4 FOR TYPEOUT
  6611  047110  104402                  TYPOC                   ;;GO TYPE--OCTAL ASCII(ALL DIGITS)
  6612  047112  013716  001106          MOV     $LPADR,(SP)             ;FAKE RETURN
  6613  047116  000002                  RTI
  6614
  6615                          ;;**************************************************************
  6616                                  ;THIS ROUTINE HANDLES PARITY ERRORS
  6617                          ;;**************************************************************
  6618
  6619  047120                  PARITY:
  6620  047120  104401  047126          TYPE    ,65$                    ;;TYPE ASCIZ STRING
  6621  047124  000422                  BR      64$                     ;;GET OVER THE ASCIZ
  6622                          ;;65$:  .ASCIZ  <15><12>/PARITY TRAP TO VECTOR ADDRESS 114/
  6623  047172                  64$:
  6624  047172  104401  047200          TYPE    ,67$                    ;;TYPE ASCIZ STRING
  6625  047176  000420                  BR      66$                     ;;GET OVER THE ASCIZ
  6626                          ;;67$:  .ASCIZ  <15><12>/ADDRESS THAT CAUSED TRAP WAS /
  6627  047240                  66$:
  6628  047240  012637  004100          MOV     (SP)+,RBUF              ;GET PC+2
  6629  047244  162737  000002  004100  SUB     #TWO,RBUF               ;CORECT PC
  6630  047252  013746  004100          MOV     RBUF,-(SP)      ;;SAVE RBUF FOR TYPEOUT
```

```
  6631  047256  104402                          TYPOC                   ;;GO TYPE--OCTAL ASCII(ALL DIGITS)
  6632  047260  104401  047266                  TYPE    ,69$            ;;TYPE ASCIZ STRING
  6633  047264  000406                          BR      68$             ;;GET OVER THE ASCIZ
  6634                                  ;;69$:  .ASCIZ  <15><12>/PSW WAS /
  6635  047302                          68$:
  6636  047302  012637  004100                  MOV     (SP)+,RBUF              ;GET OLD PSW
  6637  047306  013746  004100                  MOV     RBUF,-(SP)      ;;SAVE RBUF FOR TYPEOUT
  6638  047312  104402                          TYPOC                   ;;GO TYPE--OCTAL ASCII(ALL DIGITS)
  6639  047314  005701                          TST     R1                      ;ARE WE ON AN 11/70
  6640  047316  100507                          BMI     TRAPED                  ;NO,ITS A 11/05-11/45
  6641  047320  104401  047326                  TYPE    ,71$            ;;TYPE ASCIZ STRING
  6642  047324  000417                          BR      70$             ;;GET OVER THE ASCIZ
  6643                                  ;;71$:  .ASCIZ  <15><12>/HIGH ERROR ADDRESS REG. = /
  6644  047364                          70$:
  6645  047364  013737  177742  004100            MOV     HERADD,RBUF
  6646  047372  013746  004100                  MOV     RBUF,-(SP)      ;;SAVE RBUF FOR TYPEOUT
  6647  047376  104402                          TYPOC                   ;;GO TYPE--OCTAL ASCII(ALL DIGITS)
  6648  047400  104401  047406                  TYPE    ,73$            ;;TYPE ASCIZ STRING
  6649  047404  000416                          BR      72$             ;;GET OVER THE ASCIZ
  6650                                  ;;73$:  .ASCIZ  <15><12>/LOW ERROR ADDRESS REG. = /
  6651  047442                          72$:
  6652  047442  013737  177740  004100            MOV     LERADD,RBUF
  6653  047450  013746  004100                  MOV     RBUF,-(SP)      ;;SAVE RBUF FOR TYPEOUT
  6654  047454  104402                          TYPOC                   ;;GO TYPE--OCTAL ASCII(ALL DIGITS)
  6655  047456  104401  047464                  TYPE    ,75$            ;;TYPE ASCIZ STRING
  6656  047462  000417                          BR      74$             ;;GET OVER THE ASCIZ
  6657                                  ;;75$:  .ASCIZ  <15><12>/MEMORY SYSTEM ERROR REG. = /
  6658  047522                          74$:
  6659  047522  013737  177744  004100            MOV     MEMERR,RBUF
  6660  047530  013746  004100                  MOV     RBUF,-(SP)      ;;SAVE RBUF FOR TYPEOUT
  6661  047534  104402                          TYPOC                   ;;GO TYPE--OCTAL ASCII(ALL DIGITS)
  6662  047536  013716  001106          TRAPED: MOV     $LPADR,(SP)             ;FAKE RETURN
  6663  047542  000002                          RTI                             ;RETURN WHERE LEFT OFF
  6664
  6665                                  ;;*****************************************************************
  6666                                          ;THIS IS THE DUAL PORT ROUTINE
  6667                                  ;;*****************************************************************
  6668  047544  012777  002161  133556  DUPORT: MOV     #WRITEO!PSEL!IE,@RHCS1
  6669  047552  005037  003446                  CLR     BITCNT                  ;CLEAR BIT COUNTER
  6670  047556  032777  000200  133544  18$:     BIT     #RDY,@RHCS1             ;IS RDY SET
  6671  047564  001015                          BNE     BULL                    ;BIT IS SET
  6672  047566  005237  003446                  INC     BITCNT                  ;COUNT UP
  6673  047572  001371                          BNE     18$                     ;NOT FINISHED COUNTING
  6674  047574  005037  003446                  CLR     BITCNT                  ;GET READY TO DO IT AGAIN
  6675  047600  032777  000200  133522  19$:     BIT     #RDY,@RHCS1             ;IS IT SET YET?
  6676  047606  001004                          BNE     BULL                    ;YES
  6677  047610  005237  003446                  INC     BITCNT                  ;COUNT UP
  6678  047614  001401                          BEQ     BULL                    ;BIT IS NOT GOING TO SET
  6679  047616  000770                          BR      19$
  6680  047620                          BULL:
  6681  047620  032777  000200  133502            BIT     #RDY,@RHCS1
  6682  047626  001401                          BEQ     CUTE
  6683  047630  104102                          ERROR   102
  6684  047632  000207                  CUTE:   RTS     PC
  6685                                  ;;*****************************************************************
  6686                                          ;THESE ARE THE CLEARS ROUTINES
```

```
                                        ;;*****************************************************************
                                        ;;*****************************************************************
047634  012737  000000  001162  FINDIT: MOV     #0,$REGO                ;GET READY TO FIND ERROR
047642  017737  133462  001200          MOV     @RHCS1,$TMP1                    ;GET COMPARE READY
047650  042737  007777  001200          BIC     #READ&!GO!IE!RDY!A16!A17!PSEL!DVA,$TMP1
                                                                        ;CLEAR BITS NOT NEEDED
047656  000207                          RTS     R7                      ;RETURN TO PROGRAM
047660  012737  000000  001162  LOOKFO: MOV     #0,$REGO                ;GET READY TO FIND ERROR
047666  017737  133446  001200          MOV     @RHCS2,$TMP1                    ;GET COMPARE READY
047674  042737  000377  001200          BIC     #US1!US2!US4!BAI!PAT!CLR!IR!OR,$TMP1
                                                                        ;CLEAR BITS NOT NEEDED
047702  000207                          RTS     R7                      ;RETURN TO PROGRAM
047704  012737  000000  001162  LOCKED: MOV     #0,$REGO                ;GET READY TO FIND ERROR
047712  017737  133426  001200          MOV     @RHER,$TMP1                     ;GET COMPARE READY
047720  042737  000000  001200          BIC     #ZERO,$TMP1
                                                                        ;CLEAR BITS NOT NEEDED
047726  000207                          RTS     R7                      ;RETURN TO PROGRAM
047730  012737  000000  001162  FIND:   MOV     #0,$REGO                ;GET READY TO FIND ERROR
047736  017737  133400  001200          MOV     @RHST,$TMP1                     ;GET COMPARE READY
047744  042737  030600  001200          BIC     #DRY!DPR!MOL!PIP,$TMP1
                                                                        ;CLEAR BITS NOT NEEDED
047752  000207                          RTS     R7                      ;RETURN TO PROGRAM
047754  012737  000007  001162  FOUND:  MOV     #7,$REGO                ;GET READY TO FIND ERROR
047762  017737  133352  001200          MOV     @RHCS2,$TMP1                    ;GET COMPARE READY
047770  042737  177770  001200          BIC     #BAI!PAT!CLR!IR!OR!MPE!MXF!PGE!NEM!NED!UPE!WCE!DLT,$TMP1
                                                                        ;CLEAR BITS NOT NEEDED
047776  000207                          RTS     R7                      ;RETURN TO PROGRAM
050000  012737  000000  001162  CS3ERR: MOV     #0,$REGO                ;GET READY TO FIND ERROR
050006  017737  133350  001200          MOV     @RHCS3,$TMP1                    ;GET COMPARE READY
050014  042737  000117  001200          BIC     #IE3!IPCK0!IPCK1!IPCK2!IPCK3,$TMP1
                                                                        ;CLEAR BITS NOT NEEDED
050022  000207                          RTS     R7                      ;RETURN TO PROGRAM

                                        ;;*****************************************************************
                                        ;* THIS ROUTINE IS THE TEST NUMBER CORRECTION ROUTINE
                                        ;;*****************************************************************

050024  013737  001102  003454  TSTNMB: MOV     $TSTNM,TSTNM            ;GET THE TEST NUMBER
050032  105037  003455          CLRB    TSTNM+1                 ;CLEAR UPPER BYTE
050036  032737  020000  177570          BIT     #SW13,@#177570          ;INHIBIT TYPEOUT
050044  001026                          BNE     TSTNMA                  ;YES
050046  122737  000001  001103          CMPB    #1,$ERFLG               ;IS IT FIRST ERROR
050054  001022                          BNE     TSTNMA                  ;NO
050056  013737  003454  003456          MOV     TSTNM,OFFSET            ;GET TEST NUMBER
050064  006137  003456                  ROL     OFFSET                  ;CREAT OFFSET
050070  012737  072332  003460          MOV     #HEADER,HEDDAD          ;GET BEGINING OF TABLE
050076  063737  003456  003460          ADD     OFFSET,HEDDAD           ;CREATE MES ADDRESS
050104  017737  133350  050120          MOV     @HEDDAD,HEDADD          ;SET UP FOR MESSAGE
050112  104401  001223                  TYPE    ,$CRLF
050116  104401                          TYPE
050120  000000          HEDADD: 0
050122  004737  074050  TSTNMA: JSR     R7,@#$ERRTYP            ;GO TO ERROR TYPE ROUTINE
050126  000207                          RTS     R7                      ;RETURN TO ERROR ROUTINE

                                        ;;*****************************************************************
                                        ;THIS PROGRAM WHILL DEVIDE THE ERROR
```

```
                                        ;PRINTOUT BETWEEN TESTS
                                ;;**************************************************************
                                ERRTST: TSTB    $ERFLG                  ;WAS THERE AN ERROR FOUND
                                        BEQ     OUTOF                   ;NO ,GO TO NEXT TEST
                                        BIT     #SW13,@#177570          ;INHIBIT TYPEOUT ?
                                        BNE     OUTOF                   ;YES
                                        MOV     $TSTNM,TSTNM            ;GET TEST NO.
                                        CLRB    TSTNM+1                 ;CLEAR UPPER BYTE
                                        TYPE    ,65$                ;;TYPE ASCIZ STRING
                                        BR      64$                 ;;GET OVER THE ASCIZ
                                ;;65$:  .ASCIZ  <15><12>/↑↑↑↑TEST /
                                64$:
                                        MOV     TSTNM,-(SP)         ;;SAVE TSTNM FOR TYPEOUT
                                        TYPOC                       ;;GO TYPE--OCTAL ASCII(ALL DIGITS)
                                        TYPE    ,67$                ;;TYPE ASCIZ STRING
                                        BR      66$                 ;;GET OVER THE ASCIZ
                                ;;67$:  .ASCIZ  / ERROR MESSAGE(S) ↑↑↑↑/<15><12><12><12>
                                66$:
                                OUTOF:  RTS     R7

                                ;;**************************************************************
                                        ;THIS IS THE INTERUPT ROUTINE
                                        ;FOR THE LARGE TRANSFER TEST
                                ;;**************************************************************

                                BLKTST: MOV     #RHNINT,(SP)            ;SET THE CORRET RETURN
                                        RTI                             ;AND RETURN
```

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

050262  044122  040440  042104  HED1:   .ASCIZ/RH ADDRESS DECODE TEST (TEST 1)/
050270  042522  051523  042040
050276  041505  042117  020105
050304  042524  052123  024040
050312  042524  052123  030440
050320  000051
050322  046103  040505  020122  HED2:   .ASCIZ/CLEAR  TEST (TEST 2)/
050330  052040  051505  020124
050336  052050  051505  020124
050344  024462     000
050347     124  051505  042524  HED3:   .ASCIZ/TESTER CONNECTED TEST (TEST 3)/
050354  020122  047503  047116
050362  041505  042524  020104
050370  042524  052123  024040
050376  042524  052123  031440
050404  000051
050406  047527  042122  041440  HED4:   .ASCIZ/WORD COUNT CLEAR TEST (TEST 4)/
050414  052517  052116  041440
050422  042514  051101  052040
050430  051505  020124  052050
050436  051505  020124  024464
050444     000
050445     122  041110  020101  HED5:   .ASCIZ/RHBA CLEAR TEST (TEST 5)/
050452  046103  040505  020122
050460  042524  052123  024040
050466  042524  052123  032440
050474  000051
050476  044122  040502  020105  HED6:   .ASCIZ/RHBAE CLEAR TEST (TEST 6)/
050504  046103  040505  020122
050512  042524  052123  024040
050520  042524  052123  033040
050526  000051
050530  044122  041104  041440  HED7:   .ASCIZ/RHDB CLEAR TEST (TEST 7)/
050536  042514  051101  052040
050544  051505  020124  052050
050552  051505  020124  024467
050560     000
050561     120  047522  020115  HED10:  .ASCIZ/PROM REGISTER DECODE TEST (TEST 10)/
050566  042522  044507  052123
050574  051105  042040  041505
050602  042117  020105  042524
050610  052123  024040  042524
050616  052123  030440  024460
050624     000
050625     122  041510  031523  HED11:  .ASCIZ/RHCS3 BIT TEST (TEST 11)/
050632  041040  052111  052040
050640  051505  020124  052050
050646  051505  020124  030461
050654  000051
050656  044122  041527  041040  HED12:  .ASCIZ/RHWC BIT TEST (TEST 12)/
050664  052111  052040  051505
050672  020124  052050  051505
```

```
 6827  050700  020124  031061  000051
 6828  050706  044122  040502  020105  HED13:  .ASCIZ/RHBAE BIT TEST (TEST 13)/
 6829  050714  044502  020124  042524
 6830  050722  052123  024040  042524
 6831  050730  052123  030440  024463
 6832  050736     000
 6833  050737     122  041110  020101  HED14:  .ASCIZ/RHBA BIT TEST (TEST 14)/
 6834  050744  044502  020124  042524
 6835  050752  052123  024040  042524
 6836  050760  052123  030440  024464
 6837  050766     000
 6838  050767     122  042110  020102  HED15:  .ASCIZ/RHDB BIT TEST (TEST 15)/
 6839  050774  044502  020124  042524
 6840  051002  052123  024040  042524
 6841  051010  052123  030440  024465
 6842  051016     000
 6843  051017     122  053510  020103  HED16:  .ASCIZ/RHWC OPERATIONAL TEST (TEST 16)/
 6844  051024  050117  051105  052101
 6845  051032  047511  040516  020114
 6846  051040  042524  052123  024040
 6847  051046  042524  052123  030440
 6848  051054  024466     000
 6849  051057     122  041110  020101  HED17:  .ASCIZ/RHBA OPERATIONAL TEST (TEST 17)/
 6850  051064  050117  051105  052101
 6851  051072  047511  040516  020114
 6852  051100  042524  052123  024040
 6853  051106  042524  052123  030440
 6854  051114  024467     000
 6855  051117     116  046505  052054  HED20:  .ASCIZ/NEM,TRE AND SC BIT TEST (TEST 20)/
 6856  051124  042522  040440  042116
 6857  051132  051440  020103  044502
 6858  051140  020124  042524  052123
 6859  051146  024040  042524  052123
 6860  051154  031040  024460     000
 6861  051161     127  042503  052054  HED21:  .ASCIZ/WCE,TRE AND SC BIT TEST (TEST 21)/
 6862  051166  042522  040440  042116
 6863  051174  051440  020103  044502
 6864  051202  020124  042524  052123
 6865  051210  024040  042524  052123
 6866  051216  031040  024461     000
 6867  051223     115  050104  026105  HED22:  .ASCIZ/MDPE,TRE AND SC BIT TEST (TEST 22)/
 6868  051230  051124  020105  047101
 6869  051236  020104  041523  041040
 6870  051244  052111  052040  051505
 6871  051252  020124  052050  051505
 6872  051260  020124  031062  000051
 6873  051266  050125  026105  051124  HED23:  .ASCIZ/UPE,TRE AND SC BIT TEST (TEST 23) RH11 ONLY/
 6874  051274  020105  047101  020104
 6875  051302  041523  041040  052111
 6876  051310  052040  051505  020124
 6877  051316  052050  051505  020124
 6878  051324  031462  020051  044122
 6879  051332  030461  047440  046116
 6880  051340  000131
 6881  051342  050125  026105  051124  HED24:  .ASCIZ/UPE,TRE AND SC BIT TEST (TEST 24)/
 6882  051350  020105  047101  020104
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 6883  051356  041523  041040  052111
 6884  051364  052040  051505  020124
 6885  051372  052050  051505  020124
 6886  051400  032062  000051
 6887  051404  042516  026104  051124  HED25:  .ASCIZ/NED,TRE AND SC BIT TEST (TEST 25)/
 6888  051412  020105  047101  020104
 6889  051420  041523  041040  052111
 6890  051426  052040  051505  020124
 6891  051434  052050  051505  020124
 6892  051442  032462  000051
 6893  051446  054115  026106  051124  HED26:  .ASCIZ/MXF,TRE AND SC BIT TEST (TEST 26)/
 6894  051454  020105  047101  020104
 6895  051462  041523  041040  052111
 6896  051470  052040  051505  020124
 6897  051476  052050  051505  020124
 6898  051504  033062  000051
 6899  051510  043520  020105  051124  HED27:  .ASCIZ/PGE TRE AND SC BIT TEST (TEST 27)/
 6900  051516  020105  047101  020104
 6901  051524  041523  041040  052111
 6902  051532  052040  051505  020124
 6903  051540  052050  051505  020124
 6904  051546  033462  000051
 6905  051552  054115  026106  051124  HED30:  .ASCIZ/MXF,TRE AND SC BIT TEST (TEST 30)/
 6906  051560  020105  047101  020104
 6907  051566  041523  041040  052111
 6908  051574  052040  051505  020124
 6909  051602  052050  051505  020124
 6910  051610  030063  000051
 6911  051614  041515  042520  040440  HED31:  .ASCIZ/MCPE AND SC ERROR BIT TEST (TEST 31)/
 6912  051622  042116  051440  020103
 6913  051630  051105  047522  020122
 6914  051636  044502  020124  042524
 6915  051644  052123  024040  042524
 6916  051652  052123  031440  024461
 6917  051660     000
 6918  051661     104  046102  052040  HED32:  .ASCIZ/DBL TEST,1 WORD FROM A BASE 4 ADDRESS (TEST 32)/
 6919  051666  051505  026124  020061
 6920  051674  047527  042122  043040
 6921  051702  047522  020115  020101
 6922  051710  040502  042523  032040
 6923  051716  040440  042104  042522
 6924  051724  051523  024040  042524
 6925  051732  052123  031440  024462
 6926  051740     000
 6927  051741     104  046102  052040  HED33:  .ASCIZ/DBL TEST,2 WORD FROM A BASE 4 ADD. (TEST 33)/
 6928  051746  051505  026124  020062
 6929  051754  047527  042122  043040
 6930  051762  047522  020115  020101
 6931  051770  040502  042523  032040
 6932  051776  040440  042104  020056
 6933  052004  052050  051505  020124
 6934  052012  031463  000051
 6935  052016  041104  020114  042524  HED34:  .ASCIZ/DBL TEST,3 WORD FROM A BASE 4 ADD. (TEST 34)/
 6936  052024  052123  031454  053440
 6937  052032  051117  020104  051106
 6938  052040  046517  040440  041040
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6938   052276  025501  020135  020064
6939   052304  020064  042101  024040
6940   052312  042524  052123  031440
6941   052320  024464     000
6942   052323     104  046102  052040  MED35:  .ASCIZ/DBL TEST,4 WORDS FROM A BASE 4 ADD. (TEST 35)/
6943   052331  051505  026124  020064
6944   052337  047527  042122  020123
6945   052345  051106  046517  040440
6946   052353  041040  051501  020105
6947   052361  020064  042101  027104
6948   052367  024040  042524  052123
6949   052375  031440  024465     000
6950   052402     104  046102  052040  MED36:  .ASCIZ/DBL TEST,1 WORD FROM A BASE 4 ADD.(TEST 36)/
6951   052410  051505  026124  020061
6952   052416  047527  042122  043040
6953   052424  047522  020115  020101
6954   052432  040502  042523  032040
6955   052440  040440  042104  024056
6956   052446  042524  052123  031440
6957   052454  024466     000
6958   052457     104  046102  052040  MED37:  .ASCIZ/DBL TEST,2 WORD FROM A BASE 4 ADD. WITH BAI SET (TEST 37)/
6959   052465  051505  026124  020062
6960   052471  047527  042122  043040
6961   052477  047522  020115  020101
6962   052505  040502  042523  032040
6963   052513  040440  042104  020056
6964   052521  044527  044124  041040
6965   052527  044501  051440  052105
6966   052535  024040  042524  052123
6967   052543  031440  024467     000
6968   052550     104  046102  052040  MED40:  .ASCIZ/DBL TEST,2 WORD WITH BAI SET AND WRITE REV (TEST 40)/
6969   052556  051505  026124  020062
6970   052564  047527  042122  053440
6971   052572  052111  020110  040502
6972   052600  020111  042523  020124
6973   052606  047101  020104  051127
6974   052614  052111  020105  042522
6975   052622  020126  052051  051505
6976   052630  020124  030064  000051
6977   052636  041104  020114  042524  MED41:  .ASCIZ/DBL TEST,NOT A BASE 4 ADD (TEST 41)/
6978   052644  052123  047054  052117
6979   052652  040440  041040  051501
6980   052660  020105  020064  042101
6981   052666  020104  052050  051505
6982   052674  020124  030464  000051
6983   052702  041104  020114  042524  MED42:  .ASCIZ/DBL TEST BASE 4 ADD. WRITE FWD (TEST 42)/
6984   052710  052123  041040  051501
6985   052716  020105  020064  042101
6986   052724  027104  053440  044522
6987   052732  042524  043040  042127
6988   052740  024040  042524  052123
6989   052746  032040  024462     000
6990   052753     104  046102  052040  MED43:  .ASCIZ/DBL TEST ,2 WORD ,NOT A BASE 4 ADD. (TEST 43)/
6991   052761  051505  020124  031054
6992   052767  053440  051117  020104
6993   052775  047054  052117  040440
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  6996  052550  241040  051501  020105
  6997  052556  020064  042101  027104
  6998  052564  024040  042524  052123
  6999  052572  032040  024463     000
  7000  052577     104  046102  052040  HED44:  .ASCIZ/DBL TEST,3 WORD ,NOT A BASE 4 ADD.,WRITE REV (TEST 44)/
  7001  052604  051505  026124  020063
  7002  052612  047527  042122  026040
  7003  052620  047516  020124  020101
  7004  052626  040502  042523  032040
  7005  052634  040440  042104  026056
  7006  052642  051275  052111  020105
  7007  052650  042522  020126  052050
  7008  052656  051505  020124  032064
  7009  052664  000051
  7010  052666  041104  020114  042524  HED45:  .ASCIZ/DBL TEST,2 WORD READ FWD (TEST 45)/
  7011  052674  052123  031054  053440
  7012  052702  051117  020104  042522
  7013  052710  042101  043040  042127
  7014  052716  024040  042524  052123
  7015  052724  032040  024465     000
  7016  052731     104  046102  052040  HED46:  .ASCIZ/DBL TEST,2 WORD READ FWD,NOT A BASE 4 ADD. (TEST 46)/
  7017  052736  051505  026124  020062
  7018  052744  047527  042122  051040
  7019  052752  040505  020104  053506
  7020  052760  026104  047516  020124
  7021  052766  020101  040502  042523
  7022  052774  032040  040440  042104
  7023  053002  020056  052050  051505
  7024  053010  020124  033064  000051
  7025  053016  041104  020114  042524  HED47:  .ASCIZ/DBL TEST,2 WORD READ REV,BASE 4 ADD. (TEST 47)/
  7026  053024  052123  031054  053440
  7027  053032  051117  020104  042522
  7028  053040  042101  051040  053105
  7029  053046  041054  051501  020105
  7030  053054  020064  042101  027104
  7031  053062  024040  042524  052123
  7032  053070  032040  024467     000
  7033  053075     104  046102  052040  HED50:  .ASCIZ/DBL TEST,2 WORD READ REV,NOT A BASE 4 ADD. (TEST 50)/
  7034  053102  051505  026124  020062
  7035  053110  047527  042122  051040
  7036  053116  040505  020104  042522
  7037  053124  026126  047516  020124
  7038  053132  020101  040502  042523
  7039  053140  032040  040440  042104
  7040  053146  020056  052050  051505
  7041  053154  020124  030065  000051
  7042  053162  041104  020114  042524  HED51:  .ASCIZ/DBL TEST,3 WORD READ FWD,BASE 4 ADD. (TEST 51)/
  7043  053170  052123  031454  053440
  7044  053176  051117  020104  042522
  7045  053204  042101  043040  042127
  7046  053212  041054  051501  020105
  7047  053220  020064  042101  027104
  7048  053226  024040  042524  052123
  7049  053234  032440  024461     000
  7050  053241     104  046102  052040  HED52:  .ASCIZ/DBL TEST,3 WORD READ REV,BASE 4 ADD. (TEST 52)/
  7051  053246  051505  026124  020063
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 7051  053254  047527  042122  051040
 7052  053262  040505  020104  042522
 7053  053270  026126  040502  042523
 7054  053276  032040  040440  042104
 7055  053304  020056  052050  051505
 7056  053312  020124  031065  000051
 7057  053320  041527  020105  053505  HED53:  .ASCIZ/WCE EW ERROR TEST "WCELO" (TEST 53)/
 7058  053326  042440  051122  051117
 7059  053334  052040  051505  020124
 7060  053342  053442  042503  047514
 7061  053350  020042  052050  051505
 7062  053356  020124  031465  000051
 7063  053364  041527  020105  053517  HED54:  .ASCIZ/WCE OW ERROR TEST "WCEHI" (TEST 54)/
 7064  053372  042440  051122  051117
 7065  053400  052040  051505  020124
 7066  053406  053442  042503  044510
 7067  053414  020042  052050  051505
 7068  053422  020124  032065  000051
 7069  053430  047111  042524  052522  HED55:  .ASCIZ/INTERUPT ENABLE TEST (TEST 55)/
 7070  053436  052120  042440  040516
 7071  053444  046102  020105  042524
 7072  053452  052123  024040  042524
 7073  053460  052123  032440  024465
 7074  053466     000
 7075  053467     122  040505  020104  HED56:  .ASCIZ READ OPERATIONAL TEST (NORMAL #1) (TEST 56)/
 7076  053474  050117  051105  052101
 7077  053502  047511  040516  020114
 7078  053510  042524  052123  024040
 7079  053516  047516  046522  046101
 7080  053524  021440  024461  024040
 7081  053532  042524  052123  032440
 7082  053540  024466     000
 7083  053543     122  020110  050117  HED57:  .ASCIZ/RH OPERATIONAL WRITE TEST #1 (TEST 57)/
 7084  053550  051105  052101  047511
 7085  053556  040516  020114  051127
 7086  053564  052111  020105  042524
 7087  053572  052123  021440  020061
 7088  053600  052050  051505  020124
 7089  053606  033465  000051
 7090  053612  042522  042101  047440  HED60:  .ASCIZ/READ OPERATIONAL TEST (NORMAL #2)(TEST 60)/
 7091  053620  042520  040522  044524
 7092  053626  047117  046101  052040
 7093  053634  051505  020124  047050
 7094  053642  051117  040515  020114
 7095  053650  031043  024051  042524
 7096  053656  052123  033040  024460
 7097  053664     000
 7098  053665     122  020110  050117  HED61:  .ASCIZ/RH OPERATIONAL READ TEST #1 (TEST 61)/
 7099  053672  051105  052101  047511
 7100  053700  040516  020114  042522
 7101  053706  042101  052040  051505
 7102  053714  020124  030443  024040
 7103  053722  042524  052123  033040
 7104  053730  024461     000
 7105  053733     122  040505  020104  HED62:  .ASCIZ/READ OPERATIONAL TEST (NORMAL #3)(TEST 62)/
 7106  053740  050117  051105  052101
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7107  053746  047511  040516  020114
7108  053754  042524  052123  024040
7109  053762  047516  046522  046101
7110  053770  021440  024463  052050
7111  053776  051505  020124  031066
7112  054004  000051
7113  054006  044122  047440  042520  HED63:  .ASCIZ/RH OPERATIONAL WRITE TEST #2 (TEST 63)/
7114  054014  040522  044524  047117
7115  054022  046101  053440  044522
7116  054030  042524  052040  051505
7117  054036  020124  031043  024040
7118  054044  042524  052123  033040
7119  054052  024463     000
7120  054055     122  040505  020104  HED64:  .ASCIZ/READ OPERATIONAL TEST (NORMAL #4)(TEST 64)/
7121  054062  050117  051105  052101
7122  054070  047511  040516  020114
7123  054076  042524  052123  024040
7124  054104  047516  046522  046101
7125  054112  021440  024464  052050
7126  054120  051505  020124  032066
7127  054126  000051
7128  054130  044122  047440  042520  HED65:  .ASCIZ/RH OPERATIONAL READ TEST #2 (TEST 65)/
7129  054136  040522  044524  047117
7130  054144  046101  051040  040505
7131  054152  020104  042524  052123
7132  054160  021440  020062  052050
7133  054166  051505  020124  032466
7134  054174  000051
7135  054176  051127  052111  020105  HED66:  .ASCIZ/WRITE OPERATIONAL TEST (NORMAL #1)(TEST 66)/
7136  054204  050117  051105  052101
7137  054212  047511  040516  020114
7138  054220  042524  052123  024040
7139  054226  047516  046522  046101
7140  054234  021440  024461  052050
7141  054242  051505  020124  033066
7142  054250  000051
7143  054252  044122  047440  042520  HED67:  .ASCIZ/RH OPERATIONAL WRITE TEST #3 (TEST 67)/
7144  054260  040522  044524  047117
7145  054266  046101  053440  044522
7146  054274  042524  052040  051505
7147  054302  020124  031443  024040
7148  054310  042524  052123  033040
7149  054316  024467     000
7150  054321     127  044522  042524  HED70:  .ASCIZ/WRITE OPERATIONAL TEST (NORMAL #3)(TEST 70)/
7151  054326  047440  042520  040522
7152  054334  044524  047117  046101
7153  054342  052040  051505  020124
7154  054350  047050  051117  040515
7155  054356  020114  031443  024051
7156  054364  042524  052123  033440
7157  054372  024460     000
7158  054375     122  020110  050117  HED71:  .ASCIZ/RH OPERATIONAL READ TEST #3 (TEST 71)/
7159  054402  051105  052101  047511
7160  054410  040516  020114  042522
7161  054416  042101  052040  051505
7162  054424  020124  031443  024040
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7163  054432  042524  052123  033440
7164  054440  024461     000
7165  054443     127  044522  042524  HED72:  .ASCIZ WRITE OPERATIONAL TEST (NORMAL #3)(TEST 72)/
7166  054450  047440  042520  040522
7167  054456  044524  047117  046101
7168  054464  052040  051505  020124
7169  054472  047050  051117  040515
7170  054500  020114  031443  024051
7171  054506  042524  052123  033440
7172  054514  024462     000
7173  054517     122  020110  050117  HED73:  .ASCIZ/RH OPERATIONAL WRITE TEST #4 (TEST 73)/
7174  054524  051105  052101  047511
7175  054532  040516  020114  051127
7176  054540  052111  020105  042524
7177  054546  052123  021440  020064
7178  054554  052050  051505  020124
7179  054562  031467  000051
7180  054566  051127  052111  020105  HED74:  .ASCIZ/WRITE OPERATIONAL TEST (NORMAL #4)(TEST 74)/
7181  054574  050117  051105  052101
7182  054602  047511  040516  020114
7183  054610  042524  052123  024040
7184  054616  047516  046522  046101
7185  054624  021440  024464  052050
7186  054632  051505  020124  032067
7187  054640  000051
7188  054642  044122  047440  042520  HED75:  .ASCIZ RH OPERATIONAL READ TEST #4 (TEST 75)/
7189  054650  040522  044524  047117
7190  054656  046101  051040  040505
7191  054664  020104  042524  052123
7192  054672  021440  020064  052050
7193  054700  051505  020124  032467
7194  054706  000051
7195  054710  040514  043522  020105  HED76:  .ASCIZ/LARGE TRANSFER TEST 671 WORDS (TEST 76)/
7196  054716  051124  047101  043123
7197  054724  051105  052040  051505
7198  054732  020124  033466  020061
7199  054740  047527  042122  020123
7200  054746  052050  051505  020124
7201  054754  033067  000051
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7202
7203                                    ;;*****************************************************************
7204                                    ;ERROR MESSAGES
7205                                    ;;*****************************************************************
7206
7207                                    .EVEN
7208  054760  047503  051122  041505  EM1:    .ASCIZ/CORRECT BIT DID NOT SET IN RHWC/
7209  054766  020124  044502  020124
7210  054774  044504  020104  047516
7211  055002  020124  042523  020124
7212  055010  047111  051040  053510
7213  055016  000103
7214  055020  047503  051122  041505  EM2:    .ASCIZ/CORRECT BIT DID NOT SET IN RHBA/
7215  055026  020124  044502  020124
7216  055034  044504  020104  047516
7217  055042  020124  042523  020124
7218  055050  047111  051040  041110
7219  055056  000101
7220  055060  047503  051122  041505  EM3:    .ASCIZ/CORRECT BIT DID NOT SET IN BUS ADDRESS REG./
7221  055066  020124  044502  020124
7222  055074  044504  020104  047516
7223  055102  020124  042523  020124
7224  055110  047111  041040  051525
7225  055116  040440  042104  042522
7226  055124  051523  051040  043505
7227  055132  000056
7228  055134  047503  051122  041505  EM4:    .ASCIZ/CORRECT BIT DID NOT SET IN RHDB/
7229  055142  020124  044502  020124
7230  055150  044504  020104  047516
7231  055156  020124  042523  020124
7232  055164  047111  051040  042110
7233  055172  000102
7234  055174  047516  026516  054105  EM5:    .ASCIZ/NON-EXISTANT MEMORY DID NOT SET IN RHCS2/
7235  055202  051511  040524  052116
7236  055210  046440  046505  051117
7237  055216  020131  044504  020104
7238  055224  047516  020124  042523
7239  055232  020124  047111  051040
7240  055240  041510  031123     000
7241  055245     040  047514  044507  EM6:    .ASCII/ LOGIC TO SET TRE BIT IN RHCS1 REGISTER/<15><12>
7242  055252  020103  047524  051440
7243  055260  052105  052040  042522
7244  055266  041040  052111  044440
7245  055274  020116  044122  051503
7246  055302  020061  042522  044507
7247  055310  052123  051105  005015
7248  055316  051511  047040  052117          .ASCII/IS NOT WORKING.GO TO (CSRB) PRINTS IF RH11/<15><12>
7249  055324  053440  051117  044513
7250  055332  043516  043454  020117
7251  055340  047524  024040  051503
7252  055346  041122  020051  051120
7253  055354  047111  051524  044440
7254  055362  020106  044122  030461
7255  055370  005015
7256  055372  051117  024040  051503          .ASCIZ/OR (CSTB) PRINTS IF RH70 IN LOCATION B7 ON BOTH PRINTS/
7257  055400  041124  020051  051120
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 7258  055406  047111  051524  044440
 7259  055414  020106  044122  030067
 7260  055422  044440  020116  047514
 7261  055430  040503  044524  047117
 7262  055436  041040  020067  047117
 7263  055444  041040  052117  020110
 7264  055452  051120  047111  051524
 7265  055460     000
 7266  055461     116  046505  041040  EM7:    .ASCIZ/NEM BIT DOES NOT READ AS SET IN RHCS2/
 7267  055466  052111  042040  042517
 7268  055474  020123  047516  020124
 7269  055502  042522  042101  040440
 7270  055510  020123  042523  020124
 7271  055516  047111  051040  041510
 7272  055524  031123     000
 7273  055527     116  046505  040440  EM10:   .ASCIZ/NEM AND SC NOT SET IN RHCS1/
 7274  055534  042116  051440  020103
 7275  055542  047516  020124  042523
 7276  055550  020124  047111  051040
 7277  055556  041510  030523     000
 7278  055563     123  020103  044502  EM11:   .ASCIZ/SC BIT SET BY ATTN OR MCPE ERROR/
 7279  055570  020124  042523  020124
 7280  055576  054502  040440  052124
 7281  055604  020116  051117  046440
 7282  055612  050103  020105  051105
 7283  055620  047522  000122
 7284  055624  051440  020103  044504  EM12:   .ASCIZ/ SC DID NOT SET/
 7285  055632  020104  047516  020124
 7286  055640  042523  000124
 7287  055644  051124  020105  044502  EM13:   .ASCIZ/TRE BIT IS SET BUT SC READS AS CLEARED/
 7288  055652  020124  051511  051440
 7289  055660  052105  041040  052125
 7290  055666  051440  020103  042522
 7291  055674  042101  020123  051501
 7292  055702  041440  042514  051101
 7293  055710  042105     000
 7294  055713     127  042503  041040  EM14:   .ASCIZ/WCE BIT DID NOT SET/
 7295  055720  052111  042040  042111
 7296  055726  047040  052117  051440
 7297  055734  052105     000
 7298  055737     127  042503  041040  EM15:   .ASCIZ/WCE BIT DID NOT SET/
 7299  055744  052111  042040  042111
 7300  055752  047040  052117  051440
 7301  055760  052105     000
 7302  055763     124  042522  041040  EM16:   .ASCIZ/TRE BIT NOT SET/
 7303  055770  052111  047040  052117
 7304  055776  051440  052105     000
 7305  056003     127  042503  040440  EM17:   .ASCIZ/WCE AND TRE ARE SET BUT SC BIT NOT SET/
 7306  056010  042116  052040  042522
 7307  056016  040440  042522  051440
 7308  056024  052105  041040  052125
 7309  056032  051440  020103  044502
 7310  056040  020124  047516  020124
 7311  056046  042523  000124
 7312  056052  050125  020105  044504  EM20:   .ASCIZ/UPE DID NOT SET IN RHCS2/
 7313  056060  020104  047516  020124
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 7314  056066  042523  020124  047111
 7315  056074  051040  041510  031123
 7316  056102     000
 7317  056103     124  042522  040440  EM21:   .ASCII/TRE AND SC BITS ARE SET/
 7318  056110  042116  051440  020103
 7319  056116  044502  051524  040440
 7320  056124  042522  051440  052105
 7321  056132  050125  020105  047101  EM22:   .ASCIZ/UPE AND SC BIT DID NOT SET/
 7322  056140  020104  041523  041040
 7323  056146  052111  042040  042111
 7324  056154  047040  052117  051440
 7325  056162  052105     000
 7326  056165     123  020103  044502  EM23:   .ASCIZ/SC BIT NOT SET/
 7327  056172  020124  047516  020124
 7328  056200  042523  000124
 7329  056204  042516  020104  044504  EM24:   .ASCIZ/NED DID NOT SET IN RHCS2/
 7330  056212  020104  047516  020124
 7331  056220  042523  020124  047111
 7332  056226  051040  041510  031123
 7333  056234     000
 7334  056235     124  042522  040440  EM25:   .ASCIZ/TRE AND SC SHOULD NOT SET/
 7335  056242  042116  051440  020103
 7336  056250  044123  052517  042114
 7337  056256  047040  052117  051440
 7338  056264  052105     000
 7339  056267     124  042522  051440  EM26:   .ASCIZ/TRE SHOULD NOT BE SET/
 7340  056274  047510  046125  020104
 7341  056302  047516  020124  042502
 7342  056310  051440  052105     000
 7343  056315     124  042522  041040  EM27:   .ASCIZ/TRE BIT WAS NOT SET BY NED/
 7344  056322  052111  053440  051501
 7345  056330  047040  052117  051440
 7346  056336  052105  041040  020131
 7347  056344  042516  000104
 7348  056350  054115  020106  044502  EM30:   .ASCIZ/MXF BIT DID NOT SET IN RHCS2/
 7349  056356  020124  044504  020104
 7350  056364  047516  020124  042523
 7351  056372  020124  047111  051040
 7352  056400  041510  031123     000
 7353  056405     115  043130  041040  EM31:   .ASCIZ/MXF BIT SHOULD BE SET IN RHCS2/
 7354  056412  052111  051440  047510
 7355  056420  046125  020104  042502
 7356  056426  051440  052105  044440
 7357  056434  020116  044122  051503
 7358  056442  000062
 7359  056444  054115  020106  047101  EM32:   .ASCIZ/MXF AND SC ARE NOT SET/
 7360  056452  020104  041523  040440
 7361  056460  042522  047040  052117
 7362  056466  051440  052105     000
 7363  056473     124  042522  051040  EM33:   .ASCIZ/TRE READS AS CLEARED,MXF AND SC ARE SET/
 7364  056500  040505  051504  040440
 7365  056506  020123  046103  040505
 7366  056514  042522  026104  054115
 7367  056522  020106  047101  020104
 7368  056530  041523  040440  042522
 7369  056536  051440  052105     000
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 7370  056543     124  051505  042524  EM34:   .ASCIZ/TESTER DOES NOT READ AS BEING CONNECTED/
 7371  056550  020122  047504  051505
 7372  056556  047040  052117  051040
 7373  056564  040505  020104  051501
 7374  056572  041040  044505  043516
 7375  056600  041440  047117  042516
 7376  056606  052103  042105     000
 7377  056613     102  052111  044440  EM35:   .ASCIZ/BIT IN RHCS3 WILL NOT SET/
 7378  056620  020116  044122  051503
 7379  056626  020063  044527  046114
 7380  056634  047040  052117  051440
 7381  056642  052105     000
 7382  056645     122  020110  044504  EM36:   .ASCIZ/RH DID NOT RESPOND TO ADDRESS/
 7383  056652  020104  047516  020124
 7384  056660  042522  050123  047117
 7385  056666  020104  047524  040440
 7386  056674  042104  042522  051523
 7387  056702     000
 7388  056703     104  052114  042040  EM37:   .ASCIZ/DLT DID NOT SET IN RHCS2/
 7389  056710  042111  047040  052117
 7390  056716  051440  052105  044440
 7391  056724  020116  044122  051503
 7392  056732  000062
 7393  056734  046104  020124  051511  EM40:   .ASCII/DLT IS NOT SET IN RHCS2,BUT TRE AND SC ARE SET/<15><12>
 7394  056742  047040  052117  051440
 7395  056750  052105  044440  020116
 7396  056756  044122  051503  026062
 7397  056764  052502  020124  051124
 7398  056772  020105  047101  020104
 7399  057000  041523  040440  042522
 7400  057006  051440  052105  005015
 7401  057014  051124  020105  047101          .ASCIZ/TRE AND SC COULD HAVE BEEN SET BY ANOTHER ERROR/
 7402  057022  020104  041523  041440
 7403  057030  052517  042114  044040
 7404  057036  053101  020105  042502
 7405  057044  047105  051440  052105
 7406  057052  041040  020131  047101
 7407  057060  052117  042510  020122
 7408  057066  051105  047522  000122
 7409  057074  052517  050124  052125  EM41:   .ASCIZ/OUTPUT READY DID NOT SET WHEN INFO WAS LOADED INTO THE DATA BUFFER/
 7410  057102  051040  040505  054504
 7411  057110  042040  042111  047040
 7412  057116  052117  051440  052105
 7413  057124  053440  042510  020116
 7414  057132  047111  047506  053440
 7415  057140  051501  046040  040517
 7416  057146  042504  020104  047111
 7417  057154  047524  052040  042510
 7418  057162  042040  052101  020101
 7419  057170  052502  043106  051105
 7420  057176     000
 7421  057177     101  046114  041040  EM42:   .ASCIZ/ALL BITS DID NOT LOAD INTO RHWC (177777)/
 7422  057204  052111  020123  044504
 7423  057212  020104  047516  020124
 7424  057220  047514  042101  044440
 7425  057226  052116  020117  044122
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7426  057234  041527  024040  033461
7427  057242  033467  033467  000051
7428  057250  044122  041527  042040  EM43:   .ASCIZ/RHWC DID NOT LOAD ANY BITS (177777)/
7429  057256  042111  047040  052117
7430  057264  046040  040517  020104
7431  057272  047101  020131  044502
7432  057300  051524  024040  033461
7433  057306  033467  033467  000051
7434  057314  047523  042515  041040  EM44:   .ASCIZ/SOME BITS CLEARED IN RHWC AFTER CLR WAS LOADED INTO RHCS2/
7435  057322  052111  020123  046103
7436  057330  040505  042522  020104
7437  057336  047111  051040  053510
7438  057344  020103  043101  042524
7439  057352  020122  046103  020122
7440  057360  040527  020123  047514
7441  057366  042101  042105  044440
7442  057374  052116  020117  044122
7443  057402  051503  000062
7444  057406  047516  026516  054105  EM45:   .ASCIZ/NON-EXISTANT MEMORY BIT SET IN RHCS2 (NEM)/
7445  057414  051511  040524  052116
7446  057422  046440  046505  051117
7447  057430  020131  044502  020124
7448  057436  042523  020124  047111
7449  057444  051040  041510  031123
7450  057452  024040  042516  024515
7451  057460     000
7452  057461     122  041110  020101  EM46:   .ASCIZ/RHBA DID NOT CLR AFTER CLR WAS LOADED INTO RHCS2/
7453  057466  044504  020104  047516
7454  057474  020124  046103  020122
7455  057502  043101  042524  020122
7456  057510  046103  020122  040527
7457  057516  020123  047514  042101
7458  057524  042105  044440  052116
7459  057532  020117  044122  051503
7460  057540  000062
7461  057542  046101  020114  044502  EM47:   .ASCIZ/ALL BITS DID NOT LOAD INTO RHBA (177776)/
7462  057550  051524  042040  020111
7463  057556  047040  052117  046040
7464  057564  040517  020104  047111
7465  057572  047524  051040  041110
7466  057600  020101  030450  033467
7467  057606  033467  024466     000
7468  057613     114  040517  044504  EM50:   .ASCIZ/LOADING TRE AFTER ITS SET DOES NOT CLEAR ERROR/
7469  057620  043516  052040  042522
7470  057626  040440  052106  051105
7471  057634  044440  051524  051440
7472  057642  052105  042040  042517
7473  057650  020123  047516  020124
7474  057656  046103  040505  020122
7475  057664  051105  047522  000122
7476  057672  043520  020105  044504  EM51:   .ASCIZ/PGE DID NOT SET IN RHCS2/
7477  057700  020104  047516  020124
7478  057706  042523  020124  047111
7479  057714  051040  041510  031123
7480  057722     000
7481  057723     124  042510  050040  EM52:   .ASCII/THE PROM WHILE ACCESSING A REGISTER/<15><12>
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 7482  057730  047522  020115  044127
 7483  057736  046111  020105  041501
 7484  057744  042503  051523  047111
 7485  057752  020107  020101  042522
 7486  057760  044507  052123  051105
 7487  057766  005015
 7488  057770  044127  041511  020110          .ASCII/WHICH YOUR TESTER CANNOT SUPPLY INFORMATION/<15><12>
 7489  057776  047531  051125  052040
 7490  060004  051505  042524  020122
 7491  060012  040503  047116  052117
 7492  060020  051440  050125  046120
 7493  060026  020131  047111  047506
 7494  060034  046522  052101  047511
 7495  060042  006516     012
 7496  060045     106  051117  051440          .ASCIZ/FOR SAYS INFO IS PRESENT/
 7497  060052  054501  020123  047111
 7498  060060  047506  044440  020123
 7499  060066  051120  051505  047105
 7500  060074  000124
 7501  060076  044122  051503  000061  EM53:   .ASCIZ/RHCS1/
 7502  060104  044122  041527     000  EM54:   .ASCIZ/RHWC/
 7503  060111     122  041110  000101  EM55:   .ASCIZ/RHBA/
 7504  060116  044122  051115  000062  EM56:   .ASCIZ/RHMR2/
 7505  060124  044122  051503  000062  EM57:   .ASCIZ/RHCS2/
 7506  060132  044122  052123     000  EM60:   .ASCIZ/RHST/
 7507  060137     122  042510  000122  EM61:   .ASCIZ/RHER/
 7508  060144  044122  051501     000  EM62:   .ASCIZ/RHAS/
 7509  060151     122  052110  041104  EM63:   .ASCIZ/RHTDB/
 7510  060156     000
 7511  060157     122  042110  000123  EM64:   .ASCIZ/RHDS/
 7512  060164  044122  051115  000061  EM65:   .ASCIZ/RHMR1/
 7513  060172  044122  052104     000  EM66:   .ASCIZ/RHDT/
 7514  060177     122  041110  042501  EM67:   .ASCIZ/RHBAE/
 7515  060204     000
 7516  060205     122  041510  031523  EM70:   .ASCIZ/RHCS3/
 7517  060212     000
 7518  060213     104  053105  041511  EM71:   .ASCIZ/DEVICE NUMBER IN RHMR2 DOES NOT EQUAL A 7AFTER A CLEAR/
 7519  060220  020105  052516  041115
 7520  060226  051105  044440  020116
 7521  060234  044122  051115  020062
 7522  060242  047504  051505  047040
 7523  060250  052117  042440  052521
 7524  060256  046101  040440  033440
 7525  060264  043101  042524  020122
 7526  060272  020101  046103  040505
 7527  060300  000122
 7528  060302  044122  051503  020061  EM72:   .ASCIZ/RHCS1 HAS AN ERROR BIT SET/<15><12>
 7529  060310  040510  020123  047101
 7530  060316  042440  051122  051117
 7531  060324  041040  052111  051440
 7532  060332  052105  005015     000
 7533  060337     105  051122  051117  EM73:   .ASCIZ/ERROR BIT SET IN RHCS2/
 7534  060344  041040  052111  051440
 7535  060352  052105  044440  020116
 7536  060360  044122  051503  000062
 7537  060366  051105  047522  020122  EM74:   .ASCIZ/ERROR BIT SET IN RHER/
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7538  060374  044502  020124  042523
7539  060402  020124  047111  051040
7540  060410  042510  000122
7541  060414  051105  047522  020122  EM75:   .ASCIZ/ERROR BIT SET IN RHST/<15><12>
7542  060422  044502  020124  042523
7543  060430  020124  047111  051040
7544  060436  051510  006524  000012
7545  060444  044122  040502  044440  EM76:   .ASCIZ/RHBA INCREMENTED BUT IT DID NOT CARRY OVER TO RHBAE,RHBAE SHOULD =40/
7546  060452  041516  042522  042515
7547  060460  052116  042105  041040
7548  060466  052125  044440  020124
7549  060474  044504  020104  047516
7550  060502  020124  040503  051122
7551  060510  020131  053117  051105
7552  060516  052040  020117  044122
7553  060524  040502  026105  044122
7554  060532  040502  020105  044123
7555  060540  052517  042114  036440
7556  060546  030064     000
7557  060551     122  054504  042040  EM77:   .ASCII/RDY DID NOT SET,AND WORD COUNT DID NOT INCREMENT/<15><12>
7558  060556  042111  047040  052117
7559  060564  051440  052105  040454
7560  060572  042116  053440  051117
7561  060600  020104  047503  047125
7562  060606  020124  044504  020104
7563  060614  047516  020124  047111
7564  060622  051103  046505  047105
7565  060630  006524     012
7566  060633     104  044517  043516          .ASCIZ/DOING A WRITE OPERATION/
7567  060640  040440  053440  044522
7568  060646  042524  047440  042520
7569  060654  040522  044524  047117
7570  060662     000
7571  060663     122  041110  042501  EM100:  .ASCII/RHBAE DID NOT CLEAR AFTER CLR WAS LOADED/<15><12>
7572  060670  042040  042111  047040
7573  060676  052117  041440  042514
7574  060704  051101  040440  052106
7575  060712  051105  041440  051114
7576  060720  053440  051501  046040
7577  060726  040517  042504  006504
7578  060734     012
7579  060735     111  052116  020117          .ASCIZ/INTO RHCS2/
7580  060742  044122  051503  000062
7581  060750  051127  052111  020105  EM101:  .ASCIZ/WRITE REVERSE OPERATION DID NOT WORK/
7582  060756  042522  042526  051522
7583  060764  020105  050117  051105
7584  060772  052101  047511  020116
7585  061000  044504  020104  047516
7586  061006  020124  047527  045522
7587  061014     000
7588
7589  061015     122  054504  042040  EM102:  .ASCIZ/RDY DID NOT SET IN RHCS1/
7590  061022  042111  047040  052117
7591  061030  051440  052105  044440
7592  061036  020116  044122  051503
7593  061044  000061
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 7594  061046  052504  044522  043516  EM103:  .ASCII/DJRING A WRITE OPERATION RDY DID NOT SET/<15><12>
 7595  061054  040440  053440  044522
 7596  061062  042524  047440  042520
 7597  061070  040522  044524  047117
 7598  061076  051040  054504  042040
 7599  061104  042111  047040  052117
 7600  061112  051440  052105  005015
 7601  061120  047527  042122  041440          .ASCII/WORD COUNT DID NOT INCREMENT,BUT INFORMATION/<15><12>
 7602  061126  052517  052116  042040
 7603  061134  042111  047040  052117
 7604  061142  044440  041516  042522
 7605  061150  042515  052116  041054
 7606  061156  052125  044440  043116
 7607  061164  051117  040515  044524
 7608  061172  047117  005015
 7609  061176  040527  020123  051127          .ASCIZ/WAS WRITTEN TO TESTER/
 7610  061204  052111  042524  020116
 7611  061212  047524  052040  051505
 7612  061220  042524  000122
 7613  061224  052504  044522  043516  EM104:  .ASCII/DURING A WRITE OPERATION RDY DID NOT SET/<15><12>
 7614  061232  040440  053440  044522
 7615  061240  042524  047440  042520
 7616  061246  040522  044524  047117
 7617  061254  051040  054504  042040
 7618  061262  042111  047040  052117
 7619  061270  051440  052105  005015
 7620  061276  047527  042122  041440          .ASCII/WORD COUNT DID NOT INCREMENT,AND INFORMATION/<15><12>
 7621  061304  052517  052116  042040
 7622  061312  042111  047040  052117
 7623  061320  044440  041516  042522
 7624  061326  042515  052116  040454
 7625  061334  042116  044440  043116
 7626  061342  051117  040515  044524
 7627  061350  047117  005015
 7628  061354  040527  020123  047516          .ASCIZ/WAS NOT TRANSFERED TO THE TESTER/
 7629  061362  020124  051124  047101
 7630  061370  043123  051105  042105
 7631  061376  052040  020117  044124
 7632  061404  020105  042524  052123
 7633  061412  051105     000
 7634  061415     102  042501  044440  EM105:  .ASCIZ/BAE IS MESSED UP.IT SHOULD EQUAL 40,/
 7635  061422  020123  042515  051523
 7636  061430  042105  052440  026120
 7637  061436  052111  051440  047510
 7638  061444  046125  020104  050505
 7639  061452  040525  020114  030064
 7640  061460  000054
 7641  061462  040502  020105  044504  EM106:  .ASCIZ/BAE DID NOT INCREMENT/
 7642  061470  020104  047516  020124
 7643  061476  047111  051103  046505
 7644  061504  047105  000124
 7645  061510  042522  042101  051040  EM107:  .ASCIZ/READ REV OPERATION DID NOT READ FROM TESTER TO STORAGE LOCATION (RBUF)/
 7646  061516  053105  047440  042520
 7647  061524  040522  044524  047117
 7648  061532  042040  042111  047040
 7649  061540  052117  051040  040505
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 7650  061546  020104  051106  046517
 7651  061554  052040  051505  042524
 7652  061562  020122  047524  051440
 7653  061570  047524  040522  042507
 7654  061576  046040  041517  052101
 7655  061604  047511  020116  051050
 7656  061612  052502  024506     000
 7657  061620     122  041110  042501  EM110:  .ASCII/RHBAE EQUALS 0,IT SHOULD EQUAL 40/<15><12>
 7658  061624  042440  052521  046101
 7659  061632  020123  026060  052111
 7660  061640  051440  047510  046126
 7661  061646  020104  050505  040525
 7662  061654  020114  030064  005015
 7663  061662  043101  042524  020122          .ASCIZ/AFTER A ONE WORD WRITE/
 7664  061670  020101  047117  020105
 7665  061676  047527  042122  053440
 7666  061704  044522  042524     000
 7667  061711     101  033461  042040  EM111:  .ASCIZ/A17 DID NOT SET AFTER BA WAS INCREMENTED/<15><12>
 7668  061716  042111  047040  052117
 7669  061724  051440  052105  040440
 7670  061732  052106  051105  041040
 7671  061740  020101  040527  020123
 7672  061746  047111  051103  046505
 7673  061754  047105  042524  006504
 7674  061762  000012
 7675  061764  040502  042040  042111  EM112:  .ASCIZ BA DID NOT INCREMENT/
 7676  061772  047040  052117  044440
 7677  062000  041516  042522  042515
 7678  062006  052116     000
 7679  062011     102  020101  047111  EM113:  .ASCIZ BA INCREMENTED BUT IT DID NOT CARRY TO/<15><12>
 7680  062016  051103  046505  047105
 7681  062024  042524  020104  052502
 7682  062032  020124  052111  042040
 7683  062040  042111  047040  052117
 7684  062046  041440  051101  054522
 7685  062054  052040  006517     012
 7686  062061     101  033061  040440          .ASCIZ/A16 AND A17 IN RHCS1/
 7687  062066  042116  040440  033461
 7688  062074  044440  020116  044122
 7689  062102  051503  000061
 7690  062106  052517  050124  052125  EM114:  .ASCII/OUTPUT READY WAS NOT NEGATED AFTER CLR WAS/<15><12>
 7691  062114  051040  040505  054504
 7692  062122  053440  051501  047040
 7693  062130  052117  047040  043505
 7694  062136  052101  042105  040440
 7695  062144  052106  051105  041440
 7696  062152  051114  053440  051501
 7697  062160  005015
 7698  062162  047514  042101  042105          .ASCIZ/LOADED INTO RHCS2/
 7699  062170  044440  052116  020117
 7700  062176  044122  051503  000062
 7701  062204  046101  020114  044502  EM115:  .ASCIZ/ALL BITS DID NOT READ TO STORAGE LOC. (RBUF) DURING A READ REV. OPERATION
 7702  062212  051524  042040  042111
 7703  062220  047040  052117  051040
 7704  062226  040505  020104  047524
 7705  062234  051440  047524  040522
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7706  062242  042507  046040  041517
7707  062250  020056  051050  052502
7708  062256  024506  042040  051125
7709  062264  047111  020107  020101
7710  062272  042522  042101  051040
7711  062300  053105  020056  050117
7712  062306  051105  052101  047511
7713  062314  000116
7714  062316  042115  042520  042040  EM116:  .ASCIZ/MDPE DID NOT SET IN RHCS2/
7715  062324  042111  047040  052117
7716  062332  053440  052105  044440
7717  062340  020116  044122  051503
7718  062346  000062
7719  062350  047111  047506  042040  EM117:  .ASCII/INFO DID NOT WRITE TO TESTER DOING A/<15><12>
7720  062356  042111  047040  052117
7721  062364  053440  044522  042524
7722  062372  052040  020117  042524
7723  062400  052123  051105  042040
7724  062406  044517  043516  040440
7725  062414  005015
7726  062416  051127  052111  020105          .ASCIZ/WRITE REVERSE OPERATION/
7727  062424  042522  042526  051522
7728  062432  020105  050117  051105
7729  062440  052101  047511  000116
7730  062446  051124  020105  047101  EM120:  .ASCIZ/TRE AND SC WHERE NOT SET BY MDPE/
7731  062454  020104  041523  053440
7732  062462  042510  042522  047040
7733  062470  052117  051440  052105
7734  062476  041040  020131  042115
7735  062504  042520     000
7736  062507     124  042522  044440  EM121:  .ASCIZ/TRE IS SET IN RHCS1,MDPE AND SC/
7737  062514  020123  042523  020124
7738  062522  047111  051040  041510
7739  062530  030523  046454  050104
7740  062536  020105  047101  020104
7741  062544  041523     000
7742  062547     123  047510  046125          .ASCIZ/SHOULD ALSO BE SET/
7743  062554  020104  046101  047523
7744  062562  041040  020105  042523
7745  062570  000124
7746  062572  042115  042520  040440  EM122:  .ASCIZ/MDPE AND SC SHOULD BE SET/
7747  062600  042116  051440  020103
7748  062606  044123  052517  042114
7749  062614  041040  020105  042523
7750  062622  000124
7751  062624  051124  020105  047101  EM123:  .ASCIZ/TRE AND SC ARE SET, PGE SHOULD ALSO BE SET/
7752  062632  020104  041523  040440
7753  062640  042522  051440  052105
7754  062646  020054  043520  020105
7755  062654  044123  052517  042114
7756  062662  040440  031514  020117
7757  062670  042502  051440  052105
7758  062676     000
7759  062677     104  046102  042040  EM124:  .ASCII/DBL DID NOT SET AFTER A 4 WORD WRITE FROM/<15><12>
7760  062704  042111  047040  052117
7761  062712  051440  052105  040440
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7762  062720  052106  051105  040440
7763  062726  032040  053440  051117
7764  062734  020104  051127  052111
7765  062742  020105  051106  046517
7766  062750  005015
7767  062752  047101  042440  042526          .ASCIZ/AN EVEN ADDRESS/
7768  062760  020116  042101  051104
7769  062766  051505  000123
7770  062772  041104  020114  042523  EM125:  .ASCII/DBL SET IN RHCS3 DOING A 1 WORD WRITE FROM/<15><12>
7771  063000  020124  047111  051040
7772  063006  041510  031523  042040
7773  063014  044517  043516  040440
7774  063022  030440  053440  051117
7775  063030  020104  051127  052111
7776  063036  020105  051106  046517
7777  063044  005015
7778  063046  047101  042440  042526          .ASCIZ/AN EVEN ADDRESS/
7779  063054  020116  042101  051104
7780  063062  051505  000123
7781  063066  041104  020114  042523  EM126:  .ASCII/DBL SET IN RHCS3 ON A 3 WORD WRITE FROM/<15><12>
7782  063074  020124  047111  051040
7783  063102  041510  031523  047440
7784  063110  020116  020101  020063
7785  063116  047527  042122  053440
7786  063124  044522  042524  043040
7787  063132  047522  006515     012
7788  063137     101  020116  053105          .ASCIZ/AN EVEN ADDRESS/
7789  063144  047105  040440  042104
7790  063152  042522  051523     000
7791  063157     104  046102  042040  EM127:  .ASCII/DBL DID NOT SET IN RHCS3 AFTER A 2 WORD/<15><12>
7792  063164  042111  047040  052117
7793  063172  051440  052105  044440
7794  063200  020116  044122  051503
7795  063206  020063  043101  042524
7796  063214  020122  020101  020062
7797  063222  047527  042122  005015
7798  063230  051106  046517  040440          .ASCIZ/FROM AN EVEN ADDRESS/
7799  063236  020116  053105  047105
7800  063244  040440  042104  042522
7801  063252  051523     000
7802  063255     115  050103  020105  EM130:  .ASCIZ/MCPE SET IN RHCS1 BUT SC READS AS CLEARED/
7803  063262  042523  020124  047111
7804  063270  051040  041510  030523
7805  063276  041040  052125  051440
7806  063304  020103  042522  042101
7807  063312  020123  051501  041440
7808  063320  042514  051101  042105
7809  063326     000
7810  063327     115  050103  020105  EM131:  .ASCIZ/MCPE DID NOT SET IN RHCS1/
7811  063334  044504  020104  047516
7812  063342  020124  042523  020124
7813  063350  047111  051040  041510
7814  063356  030523     000
7815  063361     127  042503  046040  EM132:  .ASCIZ/WCE LO IN RHCS3 DID NOT SET/
7816  063366  020117  047111  051040
7817  063374  041510  031523  042040
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 7818  063402  042111  047040  052117
 7819  063410  051440  052105     000
 7820  063415     127  042503  046040  EM133:  .ASCII/WCE LO SHOULD ONLY BE SET IN RHCS3 BUT/<15><12>
 7821  063422  020117  044123  052517
 7822  063430  042114  047440  046116
 7823  063436  020131  042502  051440
 7824  063444  052105  044440  020116
 7825  063452  044122  051503  020063
 7826  063460  052502  006524     012
 7827  063465     127  042503  044040          .ASCIZ/WCE HI ALSO READS AS SET/
 7828  063472  020111  046101  047523
 7829  063500  051040  040505  051504
 7830  063506  040440  020123  042523
 7831  063514  000124
 7832  063516  041527  020105  047514  EM134:  .ASCIZ/WCE LO SET IN RHCS3 BUT WCE DID NOT SET IN RHCS2/
 7833  063524  051440  052105  044440
 7834  063532  020116  044122  051503
 7835  063540  020063  052502  020124
 7836  063546  041527  020105  044504
 7837  063554  020104  047516  020124
 7838  063562  042523  020124  047111
 7839  063570  051040  041510  031123
 7840  063576     000
 7841  063577     127  042503  044040  EM135:  .ASCIZ/WCE HI DID NOT SET IN RHCS3/
 7842  063604  020111  044504  020104
 7843  063612  047516  020124  042523
 7844  063620  020124  047111  051040
 7845  063626  041510  031523     000
 7846  063633     127  042503  044040  EM136:  .ASCIZ/WCE HI SET IN RHCS3 BUT WCE DID NOT SET IN RHCS2/
 7847  063640  020111  042523  020124
 7848  063646  047111  051040  041510
 7849  063654  031523  041040  052125
 7850  063662  053440  042503  042040
 7851  063670  042111  047040  052117
 7852  063676  051440  052105  044440
 7853  063704  020116  044122  051503
 7854  063712  000062
 7855  063714  041527  020105  044510  EM137:  .ASCII/WCE HI SHOULD ONLY BE SET IN RHCS3 BUT/<15><12>
 7856  063722  051440  047510  046125
 7857  063730  020104  047117  054514
 7858  063736  041040  020105  042523
 7859  063744  020124  047111  051040
 7860  063752  041510  031523  041040
 7861  063760  052125  005015
 7862  063764  041527  020105  047514          .ASCIZ/WCE LO ALSO READS AS SET/
 7863  063772  040440  051514  020117
 7864  064000  042522  042101  020123
 7865  064006  051501  051440  052105
 7866  064014     000
 7867  064015     127  044522  042524  EM140:  .ASCIZ/WRITE OPERATION DID NOT INCREMENT WORD COUNT/
 7868  064022  047440  042520  040522
 7869  064030  044524  047117  042040
 7870  064036  042111  047040  052117
 7871  064044  044440  041516  042522
 7872  064052  042515  052116  053440
 7873  064060  051117  020104  047503
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 7874  064066  047125  000124
 7875  064072  052502  020123  042101  EM141:  .ASCIZ/BUS ADDRESS DID NOT INCREMENT AFTER A WRITE/
 7876  064100  051104  051505  020123
 7877  064106  044504  020104  047516
 7878  064114  020124  047111  051103
 7879  064122  046505  047105  020124
 7880  064130  043101  042524  020122
 7881  064136  020101  051127  052111
 7882  064144  000105
 7883  064146  047111  047506  046522  EM142:  .ASCIZ/INFORMATION DID NOT GET WRITTEN TO TESTER/
 7884  064154  052101  047511  020116
 7885  064162  044504  020104  047516
 7886  064170  020124  042507  020124
 7887  064176  051127  052111  042524
 7888  064204  020116  047524  052040
 7889  064212  051505  042524  000122
 7890  064220  042522  042101  047440  EM143:  .ASCIZ/READ OPERATION DID NOT INCREMENT WORD COUNT/
 7891  064226  042520  040522  044524
 7892  064234  047117  042040  042111
 7893  064242  047040  052117  044440
 7894  064250  041516  042522  042515
 7895  064256  052116  053440  051117
 7896  064264  020104  047503  047125
 7897  064272  000124
 7898  064274  052502  020123  042101  EM144:  .ASCII/BUS ADDRESS DID NOT INCREMENT AFTER A READ/<15><12>
 7899  064302  051104  051505  020123
 7900  064310  044504  020104  047516
 7901  064316  020124  047111  051103
 7902  064324  046505  047105  020124
 7903  064332  043101  042524  020122
 7904  064340  020101  042522  042101
 7905  064346  005015
 7906  064350  050117  051105  052101          .ASCIZ/OPERATION/
 7907  064356  047511  000116
 7908  064362  047111  047506  046522  EM145:  .ASCIZ/INFORMATION DID NOT READ FROM TESTER/
 7909  064370  052101  047511  020116
 7910  064376  044504  020104  047516
 7911  064404  020124  042522  042101
 7912  064412  043040  047522  020115
 7913  064420  042524  052123  051105
 7914  064426     000
 7915  064427     124  044510  020123  EM146:  .ASCIZ/THIS IS THE CONTENTS OF THE RH REGISTERS/
 7916  064434  051511  052040  042510
 7917  064442  041440  047117  042524
 7918  064450  052116  020123  043117
 7919  064456  052040  042510  051040
 7920  064464  020110  042522  044507
 7921  064472  052123  051105  000123
 7922  064500  046101  020114  044502  EM147:  .ASCII/ALL BITS DID NOT GET TRANSFERED DURING A/<15><12>
 7923  064506  051524  042040  042111
 7924  064514  047040  052117  043440
 7925  064522  052105  052040  040522
 7926  064530  051516  042506  042522
 7927  064536  020104  052504  044522
 7928  064544  043516  040440  005015
 7929  064552  042522  042101  047440          .ASCIZ/READ OPERATION/
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7930  064560  042520  040522  044524
7931  064566  047117     000
7932  064571     122  040505  020104  EM150:  .ASCII/READ OPERATION DID NOT SEEM TO WORK,NO /<15><12>
7933  064576  050117  051105  052101
7934  064604  047511  020116  044504
7935  064612  020104  047516  020124
7936  064620  042523  046505  052040
7937  064626  020117  047527  045522
7938  064634  047054  020117  005015
7939  064642  047111  047506  046522          .ASCIZ/INFORMATION WAS TRANSFERED TO STORAGE LOC.(RBUF)/
7940  064650  052101  047511  020116
7941  064656  040527  020123  051124
7942  064664  047101  043123  051105
7943  064672  042105  052040  020117
7944  064700  052123  051117  043501
7945  064706  020105  047514  027103
7946  064714  051050  052502  024506
7947  064722     000
7948  064723     101  046114  041040  EM151:  .ASCII/ALL BITS WHERE NOT TRANSFERED TO TESTER/<15><12>
7949  064730  052111  020123  044127
7950  064736  051105  020105  047516
7951  064744  020124  051124  047101
7952  064752  043123  051105  042105
7953  064760  052040  020117  042524
7954  064766  052123  051105  005015
7955  064774  052504  044522  043516          .ASCIZ/DURING A WRITE OPERATION/
7956  065002  040440  053440  044522
7957  065010  042524  047440  042520
7958  065016  040522  044524  047117
7959  065024     000
7960  065025     127  044522  042524  EM152:  .ASCIZ/WRITE OPERATION DID NOT WRITE TO TESTER/
7961  065032  047440  042520  040522
7962  065040  044524  047117  042040
7963  065046  042111  047040  052117
7964  065054  053440  044522  042524
7965  065062  052040  020117  042524
7966  065070  052123  051105     000
7967  065075     104  046102  051440  EM153:  .ASCII/DBL SET ON A 2 WORD TRANSFER WITH BAI/<15><12>
7968  065102  052105  047440  020116
7969  065110  020101  020062  047527
7970  065116  042122  052040  040522
7971  065124  051516  042506  020122
7972  065132  044527  044124  041040
7973  065140  044501  005015
7974  065144  042523  020124  047111          .ASCIZ/SET IN RHCS2/
7975  065152  051040  041510  031123
7976  065160     000
7977  065161     104  046102  051440  EM154:  .ASCIZ/DBL SET IN RHCS3 ON A 1 WORD READ FROM/<15><12>
7978  065166  052105  044440  020116
7979  065174  044122  051503  020063
7980  065202  047117  040440  030440
7981  065210  053440  051117  020104
7982  065216  042522  042101  043040
7983  065224  047522  006515  000012
7984  065232  047101  042440  042526          .ASCIZ/AN EVEN ADDRESS/
7985  065240  020116  042101  051104
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 7986  065246  051505  000123
 7987  065252  041104  020114  042523  EM155:  .ASCII/DBL SET ON A 2 WORD WRITE REV. WITH BAI SET/<15><12>
 7988  065260  020124  047117  040440
 7989  065266  031040  053440  051117
 7990  065274  020104  051127  052111
 7991  065302  020105  042522  027126
 7992  065310  053440  052111  020110
 7993  065316  040502  020111  042523
 7994  065324  006524     012
 7995  065327     111  020116  044122          .ASCIZ/IN RHCS2/
 7996  065334  051503  000062
 7997  065340  041104  020114  042523  EM156:  .ASCII/DBL SET ON A 2 WORD TRANSFER(WRITE)/<15><12>
 7998  065346  020124  047117  040440
 7999  065354  031040  053440  051117
 8000  065362  020104  051124  047101
 8001  065370  043123  051105  053450
 8002  065376  044522  042524  006451
 8003  065404     012
 8004  065405     106  047522  020115          .ASCIZ/FROM AN ODD ADDRESS/
 8005  065412  047101  047440  042104
 8006  065420  040440  042104  042522
 8007  065426  051523     000
 8008  065431     104  046102  042040  EM157:  .ASCII/DBL DID NOT SET ON A 2 WORD WRITE REV.FROM AN EVEN/<15><12>
 8009  065436  042111  047040  052117
 8010  065444  051440  052105  047440
 8011  065452  020116  020101  020062
 8012  065460  047527  042122  053440
 8013  065466  044522  042524  051040
 8014  065474  053105  043056  047522
 8015  065502  020115  047101  042440
 8016  065510  042526  006516     012
 8017  065515     101  042104  042522          .ASCIZ/ADDRESS/
 8018  065522  051523     000
 8019  065525     104  046102  051440  EM160:  .ASCII/DBL SET ON A 2 WORD WRITE REVERSE/<15><12>
 8020  065532  052105  047440  020116
 8021  065540  020101  020062  047527
 8022  065546  042122  053440  044522
 8023  065554  042524  051040  053105
 8024  065562  051105  042523  000015
 8025  065570  051106  046517  040440          .ASCIZ/FROM AN ODD ADDRESS/
 8026  065576  020116  042117  020104
 8027  065604  042101  051104  051505
 8028  065612  000123
 8029  065614  041104  020114  042523  EM161:  .ASCII/DBL SET ON A 3 WORD WRITE REVERSE/<15><12>
 8030  065622  020124  047117  040440
 8031  065630  031440  053440  051117
 8032  065636  020104  051127  052111
 8033  065644  020105  042522  042526
 8034  065652  051522  006505     012
 8035  065657     106  047522  020115          .ASCIZ/FROM AN ODD ADDRESS/
 8036  065664  047101  047440  042104
 8037  065672  040440  042104  042522
 8038  065700  051523     000
 8039  065703     104  046102  042040  EM162:  .ASCII/DBL DID NOT SET ON A 2 WORD READ FROM AN/<15><12>
 8040  065710  042111  047040  052117
 8041  065716  051440  052105  047440
```

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 8042  065724  020116  020101  020062
 8043  065732  047527  042122  051040
 8044  065740  040505  020104  051106
 8045  065746  046517  040440  006516
 8046  065754     012
 8047  065755     105  042526  020116          .ASCIZ/EVEN ADDRESS/
 8048  065762  042101  051104  051505
 8049  065770  000123
 8050  065772  041104  020114  042523  EM163:  .ASCII/DBL SET ON A 2 WORD READ FROM/<15><12>
 8051  066000  020124  047117  040440
 8052  066006  031040  053440  051117
 8053  066014  020104  042522  042101
 8054  066022  043040  047522  006515
 8055  066030     012
 8056  066031     101  020116  042117          .ASCIZ/AN ODD ADDRESS/
 8057  066036  020104  042101  051104
 8058  066044  051505  000123
 8059  066050  041104  020114  042523  EM164:  .ASCII/DBL SET ON A 2 WORD READ REVERSE/<15><12>
 8060  066056  020124  047117  040440
 8061  066064  031040  053440  051117
 8062  066072  020104  042522  042101
 8063  066100  051040  053105  051105
 8064  066106  042523  005015
 8065  066112  051106  046517  040440          .ASCIZ/FROM AN EVEN ADDRESS/
 8066  066120  020116  053105  047105
 8067  066126  040440  042104  042522
 8068  066134  051523     000
 8069  066137     104  046102  042040  EM165:  .ASCII/DBL DID NOT SET ON A 2 WORD READ REVERSE/<15><12>
 8070  066144  042111  047040  052117
 8071  066152  051440  052105  047440
 8072  066160  020116  020101  020062
 8073  066166  047527  042122  051040
 8074  066174  040505  020104  042522
 8075  066202  042526  051522  006505
 8076  066210     012
 8077  066211     106  047522  020115          .ASCIZ/FROM AN ODD ADDRESS/
 8078  066216  047101  047440  042104
 8079  066224  040440  042104  042522
 8080  066232  051523     000
 8081  066235     104  046102  051440  EM166:  .ASCII/DBL SET ON A 3 WORD READ FROM/<15><12>
 8082  066242  052105  047440  020116
 8083  066250  020101  020063  047527
 8084  066256  042122  051040  040505
 8085  066264  020104  051106  046517
 8086  066272  005015
 8087  066274  047101  042440  042526          .ASCIZ/AN EVEN ADDRESS/
 8088  066302  020116  042101  051104
 8089  066310  051505  000123
 8090  066314  041104  020114  044504  EM167:  .ASCII/DBL DID NOT SET ON A 3 WORD READ REVERSE/<15><12>
 8091  066322  020104  047516  020124
 8092  066330  042523  020124  047117
 8093  066336  040440  031440  053440
 8094  066344  051117  020104  042522
 8095  066352  042101  051040  053105
 8096  066360  051105  042523  005015
 8097  066366  051106  046517  040440          .ASCIZ/FROM AN EVEN ADDRESS/
```

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8098  066374  020116  053105  047105
8099  066402  040440  042104  042522
8100  066410  051523     000
8101  066413     124  042522  051040  EM171:  .ASCIZ/TRE READS AS SET PGE AND SC SHOULD BE SET/
8102  066420  040505  051504  040440
8103  066426  020123  042523  020124
8104  066434  043520  020105  047101
8105  066442  020104  041523  051440
8106  066450  047510  046125  020104
8107  066456  042502  051440  052105
8108  066464     000
8109  066465     123  020103  044123  EM172:  .ASCIZ/SC SHOULD BE SET/
8110  066472  052517  042114  041040
8111  066500  020105  042523  000124
8112  066506  042122  020131  047111  EM173:  .ASCIZ/RDY IN RHCS1 DID NOT CAUSE AN INTERRUPT WITH IE SET/
8113  066514  051040  041510  030523
8114  066522  042040  042111  047040
8115  066530  052117  041440  052501
8116  066536  042523  040440  020116
8117  066544  047111  042524  051122
8118  066552  050125  020124  044527
8119  066560  044124  044440  020105
8120  066566  042523  000124
8121  066572  042511  053440  046111  EM174:  .ASCIZ/IE WILL NOT SET IN RHCS1/
8122  066600  020114  047516  020124
8123  066606  042523  020124  047111
8124  066614  051040  041510  030523
8125  066622     000
8126  066623     111  020105  040510  EM175:  .ASCIZ/IE HAS AN OPEN GOING TO THE BUS/
8127  066630  020123  047101  047440
8128  066636  042520  020116  047507
8129  066644  047111  020107  047524
8130  066652  052040  042510  041040
8131  066660  051525     000
8132  066663     122  041510  031523  EM176:  .ASCIZ/RHCS3 HAS AN ERROR BIT SET/
8133  066670  044040  051501  040440
8134  066676  020116  051105  047522
8135  066704  020122  044502  020124
8136  066712  042523  000124
8137  066716  046104  020124  047101  EM177:  .ASCIZ/DLT AND TRE ARE SET,SC SHOULD BE SET/
8138  066724  020104  051124  020105
8139  066732  051101  020105  042523
8140  066740  026124  041523  051440
8141  066746  047510  046125  020104
8142  066754  042502  051440  052105
8143  066762     000
8144  066763     110  041111  052131  EM200:  .ASCIZ/HIBYTE ,LOBYTE GATE FOR RHWC NOT WORKING PROPERLY/
8145  066770  020105  046054  041117
8146  066776  052131  020105  040507
8147  067004  042524  043040  051117
8148  067012  051040  053510  020103
8149  067020  047516  020124  047527
8150  067026  045522  047111  020107
8151  067034  051120  050117  051105
8152  067042  054514     000
8153  067045     110  041111  052131  EM201:  .ASCIZ/HIBYTE ,LOBYTE GATE FOR RHDB NOT WORKING PROPERLY/
```

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8154  067052  020105  046054  041117
8155  067060  052131  020105  040507
8156  067066  042524  043040  051117
8157  067074  051040  042110  020102
8158  067102  047516  020124  047527
8159  067110  045522  047111  020107
8160  067116  051120  050117  051105
8161  067124  054514     000
8162  067127     110  041111  052131  EM202:  .ASCIZ/HIBYTE ,LOBYTE GATE FOR RHBA NOT WORKING PROPERLY/
8163  067134  020105  046054  041117
8164  067142  052131  020105  040507
8165  067150  042524  043040  051117
8166  067156  051040  041110  020101
8167  067164  047516  020124  047527
8168  067172  045522  047111  020107
8169  067200  051120  050117  051105
8170  067206  054514     000
8171  067211     124  042510  041040  EM203:  .ASCIZ/THE BUS ADDRESS IS INCORRECT IT SHOULD BE 15000/
8172  067216  051525  040440  042104
8173  067224  042522  051523  044440
8174  067232  020123  047111  047503
8175  067240  051122  041505  020124
8176  067246  052111  051440  047510
8177  067254  046125  020104  042502
8178  067262  030440  030065  030060
8179  067270     000
8180  067271     124  051505  042524  EM204:  .ASCIZ/TESTER DATA BUFFER DOES NOT CONTAIN THE CORRECT INFO/
8181  067276  020122  040504  040524
8182  067304  041040  043125  042506
8183  067312  020122  047504  051505
8184  067320  047040  052117  041440
8185  067326  047117  040524  047111
8186  067334  052040  042510  041440
8187  067342  051117  042522  052103
8188  067350  044440  043116  000117
8189  067356  044122  042040  042111  EM205:  .ASCIZ/RH DID NOT INTERUPT LOOK AT CS1 TO SEE IF IE IS SET/
8190  067364  047040  052117  044440
8191  067372  052116  051105  050125
8192  067400  020124  047514  045517
8193  067406  040440  020124  051503
8194  067414  020061  047524  051440
8195  067422  042505  044440  020106
8196  067430  042511  044440  020123
8197  067436  042523  000124
8198  067442  044122  041527  051440  EM206:  .ASCIZ/RHWC SHOULD BE ZERO/
8199  067450  047510  046125  020104
8200  067456  042502  055040  051105
8201  067464  000117
8202
8203  067466  051124  047101  043123  EM207:  .ASCIZ/TRANSFER WAS DONE ON PORT B/
8204  067474  051105  053440  051501
8205  067502  042040  047117  020105
8206  067510  047117  050040  051117
8207  067516  020124  000102
8208  067522  041520  020040  020040  DH1:    .ASCII/PC      TEST    RHWC    CONTENTS RHWC/<15><12>
8209  067530  020040  042524  052123
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 8210  067536  020040  020040  044122
 8211  067544  041527  020040  020040
 8212  067552  047503  052116  047105
 8213  067560  051524  051040  053510
 8214  067566  006503     012
 8215  067571     040  020040  020040          .ASCIZ/       NO.            SHOULD HAVE BEEN/
 8216  067576  020040  047040  027117
 8217  067604  020040  020040  020040
 8218  067612  020040  020040  020040
 8219  067620  051440  047510  046125
 8220  067626  020104  040510  042526
 8221  067634  041040  042505  000116
 8222  067642  041520  020040  020040  DH2:    .ASCII/PC     TEST   RHBAE   CONTENTS RHBAE/<15><12>
 8223  067650  020040  042524  052123
 8224  067656  020040  020040  044122
 8225  067664  040502  020105  020040
 8226  067672  047503  052116  047105
 8227  067700  051524  051040  041110
 8228  067706  042501  005015
 8229  067712  020040  020040  020040          .ASCIZ/       NO.            SHOULD HAVE BEEN/
 8230  067720  020040  047516  020056
 8231  067726  020040  020040  020040
 8232  067734  020040  020040  020040
 8233  067742  044123  052517  042114
 8234  067750  044040  053101  020105
 8235  067756  042502  047105     000
 8236  067763     120  020103  020040  DH3:    .ASCII/PC     TEST   RHBA    CONTENTS RHBA/<15><12>
 8237  067770  020040  052040  051505
 8238  067776  020124  020040  051040
 8239  070004  041110  020101  020040
 8240  070012  041440  047117  042524
 8241  070020  052116  020123  044122
 8242  070026  040502  005015
 8243  070032  020040  020040  020040          .ASCIZ/       NO.            SHOULD HAVE BEEN/
 8244  070040  020040  047516  020056
 8245  070046  020040  020040  020040
 8246  070054  020040  020040  020040
 8247  070062  044123  052517  042114
 8248  070070  044040  053101  020105
 8249  070076  042502  047105     000
 8250  070103     120  020103  020040  DH4:    .ASCII/PC     TEST   RHDB    CONTENTS RHDB/<15><12>
 8251  070110  020040  052040  051505
 8252  070116  020124  020040  051040
 8253  070124  042110  020102  020040
 8254  070132  041440  047117  042524
 8255  070140  052116  020123  044122
 8256  070146  041104  005015
 8257  070152  020040  020040  020040          .ASCIZ/       NO.            SHOULD HAVE BEEN/
 8258  070160  020040  047516  020056
 8259  070166  020040  020040  020040
 8260  070174  020040  020040  020040
 8261  070202  044123  052517  042114
 8262  070210  044040  053101  020105
 8263  070216  042502  047105     000
 8264  070223     120  020103  020040  DH5:    .ASCII/PC     TEST   RHCS2   TRE AND SC/<15><12>
 8265  070230  020040  052040  051505
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8266  070236  020124  020040  051040
8267  070244  041510  031123  020040
8268  070252  052040  042522  040440
8269  070260  042116  051440  006503
8270  070266     012
8271  070267     040  020040  020040          .ASCIZ/       NO.                 BITS/
8272  070274  020040  047040  027117
8273  070302  020040  020040  020040
8274  070310  020040  020040  020040
8275  070316  020040  020040  041040
8276  070324  052111  000123
8277  070330  041520  020040  020040  DH11:   .ASCII/PC     TEST   CONTENTS OF/<15><12>
8278  070336  020040  042524  052123
8279  070344  020040  020040  047503
8280  070352  052116  047105  051524
8281  070360  047440  006506     012
8282  070365     040  020040  020040          .ASCIZ/       NO.       RHCS2/
8283  070372  020040  047040  027117
8284  070400  020040  020040  020040
8285  070406  020040  044122  051503
8286  070414  000062
8287  070416  041520  020040  020040  DH34:   .ASCII/PC     TEST   DEVICE/<15><12>
8288  070424  020040  042524  052123
8289  070432  020040  020040  042504
8290  070440  044526  042503  005015
8291  070446  020040  020040  020040          .ASCIZ/       NO.    CODE/
8292  070454  020040  047516  020056
8293  070462  020040  020040  047503
8294  070470  042504     000
8295  070473     120  000103          DH35:   .ASCIZ/PC/
8296  070476  041520  020040  020040  DH36:   .ASCII/PC     TEST   FAILING/<15><12>
8297  070504  020040  042524  052123
8298  070512  020040  020040  040506
8299  070520  046111  047111  006507
8300  070526     012
8301  070527     040  020040  020040          .ASCIZ/       NO.    ADDRESS/
8302  070534  020040  047040  027117
8303  070542  020040  020040  040440
8304  070550  042104  042522  051523
8305  070556     000
8306  070557     120  020103  020040  DH41:   .ASCIZ/PC     TEST NUMBER/
8307  070564  020040  052040  051505
8308  070572  020124  052516  041115
8309  070600  051105     000
8310  070603     120  020103  020040  DH52:   .ASCII/PC     TEST   ADDRESS  DATA   RHAS/<15><12>
8311  070610  020040  052040  051505
8312  070616  020124  020040  040440
8313  070624  042104  042522  051523
8314  070632  020040  040504  040524
8315  070640  020040  051040  040510
8316  070646  006523     012
8317  070651     040  020040  020040          .ASCIZ/       NO.    CONTENTS/
8318  070656  020040  047040  027117
8319  070664  020040  020040  041440
8320  070672  047117  042524  052116
8321  070700  000123
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 8322  070702  041520  020040  020040  DH71:   .ASCII/PC      TEST    DEVICE/<15><12>
 8323  070710  020040  042524  052123
 8324  070716  020040  020040  042504
 8325  070724  044526  042503  005015
 8326  070732  020040  020040  020040          .ASCIZ/         NO.     NUMBER/
 8327  070740  020040  047516  020056
 8328  070746  020040  020040  052516
 8329  070754  041115  051105     000
 8330  070761     120  020103  020040  DH72:   .ASCII/PC      TEST    CONTENTS OF/<15><12>
 8331  070766  020040  052040  051505
 8332  070774  020124  020040  041440
 8333  071002  047117  042524  052116
 8334  071010  020123  043117  005015
 8335  071016  020040  020040  020040          .ASCIZ/         NO.      REGISTER/
 8336  071024  020040  047516  020056
 8337  071032  020040  020040  051040
 8338  071040  043505  051511  042524
 8339  071046  000122
 8340  071050  041520  020040  020040  DH76:   .ASCIZ/PC      TEST NO.  RHBAE   RHBA/
 8341  071056  052040  051505  020124
 8342  071064  047516  020056  051040
 8343  071072  041110  042501  020040
 8344  071100  051040  041110  000101
 8345  071106  041520  020040  020040  DH105:  .ASCIZ/PC      TEST NO. RHBAE   RHBA    RHWC/
 8346  071114  052040  051505  020124
 8347  071122  047516  020056  044122
 8348  071130  040502  020105  020040
 8349  071136  044122  040502  020040
 8350  071144  020040  044122  041527
 8351  071152     000
 8352  071153     120  020103  020040  DH111:  .ASCIZ/PC      TEST NO. RHCS1   RHBA    RHWC/
 8353  071160  020040  042524  052123
 8354  071166  047040  027117  051040
 8355  071174  041510  030523  020040
 8356  071202  051040  041110  020101
 8357  071210  020040  051040  053510
 8358  071216  000103
 8359  071220  041520  020040  020040  DH121:  .ASCIZ/PC      TEST NO. RHCS1   RHCS2/
 8360  071226  052040  051505  020124
 8361  071234  047516  020056  044122
 8362  071242  051503  020061  020040
 8363  071250  044122  051503  000062
 8364  071256  041520  020040  020040  DH130:  .ASCIZ/PC      TEST NO. RHCS1/
 8365  071264  052040  051505  020124
 8366  071272  047516  020056  044122
 8367  071300  051503  000061
 8368  071304  041520  020040  020040  DH132:  .ASCIZ/PC      TEST NO. RHBAE   RHBA    RHCS2   RHCS3/
 8369  071312  052040  051505  020124
 8370  071320  047516  020056  044122
 8371  071326  040502  020105  020040
 8372  071334  044122  040502  020040
 8373  071342  020040  044122  051503
 8374  071350  020062  020040  044122
 8375  071356  051503  000063
 8376  071362  041520  020040  020040  DH142:  .ASCIZ/PC      TEST NO. EVENAD  RHTDB/
 8377  071370  052040  051505  020124
```

```
8378  071376  047516  020056  053105
8379  071404  047105  042101  020040
8380  071412  044122  042124  000102
8381  071420  041520  020040  020040  DH146:  .ASCIZ PC      TEST NO. RHCS1    RHCS2    RHWC/
8382  071426  052040  051505  020124
8383  071434  047516  020056  044122
8384  071442  051503  020061  020040
8385  071450  044122  051503  020062
8386  071456  020040  044122  041527
8387  071464     000
8388  071465     120  020103  020040  DH147:  .ASCIZ PC      TEST NO. RBUF     RHTDB
8389  071472  020040  042524  052123
8390  071500  047040  027117  051040
8391  071506  052502  020106  020040
8392  071514  051040  052110  041104
8393  071522     000
8394  071523     122  041110  042501  DH170:  .ASCIZ/RHBAE   RHBA     RHCS3/
8395  071530  020040  051040  041110
8396  071536  020101  020040  051040
8397  071544  041510  031523     000
8398  071551     120  020103  020040  DH171:  .ASCIZ/PC      TEST NO. RHCS3/
8399  071556  020040  042524  052123
8400  071564  047040  027117  051040
8401  071572  041510  031523     000
8402  071577     120  020103  020040  DH172:  .ASCII PC       TEST     DEVICE   RHCS2/<15><12>
8403  071604  020040  052040  051505
8404  071612  020124  020040  042040
8405  071620  053105  041511  020105
8406  071626  051040  041510  031123
8407  071634  005015
8408  071636  020040  020040  020040           .ASCIZ/         NO.      NUMBER  /
8409  071644  020040  047516  020056
8410  071652  020040  020040  052516
8411  071660  041115  051105  020040
8412  071666     000
8413          071670                  .EVEN
8414  071670  001116  003454  003444  DT1:    .WORD   $ERRPC,TSTNM,WC,$REG0,0
8415  071676  001162  000000
8416  071702  001116  003454  003416  DT2:    .WORD   $ERRPC,TSTNM,BAE,$REG0,0
8417  071710  001162  000000
8418  071714  001116  003454  003414  DT3:    .WORD   $ERRPC,TSTNM,BA,$REG0,0
8419  071722  001162  000000
8420  071726  001116  003454  003426  DT4:    .WORD   $ERRPC,TSTNM,DB,$REG0,0
8421  071734  001162  000000
8422  071740  001116  003454  003422  DT5:    .WORD   $ERRPC,TSTNM,CS2,$REG0,0
8423  071746  001162  000000
8424  071752  001116  003454  003422  DT11:   .WORD   $ERRPC,TSTNM,CS2,0
8425  071760  000000
8426  071762  001116  003454  003434  DT34:   .WORD   $ERRPC,TSTNM,DT,0
8427  071770  000000
8428  071772  001116  000000          DT35:   .WORD   $ERRPC,0
8429  071776  001116  003454  003330  DT36:   .WORD   $ERRPC,TSTNM,RHCS1,0
8430  072004  000000
8431  072006  001116  003454  000000  DT41:   .WORD   $ERRPC,TSTNM,0
8432  072014  001116  003454  003416  DT52:   .WORD   $ERRPC,TSTNM,BAE,$REG0,AS,0
8433  072022  001162  003412  000000
```

```
 8434  072230  001116  003454  004100  DT71:   .WORD   SERRPC,TSTNM,RBUF,0
 8435  072236  000000
 8436  072240  001116  003454  003416  DT76:   .WORD   SERRPC,TSTNM,BAE,BA,0
 8437  072246  003414  000300
 8438  072252  001116  003454  003416  DT105:  .WORD   SERRPC,TSTNM,BAE,BA,WC,0
 8439  072260  003414  003444  000000
 8440  072266  001116  003454  003420  DT111:  .WORD   SERRPC,TSTNM,CS1,BA,WC,0
 8441  072274  003414  003444  000000
 8442  072302  001116  003454  003420  DT121:  .WORD   SERRPC,TSTNM,CS1,CS2,0
 8443  072310  003422  000000
 8444  072314  001116  003454  003420  DT130:  .WORD   SERRPC,TSTNM,CS1,0
 8445  072322  000000
 8446  072324  001116  003454  003416  DT132:  .WORD   SERRPC,TSTNM,BAE,BA,CS2,CS3,0
 8447  072332  003414  003422  003424
 8448  072340  000000
 8449  072342  001116  003454  004000  DT142:  .WORD   SERRPC,TSTNM,EVENAD,$REG0,0
 8450  072350  001162  000000
 8451  072354  001116  003454  003420  DT146:  .WORD   SERRPC,TSTNM,CS1,CS2,WC,0
 8452  072362  003422  003444  000000
 8453  072370  001116  003454  004100  DT147:  .WORD   SERRPC,TSTNM,RBUF,$REG0,0
 8454  072376  001162  000000
 8455  072402  003416  003414  003424  DT170:  .WORD   BAE,BA,CS3,0
 8456  072410  000000
 8457  072412  001116  003454  003424  DT171:.WORD     SERRPC,TSTNM,CS3,0
 8458  072420  000000
 8459  072422  001116  003454  004100  DT172:  .WORD   SERRPC,TSTNM,RBUF,CS2,0
 8460  072430  003422  000000
 8461                                  .EVEN
 8462  072434     000     000     000  DF1:    .BYTE   0,0,0,0
 8463  072437     000
 8464  072440     000     000     000  DF2:    .BYTE   0,0,0,0
 8465  072443     000
 8466  072444     000     000     000  DF3:    .BYTE   0,0,0,0
 8467  072447     000
 8468  072450     000     000     000  DF4:    .BYTE   0,0,0,0
 8469  072453     000
 8470  072454     000     000     000  DF5:    .BYTE   0,0,0,0
 8471  072457     000
 8472  072460     000     000     000  DF11:   .BYTE   0,0,0
 8473  072463     000     000     000  DF34:   .BYTE   0,0,0
 8474  072466     000                  DF35:   .BYTE   0
 8475  072467     000     000     000  DF36:   .BYTE   0,0,0
 8476  072472     000     000          DF41:   .BYTE   0,0
 8477  072474     000     000     000  DF52:   .BYTE   0,0,0,0,0
 8478  072477     000     000
 8479  072501     000     000     000  DF71:   .BYTE   0,0,0
 8480  072504     000     000     000  DF76:   .BYTE   0,0,0,0
 8481  072507     000
 8482  072510     000     000     000  DF105:  .BYTE   0,0,0,0,0
 8483  072513     000     000
 8484  072515     000     000     000  DF132:  .BYTE   0,0,0,0,0,0
 8485  072520     000     000     000
 8486  072523     000     000     000  DF170:  .BYTE   0,0,0
 8487  072526     000     000     000  DF172:  .BYTE   0,0,0,0
 8488  072531     000
 8489                                  .EVEN
```

```
                                ;;*****************************************************************
                                ;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
```

```
 8546  072510  054252                    MED67
 8547  072512  054321                    MED70
 8548  072514  054375                    MED71
 8549  072516  054443                    MED72
 8550  072520  054517                    MED73
 8551  072522  054566                    MED74
 8552  072524  054642                    MED75
 8553  072526  054710                    MED76
```

```
                                        .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

072530                                  $SCOPE:
072530  032777  040000  106402  1$:     BIT     #BIT14,@SWR     ;;LOOP ON PRESENT TEST?
072536  001111                          BNE     $OVER           ;;YES IF SW14=1
                                        ;*****START OF CODE FOR THE XOR TESTER*****
072540  000416                  $XTSTR: BR      6$              ;;IF RUNNING ON THE "XOR" TESTER CHANGE
                                                                ;;THIS INSTRUCTION TO A "NOP" (NOP=240)
072542  013746  000004                  MOV     @#ERRVEC,-(SP)  ;;SAVE THE CONTENTS OF THE ERROR VECTOR
072546  012737  072566  000004          MOV     #5$,@#ERRVEC    ;;SET FOR TIMEOUT
072554  005737  177060                  TST     @#177060        ;;TIME OUT ON XOR?
072560  012637  000004                  MOV     (SP)+,@#ERRVEC  ;;RESTORE THE ERROR VECTOR
072564  000463                          BR      $SVLAD          ;;GO TO THE NEXT TEST
072566  022626                  5$:     CMP     (SP)+,(SP)+     ;;CLEAR THE STACK AFTER A TIME OUT
072570  012637  000004                  MOV     (SP)+,@#ERRVEC  ;;RESTORE THE ERROR VECTOR
072574  000423                          BR      7$              ;;LOOP ON THE PRESENT TEST
072576                          6$:;*****END OF CODE FOR THE XOR TESTER*****
072576  032777  000400  106334          BIT     #BIT08,@SWR     ;;LOOP ON SPEC. TEST?
072604  001404                          BEQ     2$              ;;BR IF NO
072606  127737  106326  001102          CMPB    @SWR,$TSTNM     ;;ON THE RIGHT TEST?    SWR<7:0>
072614  001462                          BEQ     $OVER           ;;BR IF YES
072616  105737  001103          2$:     TSTB    $ERFLG          ;;HAS AN ERROR OCCURRED?
072622  001421                          BEQ     3$              ;;BR IF NO
072624  123737  001115  001103          CMPB    $ERMAX,$ERFLG   ;;MAX. ERRORS FOR THIS TEST OCCURRED?
072632  101015                          BHI     3$              ;;BR IF NO
072634  032777  001000  106276          BIT     #BIT09,@SWR     ;;LOOP ON ERROR?
072642  001404                          BEQ     4$              ;;BR IF NO
072644  013737  001110  001106  7$:     MOV     $LPERR,$LPADR   ;;SET LOOP ADDRESS TO LAST SCOPE
072652  000443                          BR      $OVER
072654  105037  001103          4$:     CLRB    $ERFLG          ;;ZERO THE ERROR FLAG
072660  005037  001212                  CLR     $TIMES          ;;CLEAR THE NUMBER OF ITERATIONS TO MAKE
072664  000415                          BR      1$              ;;ESCAPE TO THE NEXT TEST
072666  032777  004000  106244  3$:     BIT     #BIT11,@SWR     ;;INHIBIT ITERATIONS?
072674  001011                          BNE     1$              ;;BR IF YES
072676  005737  001100                  TST     $PASS           ;;IF FIRST PASS OF PROGRAM
072702  001406                          BEQ     1$              ;;      INHIBIT ITERATIONS
072704  005237  001104                  INC     $ICNT           ;;INCREMENT ITERATION COUNT
072710  023737  001212  001104          CMP     $TIMES,$ICNT    ;;CHECK THE NUMBER OF ITERATIONS MADE
072716  002021                          BGE     $OVER           ;;BR IF MORE ITERATION REQUIRED
072720  012737  000001  001104  1$:     MOV     #1,$ICNT        ;;REINITIALIZE THE ITERATION COUNTER
072726  013737  072776  001212          MOV     $MXCNT,$TIMES   ;;SET NUMBER OF ITERATIONS TO DO
072734  105237  001102          $SVLAD: INCB    $TSTNM          ;;COUNT TEST NUMBERS
072740  011637  001106                  MOV     (SP),$LPADR     ;;SAVE SCOPE LOOP ADDRESS
072744  011637  001110                  MOV     (SP),$LPERR     ;;SAVE ERROR LOOP ADDRESS
```

```
 8610  072750  005037  001214                 CLR     $ESCAPE          ;;CLEAR THE ESCAPE FROM ERROR ADDRESS
 8611  072754  112737  000001  001115         MOVB    #1,$ERMAX        ;;ONLY ALLOW ONE(1) ERROR ON NEXT TEST
 8612  072762  013777  001102  106152 $OVER:  MOV     $TSTNM,@DISPLAY  ;;DISPLAY TEST NUMBER
 8613  072770  013716  001106                 MOV     $LPADR,(SP)      ;;FUDGE RETURN ADDRESS
 8614  072774  000002                         RTI                      ;;FIXES PS
 8615  072776  000100                 $MXCNT: 100                      ;;MAX. NUMBER OF ITERATIONS
 8616                                  .SBTTL  POWER DOWN AND UP ROUTINES
 8617
 8618                                  ;;*****************************************************************
 8619                                  ;POWER DOWN ROUTINE
 8620  073000  012737  073140  000024 $PWRDN: MOV     #$ILLUP,@#PWRVEC ;;SET FOR FAST UP
 8621  073006  012737  000340  000026         MOV     #340,@#PWRVEC+2  ;;PRIO:7
 8622  073014  010046                         MOV     R0,-(SP)         ;;PUSH R0 ON STACK
 8623  073016  010146                         MOV     R1,-(SP)         ;;PUSH R1 ON STACK
 8624  073020  010246                         MOV     R2,-(SP)         ;;PUSH R2 ON STACK
 8625  073022  010346                         MOV     R3,-(SP)         ;;PUSH R3 ON STACK
 8626  073024  010446                         MOV     R4,-(SP)         ;;PUSH R4 ON STACK
 8627  073026  010546                         MOV     R5,-(SP)         ;;PUSH R5 ON STACK
 8628  073030  017746  106104                 MOV     @SWR,-(SP)       ;;PUSH @SWR ON STACK
 8629  073034  010637  073144                 MOV     SP,$SAVR6        ;;SAVE SP
 8630  073040  012737  073052  000024         MOV     #$PWRUP,@#PWRVEC ;;SET UP VECTOR
 8631  073046  000000                         HALT
 8632  073050  000776                         BR      .-2              ;;HANG UP
 8633
 8634                                  ;;*****************************************************************
 8635                                  ;POWER UP ROUTINE
 8636  073052  012737  073140  000024 $PWRUP: MOV     #$ILLUP,@#PWRVEC ;;SET FOR FAST DOWN
 8637  073060  013706  073144                 MOV     $SAVR6,SP        ;;GET SP
 8638  073064  005037  073144                 CLR     $SAVR6           ;;WAIT LOOP FOR THE TTY
 8639  073070  005237  073144         1$:     INC     $SAVR6           ;;WAIT FOR THE INC
 8640  073074  001375                         BNE     1$               ;;OF  WORD
 8641  073076  012677  106036                 MOV     (SP)+,@SWR       ;;POP STACK INTO @SWR
 8642  073102  012605                         MOV     (SP)+,R5         ;;POP STACK INTO R5
 8643  073104  012604                         MOV     (SP)+,R4         ;;POP STACK INTO R4
 8644  073106  012603                         MOV     (SP)+,R3         ;;POP STACK INTO R3
 8645  073110  012602                         MOV     (SP)+,R2         ;;POP STACK INTO R2
 8646  073112  012601                         MOV     (SP)+,R1         ;;POP STACK INTO R1
 8647  073114  012600                         MOV     (SP)+,R0         ;;POP STACK INTO R0
 8648  073116  012737  073000  000024         MOV     #$PWRDN,@#PWRVEC ;;SET UP THE POWER DOWN VECTOR
 8649  073124  012737  000340  000026         MOV     #340,@#PWRVEC+2  ;;PRIO:7
 8650  073132  104401                         TYPE                     ;REPORT THE POWER FAILURE
 8651  073134  073146         $PWRMG: .WORD   $POWER           ;;POWER FAIL MESSAGE POINTER
 8652  073136  000002                 RTI
 8653  073140  000000         $ILLUP: HALT                     ;;THE POWER UP SEQUENCE WAS STARTED
 8654  073142  000776                 BR      .-2              ;; BEFORE THE POWER DOWN WAS COMPLETE
 8655  073144  000000         $SAVR6: 0                        ;;PUT THE SP HERE
 8656  073146  005015  047520  042527 $POWER: .ASCIZ  <15><12>"POWER"
 8657  073154  000122
 8658                                  .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
                                ;*

 8676  073156  105737  001157   $TYPE:  TSTB    $TPFLG          ;;IS THERE A TERMINAL?
 8677  073162  100002                   BPL     1$              ;;BR IF YES
 8678  073164  000000                   HALT                    ;;HALT HERE IF NO TERMINAL
 8679  073166  000407                   BR      3$              ;;LEAVE
 8680  073170  010046           1$:     MOV     R0,-(SP)        ;;SAVE R0
 8681  073172  017600  000002           MOV     @2(SP),R0       ;;GET ADDRESS OF ASCIZ STRING
 8682  073176  112046           2$:     MOVB    (R0)+,-(SP)     ;;PUSH CHARACTER TO BE TYPED ONTO STACK
 8683  073200  001005                   BNE     4$              ;;BR IF IT ISN'T THE TERMINATOR
 8684  073202  005726                   TST     (SP)+           ;;IF TERMINATOR POP IT OFF THE STACK
 8685  073204  012600           60$:    MOV     (SP)+,R0        ;;RESTORE R0
 8686  073206  062716  000002   3$:     ADD     #2,(SP)         ;;ADJUST RETURN PC
 8687  073212  000002                   RTI                     ;;RETURN
 8688  073214  122716  000011   4$:     CMPB    #HT,(SP)        ;;BRANCH IF <HT>
 8689  073220  001430                   BEQ     8$
 8690  073222  122716  000200           CMPB    #CRLF,(SP)      ;;BRANCH IF NOT <CRLF>
 8691  073226  001006                   BNE     5$
 8692  073230  005726                   TST     (SP)+           ;;POP  <CR><LF> EQUIV
 8693  073232  104401                   TYPE                    ;;TYPE A CR AND LF
 8694  073234  001223                   $CRLF
 8695  073236  105037  073372           CLRB    $CHARCNT        ;;CLEAR CHARACTER COUNT
 8696  073242  000755                   BR      2$              ;;GET NEXT CHARACTER
 8697  073244  004737  073326   5$:     JSR     PC,$TYPEC       ;;GO TYPE THIS CHARACTER
 8698  073250  123726  001156   6$:     CMPB    $FILLC,(SP)+    ;;IS IT TIME FOR FILLER CHARS.?
 8699  073254  001350                   BNE     2$              ;;IF NO GO GET NEXT CHAR.
 8700  073256  013746  001154           MOV     $NULL,-(SP)     ;;GET # OF FILLER CHARS. NEEDED
 8701                                                           ;;AND THE NULL CHAR.
 8702  073262  105366  000001   7$:     DECB    1(SP)           ;;DOES A NULL NEED TO BE TYPED?
 8703  073266  002770                   BLT     6$              ;;BR IF NO--GO POP THE NULL OFF OF STACK
 8704  073270  004737  073326           JSR     PC,$TYPEC       ;;GO TYPE A NULL
 8705  073274  105337  073372           DECB    $CHARCNT        ;;DO NOT COUNT AS A COUNT
 8706  073300  000770                   BR      7$              ;;LOOP
 8707
 8708                                ;HORIZONTAL TAB PROCESSOR
 8709
 8710  073302  112716  000040   8$:     MOVB    #' ,(SP)        ;;REPLACE TAB WITH SPACE
 8711  073306  004737  073326   9$:     JSR     PC,$TYPEC       ;;TYPE A SPACE
 8712  073312  132737  000007  073372   BITB    #7,$CHARCNT     ;;BRANCH IF NOT AT
 8713  073320  001372                   BNE     9$              ;;TAB STOP
 8714  073322  005726                   TST     (SP)+           ;;POP SPACE OFF STACK
```

```
 8715  073324  000724                          BR      2$              ;;GET NEXT CHARACTER
 8716  073326  105777  105616          $TYPEC: TSTB    @$TPS           ;;WAIT UNTIL PRINTER IS READY
 8717  073332  100375                          BPL     $TYPEC
 8718  073334  116677  000002  105610          MOVB    2(SP),@$TPB     ;;LOAD CHAR TO BE TYPED INTO DATA REG.
 8719  073342  122766  000015  000002          CMPB    #CR,2(SP)       ;;IS CHARACTER A CARRIAGE RETURN?
 8720  073350  001003                          BNE     1$              ;;BRANCH IF NO
 8721  073352  105037  073372                  CLRB    $CHARCNT        ;;YES--CLEAR CHARACTER COUNT
 8722  073356  000406                          BR      $TYPEX          ;;EXIT
 8723  073360  122766  000012  000002  1$:     CMPB    #LF,2(SP)       ;;IS CHARACTER A LINE FEED?
 8724  073366  001402                          BEQ     $TYPEX          ;;BRANCH IF YES
 8725  073370  105227                          INCB    (PC)+           ;;COUNT THE CHARACTER
 8726  073372  000000          $CHARCNT:.WORD  0               ;;CHARACTER COUNT STORAGE
 8727  073374  000207          $TYPEX: RTS     PC
 8728
```

```
 8729                                   .SBTTL  BINARY TO OCTAL (ASCII) AND TYPE
 8730
 8731                                   ;;**********************************************************************
 8732                                   ;*THIS ROUTINE IS USED TO CHANGE A 16-BIT BINARY NUMBER TO A 6-DIGIT
 8733                                   ;*OCTAL (ASCII) NUMBER AND TYPE IT.
 8734                                   ;*$TYPOS---ENTER HERE TO SETUP SUPPRESS ZEROS AND NUMBER OF DIGITS TO TYPE
 8735                                   ;*CALL:
 8736                                   ;*       MOV     NUM,-(SP)       ;;NUMBER TO BE TYPED
 8737                                   ;*       TYPOS                   ;;CALL FOR TYPEOUT
 8738                                   ;*       .BYTE   N               ;;N=1 TO 6 FOR NUMBER OF DIGITS TO TYPE
 8739                                   ;*       .BYTE   M               ;;M=1 OR 0
 8740                                   ;*                                       ;;1=TYPE LEADING ZEROS
 8741                                   ;*                                       ;;0=SUPPRESS LEADING ZEROS
 8742                                   ;*
 8743                                   ;*$TYPON----ENTER HERE TO TYPE OUT WITH THE SAME PARAMETERS AS THE LAST
 8744                                   ;*$TYPOS OR $TYPOC
 8745                                   ;*CALL:
 8746                                   ;*       MOV     NUM,-(SP)       ;;NUMBER TO BE TYPED
 8747                                   ;*       TYPON                   ;;CALL FOR TYPEOUT
 8748                                   ;*
 8749                                   ;*$TYPOC---ENTER HERE FOR TYPEOUT OF A 16 BIT NUMBER
 8750                                   ;*CALL:
 8751                                   ;*       MOV     NUM,-(SP)       ;;NUMBER TO BE TYPED
 8752                                   ;*       TYPOC                   ;;CALL FOR TYPEOUT
 8753
 8754  073376  017646  000000          $TYPOS: MOV     @(SP),-(SP)     ;;PICKUP THE MODE
 8755  073402  116637  000001  073621          MOVB    1(SP),$OFILL    ;;LOAD ZERO FILL SWITCH
 8756  073410  112637  073623                  MOVB    (SP)+,$OMODE+1  ;;NUMBER OF DIGITS TO TYPE
 8757  073414  062716  000002                  ADD     #2,(SP)         ;;ADJUST RETURN ADDRESS
 8758  073420  000406                          BR      $TYPON
 8759  073422  112737  000001  073621  $TYPOC: MOVB    #1,$OFILL       ;;SET THE ZERO FILL SWITCH
 8760  073430  112737  000006  073623          MOVB    #6,$OMODE+1     ;;SET FOR SIX(6) DIGITS
 8761  073436  112737  000005  073620  $TYPON: MOVB    #5,$OCNT        ;;SET THE ITERATION COUNT
 8762  073444  010346                          MOV     R3,-(SP)        ;;SAVE R3
 8763  073446  010446                          MOV     R4,-(SP)        ;;SAVE R4
 8764  073450  010546                          MOV     R5,-(SP)        ;;SAVE R5
 8765  073452  113704  073623                  MOVB    $OMODE+1,R4     ;;GET THE NUMBER OF DIGITS TO TYPE
 8766  073456  005404                          NEG     R4
 8767  073460  062704  000006                  ADD     #6,R4           ;;SUBTRACT IT FOR MAX. ALLOWED
 8768  073464  110437  073622                  MOVB    R4,$OMODE       ;;SAVE IT FOR USE
 8769  073470  113704  073621                  MOVB    $OFILL,R4       ;;GET THE ZERO FILL SWITCH
 8770  073474  016605  000012                  MOV     12(SP),R5       ;;PICKUP THE INPUT NUMBER
 8771  073500  005003                          CLR     R3              ;;CLEAR THE OUTPUT WORD
 8772  073502  006105                  1$:     ROL     R5              ;;ROTATE MSB INTO "C"
 8773  073504  000404                          BR      3$              ;;GO DO MSB
 8774  073506  006105                  2$:     ROL     R5              ;;FORM THIS DIGIT
 8775  073510  006105                          ROL     R5
 8776  073512  006105                          ROL     R5
 8777  073514  010503                          MOV     R5,R3
 8778  073516  006103                  3$:     ROL     R3              ;;GET LSB OF THIS DIGIT
 8779  073520  105337  073622                  DECB    $OMODE          ;;TYPE THIS DIGIT?
 8780  073524  100016                          BPL     7$              ;;BR IF NO
 8781  073526  042703  177770                  BIC     #177770,R3      ;;GET RID OF JUNK
 8782  073532  001002                          BNE     4$              ;;TEST FOR 0
 8783  073534  005704                          TST     R4              ;;SUPPRESS THIS 0?
 8784  073536  001403                          BEQ     5$              ;;BR IF YES
```

```
 8785  073540  005204                    4$:     INC     R4              ;;DON'T SUPPRESS ANYMORE 0'S
 8786  073542  052703  000060                    BIS     #'0,R3          ;;MAKE THIS DIGIT ASCII
 8787  073546  052703  000040            5$:     BIS     #' ,R3          ;;MAKE ASCII IF NOT ALREADY
 8788  073552  110337  073616                    MOVB    R3,8$           ;;SAVE FOR TYPING
 8789  073556  104401  073616                    TYPE    ,8$             ;;GO TYPE THIS DIGIT
 8790  073562  105337  073620            7$:     DECB    $OCNT           ;;COUNT BY 1
 8791  073566  003347                            BGT     2$              ;;BR IF MORE TO DO
 8792  073570  002402                            BLT     6$              ;;BR IF DONE
 8793  073572  005204                            INC     R4              ;;INSURE LAST DIGIT ISN'T A BLANK
 8794  073574  000744                            BR      2$              ;;GO DO THE LAST DIGIT
 8795  073576  012605                    6$:     MOV     (SP)+,R5        ;;RESTORE R5
 8796  073600  012604                            MOV     (SP)+,R4        ;;RESTORE R4
 8797  073602  012603                            MOV     (SP)+,R3        ;;RESTORE R3
 8798  073604  016666  000002  000004           MOV     2(SP),4(SP)     ;;SET THE STACK FOR RETURNING
 8799  073612  012616                            MOV     (SP)+,(SP)
 8800  073614  000002                            RTI                     ;;RETURN
 8801  073616     000                 8$:     .BYTE   0               ;;STORAGE FOR ASCII DIGIT
 8802  073617     000                         .BYTE   0               ;;TERMINATOR FOR TYPE ROUTINE
 8803  073620     000                 $OCNT:  .BYTE   0               ;;OCTAL DIGIT COUNTER
 8804  073621     000                 $OFILL: .BYTE   0               ;;ZERO FILL SWITCH
 8805  073622  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
                                        $TYPDS:
073624  010046                          1$:     MOV     R0,-(SP)        ;;PUSH R0 ON STACK
073626  010146                                  MOV     R1,-(SP)        ;;PUSH R1 ON STACK
073630  010246                                  MOV     R2,-(SP)        ;;PUSH R2 ON STACK
073632  010346                                  MOV     R3,-(SP)        ;;PUSH R3 ON STACK
073634  010546                                  MOV     R5,-(SP)        ;;PUSH R5 ON STACK
073636  012746  020200                          MOV     #20200,-(SP)    ;;SET BLANK SWITCH AND SIGN
073642  016605  000020                          MOV     20(SP),R5       ;;GET THE INPUT NUMBER
073646  100004                                  BPL     1$              ;;BR IF INPUT IS POS.
073650  005405                                  NEG     R5              ;;MAKE THE BINARY NUMBER POS.
073652  112766  000055  000001                  MOVB    #'-,1(SP)       ;;MAKE THE ASCII NUMBER NEG.
073660  005000                          1$:     CLR     R0              ;;ZERO THE CONSTANTS INDEX
073662  012703  074040                          MOV     #$DBLK,R3       ;;SETUP THE OUTPUT POINTER
073666  112723  000040                          MOVB    #' ,(R3)+       ;;SET THE FIRST CHARACTER TO A BLANK
073672  005002                          2$:     CLR     R2              ;;CLEAR THE BCD NUMBER
073674  016001  074030                          MOV     $DTBL(R0),R1    ;;GET THE CONSTANT
073700  160105                          3$:     SUB     R1,R5           ;;FORM THIS BCD DIGIT
073702  002402                                  BLT     4$              ;;BR IF DONE
073704  005202                                  INC     R2              ;;INCREASE THE BCD DIGIT BY 1
073706  000774                                  BR      3$
073710  060105                          4$:     ADD     R1,R5           ;;ADD BACK THE CONSTANT
073712  005702                                  TST     R2              ;;CHECK IF BCD DIGIT=0
073714  001002                                  BNE     5$              ;;FALL THROUGH IF 0
073716  105716                                  TSTB    (SP)            ;;STILL DOING LEADING 0'S?
073720  100407                                  BMI     7$              ;;BR IF YES
073722  106316                          5$:     ASLB    (SP)            ;;MSD?
073724  103003                                  BCC     6$              ;;BR IF NO
073726  116663  000001  177777                  MOVB    1(SP),-1(R3)    ;;YES--SET THE SIGN
073734  052702  000060                  6$:     BIS     #'0,R2          ;;MAKE THE BCD DIGIT ASCII
073740  052702  000040                  7$:     BIS     #' ,R2          ;;MAKE IT A SPACE IF NOT ALREADY A DIGIT
073744  110223                                  MOVB    R2,(R3)+        ;;PUT THIS CHARACTER IN THE OUTPUT BUFFER
073746  005720                                  TST     (R0)+           ;;JUST INCREMENTING
073750  020027  000010                          CMP     R0,#10          ;;CHECK THE TABLE INDEX
073754  002746                                  BLT     2$              ;;GO DO THE NEXT DIGIT
073756  003002                                  BGT     8$              ;;GO TO EXIT
073760  010502                                  MOV     R5,R2           ;;GET THE LSD
073762  000764                                  BR      6$              ;;GO CHANGE TO ASCII
073764  105726                          8$:     TSTB    (SP)+           ;;WAS THE LSD THE FIRST NON-ZERO?
073766  100003                                  BPL     9$              ;;BR IF NO
073770  116663  177777  177776                  MOVB    -1(SP),-2(R3)   ;;YES--SET THE SIGN FOR TYPING
073776  105013                          9$:     CLRB    (R3)            ;;SET THE TERMINATOR
074000  012605                                  MOV     (SP)+,R5        ;;POP STACK INTO R5
074002  012603                                  MOV     (SP)+,R3        ;;POP STACK INTO R3
074004  012602                                  MOV     (SP)+,R2        ;;POP STACK INTO R2
```

```
 8862  074006  012601                          MOV     (SP)+,R1        ;;POP STACK INTO R1
 8863  074010  012600                          MOV     (SP)+,R0        ;;POP STACK INTO R0
 8864  074012  104401  074040                  TYPE    ,$DBLK          ;;NOW TYPE THE NUMBER
 8865  074016  016666  000002  000004          MOV     2(SP),4.SP,     ;;ADJUST THE STACK
 8866  074024  012616                          MOV     (SP)+,(SP)
 8867  074026  000002                          RTI                     ;;RETURN TO USER
 8868  074030  023420                $DTBL:    10000.
 8869  074032  001750                          1000.
 8870  074034  000144                          100.
 8871  074036  000012                          10.
 8872  074040  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.

074050                                  $ERRTYP:
074050  104401  001223                          TYPE    ,$CRLF          ;;"CARRIAGE RETURN" & "LINE FEED"
074054  010046                                  MOV     R0,-(SP)        ;;SAVE R0
074056  005000                                  CLR     R0              ;;PICKUP THE ITEM INDEX
074060  153700  001114                          BISB    @#$ITEMB,R0
074064  001004                                  BNE     1$              ;;IF ITEM NUMBER IS ZERO, JUST
                                                                        ;;TYPE THE PC OF THE ERROR
074066  013746  001116                          MOV     $ERRPC,-(SP)    ;;SAVE $ERRPC FOR TYPEOUT
                                                                        ;;ERROR ADDRESS
074072  104402                                  TYPOC                   ;;GO TYPE--OCTAL ASCII(ALL DIGITS)
074074  000426                                  BR      6$              ;;GET OUT
074076  005300                          1$:     DEC     R0              ;;ADJUST THE INDEX SO THAT IT WILL
074100  006300                                  ASL     R0              ;;      WORK FOR THE ERROR TABLE
074102  006300                                  ASL     R0
074104  006300                                  ASL     R0
074106  062700  001226                          ADD     #$ERRTB,R0      ;;FORM TABLE POINTER
074112  012037  074122                          MOV     (R0)+,2$        ;;PICKUP "ERROR MESSAGE" POINTER
074116  001404                                  BEQ     3$              ;;SKIP TYPEOUT IF NO POINTER
074120  104401                                  TYPE                    ;;TYPE THE "ERROR MESSAGE"
074122  000000                          2$:     .WORD   0               ;;"ERROR MESSAGE" POINTER GOES HERE
074124  104401  001223                          TYPE    ,$CRLF          ;;"CARRIAGE RETURN" & "LINE FEED"
074130  012037  074140                  3$:     MOV     (R0)+,4$        ;;PICKUP "DATA HEADER" POINTER
074134  001404                                  BEQ     5$              ;;SKIP TYPEOUT IF 0
074136  104401                                  TYPE                    ;;TYPE THE "DATA HEADER"
074140  000000                          4$:     .WORD   0               ;;"DATA HEADER" POINTER GOES HERE
074142  104401  001223                          TYPE    ,$CRLF          ;;"CARRIAGE RETURN" & "LINE FEED"
074146  011000                          5$:     MOV     (R0),R0         ;;PICKUP "DATA TABLE" POINTER
074150  001004                                  BNE     7$              ;;GO TYPE THE DATA
074152  012600                          6$:     MOV     (SP)+,R0        ;;RESTORE R0
074154  104401  001223                          TYPE    ,$CRLF          ;;"CARRIAGE RETURN" & "LINE FEED"
074160  000207                                  RTS     PC              ;;RETURN
074162                                  7$:
074162  013046                                  MOV     @(R0)+,-(SP)    ;;SAVE @(R0)+ FOR TYPEOUT
074164  104402                                  TYPOC                   ;;GO TYPE--OCTAL ASCII(ALL DIGITS)
074166  005710                                  TST     (R0)            ;;IS THERE ANOTHER NUMBER?
074170  001770                                  BEQ     6$              ;;BR IF NO
074172  104401  074200                          TYPE    ,8$             ;;TYPE TWO(2) SPACES
074176  000771                                  BR      7$              ;;LOOP
074200  020040      000                 8$:     .ASCIZ  /  /            ;;TWO(2) SPACES
074204                                  .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

074204                          $ERROR:
074204  105237  001103         7$:     INCB    $ERFLG          ;;SET THE ERROR FLAG
074210  001775                         BEQ     7$              ;;OOPS, I LET THE FLAG GO TO ZERO
074212  013777  001102  104722         MOV     $TSTNM,@DISPLAY ;;DISPLAY TEST NUMBER AND ERROR FLAG
074220  032777  002000  104712         BIT     #BIT10,@SWR     ;;BELL ON ERROR?
074226  001402                         BEQ     1$              ;;NO - SKIP
074230  104401  001216                 TYPE    ,$BELL          ;;RING BELL
074234  005237  001112         1$:     INC     $ERTTL          ;;COUNT THE NUMBER OF ERRORS
074240  011637  001116                 MOV     (SP),$ERRPC     ;;GET ADDRESS OF ERROR INSTRUCTION
074244  162737  000002  001116         SUB     #2,$ERRPC
074252  117737  104640  001114         MOVB    @$ERRPC,$ITEMB  ;;STRIP AND SAVE THE ERROR ITEM CODE
074260  032777  020000  104652         BIT     #BIT13,@SWR     ;;SKIP TYPEOUT IF SET
074266  001004                         BNE     20$             ;;SKIP TYPEOUTS
074270  004737  050024                 JSR     R5,TSTNMB       ;;GO TO USER ERROR ROUTINE
074274  104401  001223                 TYPE    ,$CRLF
074300                          20$:
074300  005777  104634         2$:     TST     @SWR            ;;HALT ON ERROR
074304  100001                         BPL     3$              ;;SKIP IF CONTINUE
074306  000000                         HALT                    ;;HALT ON ERROR!
074310  032777  001000  104622 3$:     BIT     #BIT09,@SWR     ;;LOOP ON ERROR SWITCH SET?
074316  001402                         BEQ     4$              ;;BR IF NO
074320  013716  001110                 MOV     $LPERR,(SP)     ;;FUDGE RETURN FOR LOOPING
074324  005737  001214         4$:     TST     $ESCAPE         ;;CHECK FOR AN ESCAPE ADDRESS
074330  001402                         BEQ     5$              ;;BR IF NONE
074332  013716  001214                 MOV     $ESCAPE,(SP)    ;;FUDGE RETURN ADDRESS FOR ESCAPE
074336                          5$:
074336  000002                         RTI                     ;;RETURN
```

```
                                .SBTTL  TTY INPUT ROUTINE
                                ;;*****************************************************************
                                .ENABL  LSB
                                .DSABL  LSB


                                ;;*****************************************************************
                                ;*THIS ROUTINE WILL INPUT A SINGLE CHARACTER FROM THE TTY
                                ;*CALL:
                                ;*      RDCHR                   ;;INPUT A SINGLE CHARACTER FROM THE TTY
                                ;*      RETURN HERE             ;;CHARACTER IS ON THE STACK
                                ;*                              ;;WITH PARITY BIT STRIPPED OFF
                                ;
074340  011646                  $RDCHR: MOV     (SP),-(SP)      ;;PUSH DOWN THE PC
074342  016666  000004  000002          MOV     4(SP),2(SP)     ;;SAVE THE PS
074350  105777  104570          1$:     TSTB    @$TKS           ;;WAIT FOR
074354  100375                          BPL     1$              ;;A CHARACTER
074356  117766  104564  000004          MOVB    @$TKB,4(SP)     ;;READ THE TTY
074364  042766  177600  000004          BIC     #^C(177),4(SP)  ;;GET RID OF JUNK IF ANY
074372  026627  000004  000023          CMP     4(SP),#23       ;;IS IT A CONTROL-S?
074400  001013                          BNE     3$              ;;BRANCH IF NO
074402  105777  104536          2$:     TSTB    @$TKS           ;;WAIT FOR A CHARACTER
074406  100375                          BPL     2$              ;;LOOP UNTIL ITS THERE
074410  117746  104532                  MOVB    @$TKB,-(SP)     ;;GET CHARACTER
074414  042716  177600                  BIC     #^C177,(SP)     ;;MAKE IT 7-BIT ASCII
074420  022627  000021                  CMP     (SP)+,#21       ;;IS IT A CONTROL-Q?
074424  001366                          BNE     2$              ;;IF NOT DISCARD IT
074426  000750                          BR      1$              ;;YES, RESUME
074430  026627  000004  000140  3$:     CMP     4(SP),#140      ;;IS IT UPPER CASE?
074436  002407                          BLT     4$              ;;BRANCH IF YES
074440  026627  000004  000175          CMP     4(SP),#175      ;;IS IT A SPECIAL CHAR?
074446  003003                          BGT     4$              ;;BRANCH IF YES
074450  042766  000040  000004          BIC     #40,4(SP)       ;;MAKE IT UPPER CASE
074456  000002                  4$:     RTI                     ;;GO BACK TO USER
                                ;;*****************************************************************
                                ;*THIS ROUTINE WILL INPUT A STRING FROM THE TTY
                                ;*CALL:
                                ;*      RDLIN                   ;;INPUT A STRING FROM THE TTY
                                ;*      RETURN HERE             ;;ADDRESS OF FIRST CHARACTER WILL BE ON THE STACK
                                ;*                              ;;TERMINATOR WILL BE A BYTE OF ALL 0'S

074460  010346                  $RDLIN: MOV     R3,-(SP)        ;;SAVE R3
074462  012703  074566          1$:     MOV     #$TTYIN,R3      ;;GET ADDRESS
074466  022703  074576          2$:     CMP     #$TTYIN+8.,R3   ;;BUFFER FULL?
074472  101405                          BLOS    4$              ;;BR IF YES
074474  104406                          RDCHR                   ;;GO READ ONE CHARACTER FROM THE TTY
074476  112613                          MOVB    (SP)+,(R3)      ;;GET CHARACTER
074500  122713  000177          10$:    CMPB    #177,(R3)       ;;IS IT A RUBOUT
074504  001003                          BNE     3$              ;;SKIP IF NOT
074506  104401  001222          4$:     TYPE    ,$QUES          ;;TYPE A '?'
074512  000763                          BR      1$              ;;CLEAR THE BUFFER AND LOOP
074514  111337  074564          3$:     MOVB    (R3),9$         ;;ECHO THE CHARACTER
074520  104401  074564                  TYPE    ,9$
```

```
 9017  074524  122723  000015                 CMPB    #15,(R3)+       ;;CHECK FOR RETURN
 9018  074530  001356                         BNE     2$              ;;LOOP IF NOT RETURN
 9019  074532  105063  177777                 CLRB    -1(R3)          ;;CLEAR RETURN (THE 15)
 9020  074536  104401  001224                 TYPE    $LF             ;;TYPE A LINE FEED
 9021  074542  012603                         MOV     (SP)+,R3        ;;RESTORE R3
 9022  074544  011646                         MOV     (SP),-(SP)      ;;ADJUST THE STACK AND PUT ADDRESS OF THE
 9023  074546  016666  000004  000002         MOV     4(SP),2.SP)     ;;      FIRST ASCII CHARACTER ON IT
 9024  074554  012766  074566  000004         MOV     #$TTYIN,4(SP)
 9025  074562  000002                         RTI                     ;;RETURN
 9026  074564     000                 9$:     .BYTE   0               ;;STORAGE FOR ASCII CHAR. TO TYPE
 9027  074565     000                         .BYTE   0               ;;TERMINATOR
 9028  074566  000010             $TTYIN:     .BLKB   8.              ;;RESERVE 8 BYTES FOR TTY INPUT
 9029  074576  052536  005015  000  $CNTLU:  .ASCIZ  /^U (15)(12)    ;;CONTROL "U"
 9030  074603     136  006507  000012 $CNTLG: .ASCIZ  /^G/(15)(12)    ;;CONTROL "G"
 9031  074610  005015  053523  020122 $MSWR:  .ASCIZ  (15)(12)/SWR = /
 9032  074616  020075     000
 9033  074621     040  047040  053505 $MNEW:  .ASCIZ  /  NEW =
 9034  074626  036440  000040
```

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

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

074632  011646                  $RDOCT: MOV     (SP),-(SP)      ;;PROVIDE SPACE FOR THE
074634  016666  000004  000002          MOV     4(SP),2(SP)     ;;INPUT NUMBER
074642  010046                          MOV     R0,-(SP)        ;;PUSH R0 ON STACK
074644  010146                          MOV     R1,-(SP)        ;;PUSH R1 ON STACK
074646  010246                          MOV     R2,-(SP)        ;;PUSH R2 ON STACK
074650  104407                  1$:     RDLIN                   ;;READ AN ASCIZ LINE
074652  012600                          MOV     (SP)+,R0        ;;GET ADDRESS OF 1ST CHARACTER
074654  005001                          CLR     R1              ;;CLEAR DATA WORD
074656  005002                          CLR     R2
074660  112046                  2$:     MOVB    (R0)+,-(SP)     ;;PICKUP THIS CHARACTER
074662  001412                          BEQ     3$              ;;IF ZERO GET OUT
074664  006301                          ASL     R1              ;;*2
074666  006102                          ROL     R2
074670  006301                          ASL     R1              ;;*4
074672  006102                          ROL     R2
074674  006301                          ASL     R1              ;;*8
074676  006102                          ROL     R2
074700  042716  177770                  BIC     #^C7,(SP)       ;;STRIP THE ASCII JUNK
074704  062601                          ADD     (SP)+,R1        ;;ADD IN THIS DIGIT
074706  000764                          BR      2$              ;;LOOP
074710  005726                  3$:     TST     (SP)+           ;;CLEAN TERMINATOR FROM STACK
074712  010166  000012                  MOV     R1,12(SP)       ;;SAVE THE RESULT
074716  010237  074732                  MOV     R2,$HIOCT
074722  012602                          MOV     (SP)+,R2        ;;POP STACK INTO R2
074724  012601                          MOV     (SP)+,R1        ;;POP STACK INTO R1
074726  012600                          MOV     (SP)+,R0        ;;POP STACK INTO R0
074730  000002                          RTI                     ;;RETURN
074732  000000                  $HIOCT: .WORD   0               ;;HIGH ORDER BITS GO HERE
```

```
 9073                                   .SBTTL  TRAP DECODER
 9074
 9075                                   ;;**********************************************************************
 9076                                   ;*THIS ROUTINE WILL PICKUP THE LOWER BYTE OF THE "TRAP" INSTRUCTION
 9077                                   ;*AND USE IT TO INDEX THROUGH THE TRAP TABLE FOR THE STARTING ADDRESS
 9078                                   ;*OF THE DESIRED ROUTINE. THEN USING THE ADDRESS OBTAINED IT WILL
 9079                                   ;*GO TO THAT ROUTINE.
 9080
 9081  074734  010046                  $TRAP:  MOV     R0,-(SP)        ;;SAVE R0
 9082  074736  016600  000002                  MOV     2(SP),R0        ;;GET TRAP ADDRESS
 9083  074742  005740                          TST     -(R0)           ;;BACKUP BY 2
 9084  074744  111000                          MOVB    (R0),R0         ;;GET RIGHT BYTE OF TRAP
 9085  074746  006300                          ASL     R0              ;;POSITION FOR INDEXING
 9086  074750  016000  074770                  MOV     $TRPAD(R0),R0   ;;INDEX TO TABLE
 9087  074754  000200                          RTS     R0              ;;GO TO ROUTINE
 9088
 9089
 9090                                   ;;THIS IS USE TO HANDLE THE "GETPRI" MACRO
 9091
 9092  074756  011646                  $TRAP2: MOV     (SP),-(SP)      ;;MOVE THE PC DOWN
 9093  074760  016666  000004  000002          MOV     4(SP),2(SP)     ;;MOVE THE PSW DOWN
 9094  074766  000002                          RTI                     ;;RESTORE THE PSW
 9095
 9096                                   .SBTTL  TRAP TABLE
 9097
 9098                                   ;*THIS TABLE CONTAINS THE STARTING ADDRESSES OF THE ROUTINES CALLED
 9099                                   ;*BY THE "TRAP" INSTRUCTION.
 9100
 9101                                   ;       ROUTINE
 9102                                   ;       -------
 9103  074770  074756                  $TRPAD: .WORD   $TRAP2
 9104  074772  073156                          $TYPE   ;;CALL=TYPE     TRAP+1(104401)  TTY TYPEOUT ROUTINE
 9105  074774  073422                          $TYPOC  ;;CALL=TYPOC    TRAP+2(104402)  TYPE OCTAL NUMBER (WITH LEADING ZEROS)
 9106  074776  073376                          $TYPOS  ;;CALL=TYPOS    TRAP+3(104403)  TYPE OCTAL NUMBER (NO LEADING ZEROS)
 9107  075000  073436                          $TYPON  ;;CALL=TYPON    TRAP+4(104404)  TYPE OCTAL NUMBER (AS PER LAST CALL)
 9108  075002  073624                          $TYPDS  ;;CALL=TYPDS    TRAP+5(104405)  TYPE DECIMAL NUMBER (WITH SIGN)
 9109
 9110
 9111  075004  074340                          $RDCHR  ;;CALL=RDCHR    TRAP+6(104406)  TTY TYPEIN CHARACTER ROUTINE
 9112  075006  074460                          $RDLIN  ;;CALL=RDLIN    TRAP+7(104407)  TTY TYPEIN STRING ROUTINE
 9113  075010  074632                          $RDOCT  ;;CALL=RDOCT    TRAP+10(104410) READ AN OCTAL NUMBER FROM TTY
 9114          000001                  .END
```

```
AB     = 052525          1654#  2497   2638   2770   3145   5394   5672   5950   6223
ABLE     013436          2718   2723   2725   2727#
ADDERR   006350          1992   1998   2002   2005#
AD01     003320          1593#  1860
AD02     003322          1594#  1862   1863
AD03     003324          1595#  1865   1866
AD04     003326          1596#  1868   1869
AC1ERR   005100          1838   1860#
AD2ERR   005200          1861   1872#
AC3ERR   005220          1864   1876#
AC4ERR   005240          1867   1880#
AHEAD    045772          6470   6473#
ALRIGT   012242          2554   2556#
APE    = 100000          1511#  2072   3056   3091   3176   3213   3284   3319   3375   3483   3519   3589   3624
                         3693   3795   3897
AROUND   004560          1804   1813#
AS       003412          1635#  2368*  8432
AT0    = 000001          1570#
AT1    = 000002          1571#
AT2    = 000004          1572#
AT3    = 000010          1573#
AT4    = 000020          1574#
AT5    = 000040          1575#
AT6    = 000100          1576#
AT7    = 000200          1577#
A16    = 000400          1524#  2946   3004   3040   3055   3177   3283   3374   3432   3588   3692   3794   3896
                         6691
A17    = 001000          1525#  2979   3040   3055   3177   3283   3374   3482   3588   3692   3794   3896   6691
BA       003414          1636#  2174*  2221*  2261*  2308*  2444*  2479*  2506*  2530*  2579*  2613*  2616   2619*
                         2641*  2644   2647*  2664*  2667   2671*  2730*  2786*  2825*  2880*  2964*  3060*  3182*
                         3288*  3379*  3487*  3593*  3697*  3799*  3901*  3997*  4062*  4111*  4161*  4211*  4266*
                         4319*  4372*  4425*  4478*  4531*  4584*  4637*  4690*  4743*  4796*  4849*  4902*  4957*
                         4992*  5054*  5089*  5154*  5212*  5287*  5351*  5426*  5490*  5565*  5629*  5704*  5768*
                         5843*  5907*  5982*  6046*  6121*  6185*  6260*  6342*  8418   8436   8438   8440   8446
                         8455
BAE      003416          1637#  2177*  2180*  2224*  2227*  2264*  2267*  2311*  2314*  2366*  2447*  2450*  2482*
                         2485*  2509*  2512*  2533*  2536*  2572*  2575   2582*  2585*  2622*  2625*  2650*  2653*
                         2674*  2677*  2733*  2736*  2789*  2792*  2828*  2831*  2883*  2886*  2967*  2970*  3063*
                         3066*  3195*  3188*  3291*  3294*  3382*  3385*  3490*  3493*  3596*  3599*  3700*  3703*
                         3802*  3805*  3904*  3907*  4000*  4003*  4065*  4068*  4114*  4117*  4164*  4167*  4214*
                         4217*  4269*  4272*  4322*  4325*  4375*  4378*  4428*  4431*  4481*  4484*  4534*  4537*
                         4587*  4590*  4640*  4643*  4693*  4696*  4746*  4749*  4799*  4802*  4852*  4855*  4905*
                         4908*  4960*  4963*  4995*  4998*  5057*  5060*  5092*  5095*  5157*  5160*  5215*  5218*
                         5290*  5293*  5354*  5357*  5429*  5432*  5493*  5496*  5569*  5571*  5632*  5635*  5707*
                         5710*  5771*  5774*  5846*  5849*  5910*  5913*  5985*  5988*  6049*  6052*  6124*  6127*
                         6188*  6191*  6263*  6266*  6345*  6348*  8416   8432   8436   8438   8446   9455
BAETST   012274          2571#  2596
BAI    = 000010          1485#  4303   4356   6696   6711
BAKER    021346          3577   3582   3584   3586#
BATST    012506          2612#  2637
BATSTA   012676          2635   2638#
BEAU     033556          5068   5071#
BEFORE   004122          1738#  2067   2076   2083   2091   2098   3094*  3096*  3216*  3218*  3322*  3324*  3413*
                         3415*  3521*  3523*  3627*  3629*  3731*  3733*  3833*  3835*  3935*  3937*  4020*  4022*
BEGIN    004144           451   1750#
```

```
BEGIN1  004176            449    1760#
BEGIN2  004166           1757#   6532
BEGIN3  004152            453    1753#
BEHIND  045746           6468#   6472
BITCNT  003446           1706#   2294#  2297#  2299#  2302#  2325#  2328#  2330#  2333#  2338#  2341#  2716#  2719#
                         2721#   2724#  2772#  2775#  2777#  2780#  2810#  2813#  2815#  2818#  2866#  2869#  2871#
                         2874#   2950#  2953#  2955#  2958#  3041#  3044#  3046#  3049#  3147#  3150#  3152#  3155#
                         3163#   3166#  3168#  3171#  3270#  3273#  3275#  3278#  3469#  3472#  3474#  3477#  3575#
                         3578#   3580#  3583#  3679#  3682#  3684#  3687#  3781#  3784#  3786#  3789#  3883#  3886#
                         3888#   3891#  3983#  3986#  3988#  3991#  4048#  4051#  4053#  4056#  4097#  4100#  4102#
                         4105#   4147#  4150#  4152#  4155#  4197#  4200#  4202#  4205#  4252#  4255#  4257#  4260#
                         4305#   4308#  4310#  4313#  4358#  4361#  4363#  4366#  4411#  4414#  4416#  4419#  4464#
                         4467#   4469#  4472#  4517#  4520#  4522#  4525#  4570#  4573#  4575#  4578#  4623#  4626#
                         4628#   4631#  4676#  4679#  4681#  4684#  4729#  4732#  4734#  4737#  4782#  4785#  4787#
                         4790#   4835#  4838#  4840#  4843#  4888#  4891#  4893#  4896#  4943#  4946#  4948#  4951#
                         4978#   4981#  4983#  4986#  5040#  5043#  5045#  5048#  5075#  5078#  5080#  5083#  5140#
                         5143#   5145#  5148#  5198#  5201#  5203#  5206#  5264#  5265#  5266   5273#  5276#  5278#
                         5281#   5337#  5340#  5342#  5345#  5403#  5404#  5405   5412#  5415#  5417#  5420#  5476#
                         5479#   5481#  5484#  5542#  5543#  5544   5551#  5554#  5556#  5559#  5615#  5618#  5620#
                         5623#   5681#  5682#  5683   5690#  5693#  5695#  5698#  5754#  5757#  5759#  5762#  5820#
                         5821#   5822   5829#  5832#  5834#  5837#  5893#  5896#  5898#  5901#  5959#  5960#  5961
                         5968#   5971#  5973#  5976#  6032#  6035#  6037#  6040#  6098#  6099#  6100   6107#  6110#
                         6112#   6115#  6171#  6174#  6176#  6179#  6237#  6238#  6239   6246#  6249#  6251#  6254#
                         6323#   6326#  6328#  6331#  6546#  6559   6561#  6563#  6574   6576#  6581   6585   6669#
                         6672#   6674#  6677#
BITC    = 000001          424#   6544
BITC0   = 000001          414#    424
BITC1   = 000002          413#    423
BITC2   = 000004          412#    422
BITC3   = 000010          411#    421
BITC4   = 000020          410#    420
BITC5   = 000040          409#    419
BITC6   = 000100          408#    418
BITC7   = 000200          407#    417
BITC8   = 000400          406#    416    8583
BITC9   = 001000          405#    415    8591    8953
BIT1    = 000002          423#   6317
BIT10   = 002000          404#   8938
BIT11   = 004000          403#   8598
BIT12   = 010000          402#
BIT13   = 020000          401#   8945
BIT14   = 040000          400#   8569
BIT15   = 100000          399#
BIT2    = 000004          422#
BIT3    = 000010          421#
BIT4    = 000020          420#
BIT5    = 000040          419#
BIT6    = 000100          418#
BIT7    = 000200          417#
BIT8    = 000400          416#   6542
BIT9    = 001000          415#
BLIP    = 044470         6314    6316    6321#
BLITZ   = 044400         6305#   6386
BLKTST  = 050254         6311    6769#
BL0     = 000040         1587#
BL1     = 000100         1588#
```

```
BL2     = 000200  1589#
BMD18   = 010000  1566#
BOTTOM    045044  6318    6384    6387#
BPTVEC  = 000014   431#
BULL      047620  6671    6676    6678    6680#
BUSH      034030  5107    5112#
CHARLE    022120  3681    3686    3688    3690#
CLEER     006602  2056#   2207    2245    2285    2348    2414    2460    2558    2597    2698    2847    2926    3020
                  3129    3251    3357    3448    3556    3662    3766    3868    3970    4031    4083    4132    4182
                  4232    4287    4340    4393    4446    4499    4552    4605    4658    4711    4764    4817    4870
                  4923    5021    5118    5179    5244    5318    5383    5457    5522    5596    5661    5735    5800
                  5874    5939    6013    6078    6152    6217    6291    6388
CLEVER    045422  6400    6433#
CLR     = 000040  1487#   2056    2152    2171    2218    2258    2337    2422    6696    6711
CORREG    045734  6421    6432    6443    6454    6465    6466#
CPE     = 000010  1545#   2103    3093    3832
CR      = 000015   339#   8719    8729
CRLF    = 000200   340#   8690    8729
CSI       003420  1638#   2172*   2219*   2259*   2306*   2371*   2372    2374    2376*   2442*   2477*   2504*   2528*
                  2577*   2617*   2645*   2669*   2728*   2784*   2823*   2878*   2962*   3058*   3180*   3286*   3377*
                  3485*   3591*   3695*   3797*   3899*   3995*   4060*   4109*   4159*   4209*   4264*   4317*   4370*
                  4423*   4476*   4529*   4582*   4635*   4688*   4741*   4794*   4847*   4900*   4955*   4990*   5052*
                  5087*   5152*   5210*   5285*   5349*   5424*   5488*   5563*   5627*   5702*   5766*   5841*   5905*
                  5980*   6044*   6119*   6183*   6258*   6340*   8440    8442    8444    8451
CS2       003422  1639#   2182*   2229*   2269*   2316*   2452*   2487*   2514*   2538*   2587*   2627*   2655*   2679*
                  2738*   2794*   2833*   2888*   2972*   3053*   3068*   3175*   3190*   3269*   3296*   3387*   3495*
                  3601*   3705*   3807*   3909*   4005*   4070*   4119*   4169*   4219*   4274*   4327*   4380*   4433*
                  4486*   4539*   4592*   4645*   4698*   4751*   4804*   4857*   4910*   4965*   5000*   5062*   5097*
                  5162*   5220*   5295*   5359*   5434*   5498*   5573*   5637*   5712*   5776*   5851*   5915*   5990*
                  6054*   6129*   6193*   6268*   6350*   8422    8424    8442    8446    8451    8459
CS3       003424  1640#   2178*   2181*   2225*   2228*   2265*   2268*   2312*   2315*   2429*   2430    2438*   2448*
                  2451*   2483*   2486*   2510*   2513*   2534*   2537*   2583*   2586*   2623*   2626*   2651*   2654*
                  2675*   2678*   2734*   2737*   2790*   2793*   2829*   2832*   2884*   2887*   2968*   2971*   3064*
                  3067*   3186*   3189*   3292*   3295*   3383*   3386*   3491*   3494*   3597*   3600*   3701*   3704*
                  3803*   3806*   3905*   3908*   4001*   4004*   4066*   4069*   4115*   4118*   4165*   4168*   4215*
                  4218*   4270*   4273*   4323*   4326*   4376*   4379*   4429*   4432*   4482*   4485*   4535*   4538*
                  4588*   4591*   4641*   4644*   4694*   4697*   4747*   4750*   4800*   4803*   4853*   4856*   4906*
                  4909*   4961*   4964*   4996*   4999*   5058*   5061*   5093*   5096*   5158*   5161*   5216*   5219*
                  5291*   5294*   5355*   5358*   5430*   5433*   5494*   5497*   5569*   5572*   5633*   5636*   5708*
                  5711*   5772*   5775*   5847*   5850*   5911*   5914*   5986*   5989*   6050*   6053*   6125*   6128*
                  6189*   6192*   6264*   6267*   6346*   6349*   8446    8455    8457
CS3ERR    050000  2137    6714#
CUTE      047632  6682    6684#
DAYAMS    025712  4225    4228#
DB        003426  1641#   2749*   2751*   2752    2754    2804*   2805    2841*   2842    2844    8420
DBL     = 002000  1506#   4079    4128    4178    4228    4283    4336    4389    4442    4495    4548    4601    4654
                  4707    4760    4813    4866    4919
DBLED     025560  4199    4204    4206    4208#
DBLWDS    025024  4099    4104    4106    4108#
DBMG      010344  2296    2301    2303    2305#
DBMSG     010546  2327    2332    2334    2336#
DBOUT     014004  2774    2779    2781    2783#
DBTST     013362  2715#   2762    2765    2769
DBTSTA    013702  2758    2766#
DDISP   = 177570   346#    529    1792
DELTA     015616  3043    3048    3050    3052#
```

```
DEVCNT  003376          1618#  6398#  6399   6401   6404   6407   6422#  6483
DEVIC1  003366          1613#  1845#  1860#  1887   1896#  1899   1902   1905   1969   1975   2356   6417   6419
                        6424   6429
DEVIC2  003370          1614#  1863#  1872#  1917#  1920   1923   1926   6433   6435   6441
DEVIC3  003372          1615#  1866#  1876#  1938#  1941   1944   1947   6444   6446   6452
DEVIC4  003374          1616#  1869#  1880#  1959#  1962   1966   6455   6457   6463
DEVIC5  003400          1619#  1905#  1926#  1947#  1966#  1969#  1977   1984   6419#  6424#  6435#  6446#  6457#
                        6466   6473
DF1     072234           580   1062   1085   8462#
DF10S   072310          1100   1105   1121   1126   1132   1280   8482#
DF11    072260           630    815   1160   8472#
DF132   072315          1217   1223   1229   1234   1239   1244   8484#
DF170   072323          1384   8486#
DF172   072326          1015   8487#
DF2     072240           587   1068   1073   8464#
DF3     072244           593   8466#
DF34    072263           807   8473#
DF35    072266           833    842   8474#
DF36    072267           824   1207   8475#
DF4     072250           599   8468#
DF41    072272           852   1428   1433   1438   1443   1448   1453   1458   8476#
DF5     072254           605    612    617    623    637    647    655    664    675    687    694    704    713
                         723    730    740    753    760    768    778    786    797   9470#
DF52    072274           921   8477#
DF71    072301          1025   1034   1042   1050   8479#
DF76    072304          1056   1154   1166   1171   1259   1274   1286   1291   1296   1302   1418   1423   8480#
DH1     067522           578   1060   1083   8208#
DH10S   071106          1098   1103   9345#
DH11    070330           628   1158   8277#
DH111   071153          1119   1124   1130   8352#
DH121   071220          1164   1169   1416   1421   8359#
DH130   071256          1205   1210   8364#
DH132   071304          1215   1221   1227   1232   1237   1242   8368#
DH142   071362          1257   1272   8376#
DH146   071420          1278   8381#
DH147   071465          1152   1284   1289   1294   1300   8388#
DH170   071523          1382   8394#
DH171   071551           813   8398#
DH172   071577          1011   8402#
DH2     067642           585   1066   1071   8222#
DH3     067763           591   8236#
DH34    070416           803   8287#
DH35    070473           829    840   8295#
DH36    070476           820   1212   8296#
DH4     070103           597   8250#
DH41    070557           848   1426   1431   1436   1441   1446   1451   1456   8306#
DH5     070223           603    610    615    621    635    645    653    662    673    685    692    702    711
                         721    728    738    751    758    766    776    784    795   8264#
DH52    070603           917   8310#
DH71    070702          8322#
DH72    070761          1021   1031   1040   1048   8330#
DH76    071050          1054   8340#
DISPLA  001142           529#  1792#  1800#  8612#  8937#
DISPRE  000174           446#  1800
DLT   = 100000          1497#  2088   3090   3212   3318   3409   3517   3623   3727   3829   3931   4019   6711
DMD   = 000001          1554#  5256   5263   5268   5269   5270   5271   5395   5402   5407   5408   5409   5410
```

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                    5534    5541    5546    5547    5548    5549    5673    5680    5685    5686    5687    5688    5812
                    5819    5824    5825    5826    5827    5951    5958    5963    5364    5965    5966    6090    6097
                    6102    6103    6104    6105    6229    6236    6241    6242    6243    6244
DN0     = 000001    1581*
DN1     = 000002    1582*
DN2     = 000004    1583*
DOCC    = 000400    1562*
DOIT      007606    2189    2201    2207*
DPCA    = 000040    1559*
DPE     = 000020    1546*   2103    3093    3730    3832
DPEHI   = 040000    1510*   2072    3091    3213    3319    3624
DPELO   = 020000    1509*   2072    3091    3213    3319    3518    3624
DPR     = 000400    1536*   6706
DR        003430    1642*
DRCLR   = 000011    1695*
DRY     = 000200    1535*   6706
DSWR    = 177570     345*    528    1791
DS1       003432    1643*   2183*   2230*   2270*   2317*   2453*   2488*   2515*   2539*   2588*   2628*   2656*   2680*
                    2739*   2795*   2834*   2889*   2973*   3069*   3191*   3297*   3388*   3496*   3602*   3706*   3808*
                    3910*   4006*   4071*   4120*   4170*   4220*   4275*   4328*   4381*   4434*   4487*   4540*   4593*
                    4646*   4699*   4752*   4805*   4858*   4911*   4966*   5001*   5063*   5098*   5163*   5221*   5296*
                    5360*   5435*   5499*   5574*   5638*   5713*   5777*   5852*   5916*   5991*   6055*   6130*   6194*
                    6269*   6351*
DT        003434    1644*   8426
DTE     = 010000    1549*   2103    3093    3730    3832
DTRM    = 000200    1561*
DT1       071670     579    1061    1084    8414*
DT105     072052    1099    1104    8438*
DT11      071752     629    1159    8424*
DT111     072066    1120    1125    1131    8440*
DT121     072102    1165    1170    1417    1422    8442*
DT130     072114    1206    1211    8444*
DT132     072124    1216    1222    1228    1233    1238    1243    8446*
DT142     072142    1258    1273    8449*
DT146     072154    1279    8451*
DT147     072170    1153    1285    1290    1295    1301    8453*
DT170     072202    1383    8455*
DT171     072212     814    8457*
DT172     072222    1013    8459*
DT2       071702     586    1067    1072    8416*
DT3       071714     592    8418*
DT34      071762     805    8426*
DT35      071772     831     841    8428*
DT36      071776     822    8429*
DT4       071726     598    8420*
DT41      072006     850    1427    1432    1437    1442    1447    1452    1457    8431*
DT5       071740     604     611     616     622     636     646     654     663     674     686     693     703     712
                     722     729     739     752     759     767     777     785     796    8422*
DT52      072014     919    8432*
DT71      072030    1023    1033    1041    1049    8434*
DT76      072040    1055    8436*
DUPORT    047544    6319    6668*
DVA     = 004000    1527*   3055    3177    3283    3374    3482    3588    3692    3794    3896    6691
DYNO      020570    3471    3476    3478    3480*
EMTVEC= 000030     434*   1776*   1777*
EM1       054760     576    7208*
```

```
EM10    055527            619    7273#
EM100   060663           1064    7571#
EM101   060750           1070    7581#
EM102   061015           1075    7589#
EM103   061046           1080    7594#
EM104   061224           1087    7613#
EM105   061415           1095    7634#
EM106   061462           1102    7641#
EM107   061510           1107    7645#
EM11    055563            625    7278#
EM110   061617           1112    7657#
EM111   061711           1118    7667#
EM112   061764           1123    7675#
EM113   062011           1128    7679#
EM114   062106           1134    7690#
EM115   062204           1140    7701#
EM116   062316           1145    7714#
EM117   062350           1150    7719#
EM12    055624            632    7284#
EM120   062446           1156    7730#
EM121   062507           1162    7736#
EM122   062572           1168    7746#
EM123   062624           1173    7751#
EM124   062677           1180    7759#
EM125   062772           1186    7770#
EM126   063066           1192    7781#
EM127   063157           1198    7791#
EM13    055644            640    7287#
EM130   063255           1204    7802#
EM131   063327           1209    7810#
EM132   063361           1214    7815#
EM133   063415           1219    7820#
EM134   063516           1225    7832#
EM135   063577           1231    7841#
EM136   063633           1236    7846#
EM137   063714           1241    7855#
EM14    055713            650    7294#
EM140   064015           1246    7867#
EM141   064072           1251    7875#
EM142   064146           1256    7883#
EM143   064220           1261    7890#
EM144   064274           1266    7898#
EM145   064362           1271    7908#
EM146   064427           1276    7915#
EM147   064500           1282    7922#
EM15    055737            658    7298#
EM150   064571           1288    7932#
EM151   064723           1293    7948#
EM152   065025           1298    7960#
EM153   065075           1304    7967#
EM154   065161           1310    7977#
EM155   065252           1316    7987#
EM156   065340           1322    7997#
EM157   065431           1328    8008#
EM16    055763            667    7302#
EM160   065525           1334    8019#
```

```
EM161   065614          1340    8029#
EM162   065703          1346    8039#
EM163   065772          1351    8050#
EM164   066050          1357    8059#
EM165   066137          1363    8069#
EM166   066235          1369    8081#
EM167   066314          1375    8090#
EM17    056003           677    7305#
EM171   066413          1386    8101#
EM172   066465          1393    8109#
EM173   066506          1399    8112#
EM174   066572          1405    8121#
EM175   066623          1410    8126#
EM176   066663          1415    8132#
EM177   066716          1420    8137#
EM2     055020           582    7214#
EM20    056052           690    7312#
EM200   066763          1425    8144#
EM201   067045          1430    8153#
EM202   067127          1435    8162#
EM203   067211          1440    8171#
EM204   067271          1445    8180#
EM205   067356          1450    8189#
EM206   067442          1455    8198#
EM207   067466          1460    8203#
EM21    056103           697    7317#
EM22    056132           707    7321#
EM23    056165           716    7326#
EM24    056204           726    7329#
EM25    056235           733    7334#
EM26    056267           743    7339#
EM27    056315           756    7343#
EM3     055060           589    7220#
EM30    056350           763    7348#
EM31    056405           771    7353#
EM32    056444           781    7359#
EM33    056473           789    7363#
EM34    056543           800    7370#
EM35    056613           810    7377#
EM36    056645           818    7382#
EM37    056703           827    7388#
EM4     055134           595    7228#
EM40    056734           836    7393#
EM41    057074           845    7409#
EM42    057177           856    7421#
EM43    057250           864    7428#
EM44    057314           870    7434#
EM45    057406           878    7444#
EM46    057461           885    7452#
EM47    057542           892    7461#
EM5     055174           601    7234#
EM50    057613           899    7468#
EM51    057672           906    7476#
EM52    057723           912    7481#
EM53    060076           924    7501#
EM54    060104           930    7502#
```

```
EM55     060111              936    7503#
EM56     060116              942    7504#
EM57     060124              948    7505#
EM6      055245              607    7241#
EM60     060132              954    7506#
EM61     060137              960    7507#
EM62     060144              966    7508#
EM63     060151              972    7509#
EM64     060157              978    7511#
EM65     060164              984    7512#
EM66     060172              990    7513#
EM67     060177              996    7514#
EM7      055461              614    7266#
EM70     060205             1002    7516#
EM71     060213             1008    7518#
EM72     060302             1018    7528#
EM73     060337             1028    7533#
EM74     060366             1037    7537#
EM75     060414             1045    7541#
EM76     060444             1052    7545#
EM77     060551             1058    7557#
ENDPAS   045062             6398#
ENPS   = 004000             1565#
ERPIP    025452             4179    4182#
ERR    = 040000             1539#   2096    6355
ERRIP    025434             4175    4178#
ERRTST   050130             2039    2145    2158    2208    2246    2286    2349    2413    2459    2556    2598    2699    2848
                            2927    3021    3130    3252    3358    3449    3557    3663    3767    3869    3971    4032    4084
                            4133    4183    4233    4288    4341    4394    4447    4500    4553    4606    4659    4712    4765
                            4818    4871    4924    5022    5119    5180    5245    5319    5384    5458    5523    5597    5662
                            5736    5801    5875    5940    6014    6079    6153    6218    6292    6389    6746#
ERRVEC=  000004              427#   1789    1790#   1801#   1828#   1829#   1861#   1864#   1867#   1870#   1873#   1877#   1881#
                            1991    1992#   2006#   2009#   2012    2013#   2016#   2024    2025#   2030#   2038#   8574    8575#
                            8577#   8580#
ERR1     006556             2039#
ERR10    013250             2666    2686#
ERR11    014426             2843    2847#
ERR2     007242             2109    2131    2145#
ERR29    025730             4229    4232#
ERR3     011120             2363    2375    2413#
ERR30    024424             4023    4028    4031#
ERR4     007304             2156    2158#
ERR5     011406             2440    2459#
ERR6     012154             2524    2544#
ERR7     012466             2594    2597#
ERTIP    034004             5103    5106#
ER1      003436             1645#   2184#   2231#   2271#   2318#   2454#   2489#   2516#   2540#   2589#   2629#   2657#   2681#
                            2740#   2796#   2835#   2890#   2974#   3070#   3192#   3298#   3389#   3497#   3603#   3707#   3809#
                            3911#   4007#   4072#   4121#   4171#   4221#   4276#   4329#   4382#   4435#   4488#   4541#   4594#
                            4647#   4700#   4753#   4806#   4859#   4912#   4967#   5002#   5064#   5099#   5164#   5222#   5297#
                            5361#   5436#   5500#   5575#   5639#   5714#   5778#   5853#   5917#   5992#   6056#   6131#   6195#
                            6270#   6352#
ER1R     025174             4129    4132#
EVENAD   004000             1721#   3775    4044    4095    4145    4195    4248    4301    4354    4460    4619    4725    4831
                            4884    4940    4974#   4975    5037    5038#   5072    5128    5255#   5261    5310    5400    5449
                            5533#   5539    5588    5678    5727    5811#   5817    5866    5956    6005    6089#   6095    6141
```

```
                      6144    6234    6280    6283    8449
F2X2E3  003650        2424    2029#
F2X2E7  003306        4935    5023#
F2X2IE  001234        3463    3559#
F2X2IY  003064        5034    5120#
F2S1Y   003064         [illegible]6    4985    4987    4989#
F2E8    = 000024      1356#
F2HC    003064        2132    6704#
F2HCIT  003064        2115    6689#
F2H     002446        3371    3451#
F2H     001772        3372    3472#
F30EY   005156        4126    4128#
F30S0   004754        2110    6709#
F3      002462        3830    3972#
F3      = 000026      1586#
G160    005260        1684#   1906    1970    6420    6431
G1601   005434        1903    1908#   1927    6436
G1602   005574        1924    1929#   1948    6447
G1603   005734        1945    1950#   1967    6458
G160    006160        1903    1928    1949    1968    1977#
        005272        1885    1887#   1901    1904
        005446        1909    1911#
        005606        1930    1932#
        005746        1951    1953#
        005414        1859    1900    1905#
        005554        1921    1926#
        005714        1942    1947#
        006046        1963    1966#
G5      = ******  U   445     1807    1811    1842    1848    1954    1893    1914    1935    1956    1973    2020    2035
                      2383    6411    6415    6427    6439    6450    6461    6509    6516    6554    6569    6595    6599
                      6607    6622    6626    6634    6643    6650    6657    6754    6760    9104    9105    9106    9107
                      9108    9111    9112    9113
GC      = 000001      1521#   3055    3177    3283    3374    3482    3588    3692    3794    3896    6691
GDF     012036        2527#
GDFED   013126        2668#
GG1     005402        1898    1902#
GG2     005542        1919    1923#
GG3     005702        1940    1944#
GG4     006042        1961    1965#
HEACEP  072332        6732    8491#
HEDADC  050120        6734#   6737#
HEDAAC  003460        1716#   6732#   6733+   6734
HEE1    050262        6775#   8492
HEE10   050561        6812#   8499
HEE11   050[illegible]        6819#   8500
HEE12   05[illegible]6        6824#   8501
HEE13   05[illegible]         6828#   8502
HEE14   050737        6833#   8503
HEE15   050767        6838#   8504
HEE16   051017        6843#   8505
HEE17   051057        6849#   8506
HEE2    050322        6781#   8493
HEE20   051117        6855#   8507
HEE21   051161        6861#   8508
HEE22   051223        6867#   8509
HEE23   051266        6873#   8510
```

```
HED24   051342          6881#   9511
HED25   051404          6887#   9512
HED26   051446          6893#   9513
HED27   051510          6899#   9514
HED3    050347          6785#   8494
HED30   051552          6905#   9515
HED31   051614          6911#   9516
HED32   051661          6918#   9517
HED33   051741          6927#   9518
HED34   052016          6935#   9519
HED35   052073          6943#   9520
HED36   052151          6951#   9521
HED37   052225          6959#   9522
HED4    050406          6791#   8495
HED40   052317          6969#   9523
HED41   052404          6978#   9524
HED42   052450          6984#   9525
HED43   052521          6991#   9526
HED44   052577          6999#   9527
HED45   053666          7009#   9528
HED46   052731          7015#   9529
HED47   053016          7024#   9530
HED5    050445          6797#   8496
HED50   053075          7032#   9531
HED51   053162          7041#   9532
HED52   053241          7049#   9533
HED53   053320          7057#   9534
HED54   053364          7063#   9535
HED55   053430          7069#   9536
HED56   053467          7075#   9537
HED57   053543          7083#   9538
HED6    050476          6802#   8497
HED60   053612          7090#   9539
HED61   053665          7098#   9540
HED62   053733          7105#   9541
HED63   054006          7113#   9542
HED64   054055          7120#   9543
HED65   054130          7128#   9544
HED66   054176          7135#   9545
HED67   054252          7143#   9546
HED7    050530          6807#   8498
HED70   054321          7150#   9547
HED71   054375          7158#   9548
HED72   054443          7165#   9549
HED73   054517          7173#   9550
HED74   054566          7180#   9551
HED75   054642          7188#   9552
HED76   054710          7195#   9553
HERROR= 177742          1625#   6645
HERE    007336          2171#   2197
HIBYTE  012210          2548    2550#
HT    = 000011           337#   8698    8729
HURTS   010472          2322    2324#
ICPA  = 000010          1557#   3980
IDPA  = 000020          1558#
IE    = 000100          1522#   3055    3177    3283    3374    3482    3588    3692    3794    3896    5135    5136    6321
```

```
                    6668    6691
.ETST   034376      5132    5175#
.IE3    = 000100    1505#   2014    2026    2436    3518    3624    6716
.ILF    = 000001    1543#   2103    3093    3730    3832
.IN     044404      6306#   6381
.IOTVEC= 000020      432#   1774#   1775#
.IPCK0  = 000001    1501#   2014    2026    6716
.IPCK1  = 000002    1502#   2014    2026    6716
.IPCK2  = 000004    1503#   2014    2026    3464    6716
.IPCK3  = 000010    1504#   2014    2026    6716
.IR     = 000100    1488#   6696    6711
.IS     045630      6406    6455#
.ISLK   = 002000    1564#   5812    5819    5824    5825    5826    5827    5951    5958    5963    5964    5965    5966
.IDO    007620      2215#
.JMP    022614      3777    3779#
KIPAR0= 172340       481#
KIPAR1= 172342       482#
KIPAR2= 172344       483#
KIPAR3= 172346       484#
KIPAR4= 172350       485#
KIPAR5= 172352       486#
KIPAR6= 172354       487#
KIPAR7= 172356       488#
KIPDR0= 172300       470#
KIPDR1= 172302       471#
KIPDR2= 172304       472#
KIPDR3= 172306       473#
KIPDR4= 172310       474#
KIPDR5= 172312       475#
KIPDR6= 172314       476#
KIPDR7= 172316       477#
KONG    004656      1837    1839#   1889
LEAGUE  034054      5111    5113    5116    5118#
LEAP    023354      3879    3881#
LEAVE   007240      2107    2130    2144#
LEFOUT  034042      5115#
LERADD= 177740      1624#   6652
LF      = 000012     338#   8723    9729
LOOCNT  003450      1707#   2426#   2434#   2713#   2759    2761#   2763#   2766    2768#   6305#   6376    6379#   6382#
LOOKED  047704      2125    6699#
LOOKFO  047660      2120    6694#
MCLK    = 000002    1555#   5256    5268    5270    5395    5407    5409    5534    5546    5548    5673    5685    5687
                    5812    5824    5826    5951    5963    5965    6090    6102    6104    6229    6241    6243
MCPE    = 020000    1528#   2081    3055    3089    3177    3211    3283    3374    3482    3588    3692    3726    3794
                    3896    4014
MCPET   024202      3985    3990    3992    3994#
MEMERR= 177744      1626#   6659
MINUS   004120      1737#   2546    2552    2688    2694
MITE    032646      4945    4950    4952    4954#
MIXIT   023436      3885    3890    3892    3894#
MMVEC   = 000250     459#
MOAR    046452      6556#   6562
MOL     = 010000    1537#   6706
MOJR    046462      6558#   6587
MORE    046616      6573#   6583
MOPE2   046606      6571#   6577
```

```
MPE    = 000400  1490#  2088  3090  3212  3305  3354  3409  3517  3623  3727  3829  3931  4019
                 6711
MPETST  024334  4011  4014#
MXF    = 001000  1491#  2088  3090  3212  3318  3409  3517  3623  3714  3763  3829  3882  3884
                 3889  3918  3967  4019  6711
MYSTIC  014246  2822#
NEBL   = 200100  1560#
NED    = 010000  1494#  2088  3090  3212  3318  3409  3517  3610  3659  3727  3829  3931  4019
                 6711
NEDERR  021256  3570  3572#
NEM    = 004000  1493#  2088  3077  3126  3212  3318  3409  3517  3623  3727  3829  3931  4019
                 6711
NEXTST  046504  6551  6560  6563#
NOOP   = 000001  1663#
OAR    = 125252  1655#  2520  2662  2808  3161  5193  5255  5332  5471  5533  5610  5748  5811
                 5887  6026  6089  6165
OARTST  014246  2812  2817  2819  2821#
OCOAC   004002  1722#  4407  4513  4566  4672  4778  5038  5071#  5307  5446  5585  5724  5863
                 6002
OFFSET  003456  1715#  6730#  6731#  6733
OFFII   003402  1623#  1977#  1979  1980#  1984#  1985#  1986  1987#  1988  6466#  6468  6471#  6473#
                 6474#  6475  6476#  6477
ONE    = 000001  1657#  2471  2639  2714  2759  2766  6556  6571
OPI    = 020000  1550#  2103  3093  3730  3832
OR     = 000200  1489#  2295  2300  2321  2326  2331  2339  2343  2747  2773  2778  2799  2811
                 2816  2838  6696  6711
ORSET   010610  2748  2751#
OUTOF   050252  6747  6749  6762#
PARITY  047120  1825  6619#
PASS    003452  1708#  6304#  6315  6383  6385#
PAT    = 000020  1486#  3268  3674  6696  6711
PC     = 000007  358#  6501#  6504#  6526#  6531  6684#  8697#  8704#  8711#  8725#  8727#  8910#  8947#
PGE    = 002000  1492#  2088  3090  3212  3318  3409  3517  3623  3727  3816  3865  3931  4019
                 6711
PGETST  022676  3783  3788  3790  3792#
PIP    = 020000  1538#  6706
PIRQ   = 177772  344#
PIRQVE = 000240  438#
PLACE   020464  3462  3464#
PRIBIT  046656  6557  6594#
PRTBIT  046646  6572  6580#
PR0    = 000000  361#
PR1    = 000040  362#
PR2    = 000100  363#
PR3    = 000140  364#
PR4    = 000200  365#
PR5    = 000240  366#
PR6    = 000300  367#
PR7    = 000340  368#
PS     = 177776  341#  342  5133#
PSEL   = 002000  1526#  3055  3177  3283  3374  3482  3588  3692  3794  3896  6371  6668  6691
PSW    = 177776  342#  6303#
PWRVEC  000024  433#  1780#  1781#  8620#  8621#  8630#  8636#  8648#  8649#
RBUF    004100  1724#  2111#  2116#  2121#  2126#  2133#  2138#  3266  3676  5191  5193#  5230  5232
                 5330  5331#  5369  5371  5469  5470#  5508  5510  5608  5609#  5647  5649  5747
                 5748#  5786  5886  5887#  5925  6025  6026#  6064  6164  6165#  6203  6629#  6629#
```

```
                    6630    5636*   6637    6645*   6646    6652*   6653    6659*   6660    8434    8453    9459
RBUF1   004102      1725#
RBUF2   004104      1726#
RBUF3   004106      1727#
RBUF4   004110      1728#
RBUF5   004112      1729#
RBUF6   004114      1730#
RBUF7   004116      1731#
ROCHR = 104406      9009    9111#
ROLIN = 104407      9050    9112#
ROOCT = 104410      1844    1850    1856    1895    1916    1937    1958    9113#
ROY   = 000200      1523#   2717    2722    2743    2867    2872    2893    2951    2956    3042    3047    3055    3073
                    3148    3153    3164    3169    3177    3195    3271    3276    3283    3301    3374    3392    3470
                    3475    3482    3500    3576    3581    3588    3606    3680    3685    3692    3710    3782    3797
                    3794    3812    3896    3914    3984    3989    4010    4049    4054    4075    4098    4103    4124
                    4148    4153    4174    4198    4203    4224    4253    4258    4279    4306    4311    4332    4359
                    4364    4385    4412    4417    4438    4465    4470    4491    4518    4523    4544    4571    4576
                    4597    4624    4629    4650    4677    4682    4703    4730    4735    4756    4783    4788    4809
                    4836    4841    4862    4889    4894    4915    4944    4949    4970    4979    4984    5005    5041
                    5046    5067    5076    5081    5102    5141    5146    5167    5199    5204    5226    5274    5279
                    5301    5338    5343    5365    5413    5418    5440    5477    5482    5504    5552    5557    5579
                    5616    5621    5643    5691    5696    5718    5755    5760    5782    5830    5835    5957    5894
                    5899    5921    5969    5974    5996    6033    6038    6060    6108    6113    6135    6172    6177
                    6199    6247    6252    6274    6324    6329    6335    6357    6670    6675    6681    6691
RCYSET  013570      2744    2747#
REACY   034114      5130    5132#
READ0 = 000071      1675#   3040    3267    4251    4622    4675    4834    5197    5431
READ1 = 000072      1676#
READ2 = 000073      1677#   5336    5679
READ3 = 000074      1678#
READ4 = 000075      1679#   5475    5957
READ5 = 000076      1680#
READ6 = 000077      1681#   3055    3177    3283    3374    3482    3588    3692    3794    3896    4728    4781    4897
                    5614    6235    6691
REGEND  003404      1627#   1760*   1857*   1858*   1985    6474
RESTAR  006066      1871    1875    1879    1883    1925    1946    1965    1969#
RESTAT  045316      1922    1943    1964    6408    6422#   6434    6445    6456
RESVEC= 000010       428#
RETAIN  003410      1629#   1906*   1927*   1948*   1967*   1970*   2008    6420*   6431*   6447*   6458*
RETURN  046640      6566    6575    6578#
RFAIL = 000100      1548#   2103    3093    3730    3832
RHAS    003346      1604#   2368
RMBA    003334      1599#   2174    2215*   2216    2221    2234    2237    2242    2261    2308    2444    2479    2506
                    2530    2579    2612*   2613    2614    2619    2640*   2641    2642    2647    2663*   2664    2665
                    2671    2686    2687*   2689    2693*   2695    2730    2786    2825    2864*   2880    2942*   2964
                    2991    3009    3031*   3034*   3060    3144*   3160*   3182    3266*   3288    3379    3467*   3487
                    3573*   3593    3676*   3697    3775*   3799    3901    3997    4044*   4062    4095*   4111    4145*
                    4161    4195*   4211    4248*   4266    4301*   4319    4354*   4372    4407*   4425    4460*   4478
                    4513*   4531    4566*   4584    4619*   4637    4672*   4690    4725*   4743    4778*   4796    4831*
                    4849    4884*   4902    4940*   4957    4975*   4992    5037*   5054    5072*   5089    5128*   5154
                    5191*   5212    5261*   5287    5307    5330*   5351    5400*   5426    5446    5469*   5490    5539*
                    5565    5585    5608*   5629    5678*   5704    5724    5747*   5768    5817*   5843    5863    5886*
                    5907    5956*   5982    6002    6025*   6046    6095*   6121    6141    6164*   6185    6234*   6260
                    6280    6309*   6342    6360
RMBAE   003360      1609#   1981    1986*   2180    2227    2255*   2256    2267    2274    2277    2282    2314    2362
                    2450    2485    2512    2536    2571*   2572    2573    2585    2625    2653    2677    2736    2792
```

		2631 2863* 2886 2941* 2970 2982 2984 2986 3037* 3066 3143* 3188 3265*
		3294 3385 3466* 3493 3571* 3599 3703 3778* 3805 3907 4003 4045* 4068
		4117 4167 4217 4249* 4272 4302* 4325 4355* 4378 4408* 4431 4461* 4494
		4514* 4537 4567* 4590 4620* 4643 4673* 4696 4726* 4749 4779* 4802 4822*
		4855 4885* 4908 4939* 4963 4998 5060 5095 5131* 5160 5196* 5218 5260*
		5293 5335* 5357 5399* 5432 5474* 5496 5538* 5571 5613* 5635 5677* 5715
		5752* 5774 5816* 5849 5891* 5913 5955* 5988 6030* 6052 6094* 6127 6169*
		6191 6233* 6266 6308* 6348 6469 6475*
RHCS1	003330	1597* 1978 1989 1994 2078 2081 2116 2172 2219 2259 2306 2371 2442
		2477 2504 2528 2577 2617 2645 2669 2717 2722 2728 2743 2784 2823
		2865* 2867 2872 2878 2893 2946* 2948* 2951 2956 2962 2979 3004 3040*
		3042 3047 3054 3058 3073 3146* 3148 3153 3162* 3164 3169 3175 3180
		3195 3267* 3271 3276 3282 3286 3301 3373 3377 3392 3469* 3470 3475
		3481 3485 3500 3574* 3576 3581 3587 3591 3606 3679* 3680 3685 3691
		3695 3710 3779* 3780* 3782 3787 3793 3797 3812 3895 3899 3914 3984
		3989 3995 4010 4014 4016 4047* 4049 4054 4060 4075 4096* 4098 4103
		4109 4124 4146* 4148 4153 4159 4174 4196* 4198 4203 4209 4224 4251*
		4253 4258 4264 4279 4304* 4306 4311 4317 4332 4357* 4359 4364 4370
		4385 4410* 4412 4417 4423 4438 4463* 4465 4470 4476 4491 4516* 4519
		4523 4529 4544 4569* 4571 4576 4582 4597 4622* 4624 4629 4635 4650
		4675* 4677 4682 4688 4703 4728* 4730 4735 4741 4756 4781* 4783 4788
		4794 4809 4834* 4836 4841 4847 4862 4987* 4889 4894 4900 4915 4942*
		4944 4949 4955 4970 4977* 4979 4984 4990 5005 5039* 5041 5046 5052
		5067 5074* 5076 5081 5087 5102 5135* 5136 5141 5146 5152 5167 5197*
		5199 5204 5210 5226 5262* 5274 5279 5285 5301 5336* 5338 5343 5349
		5365 5401* 5413 5418 5424 5440 5475* 5477 5492 5488 5504 5540* 5552
		5557 5563 5579 5614* 5616 5621 5627 5643 5679* 5691 5696 5702 5718
		5753* 5755 5760 5766 5782 5818* 5830 5835 5841 5857 5892* 5894 5899
		5905 5921 5957* 5969 5974 5980 5996 6031* 6033 6038 6044 6060 6096*
		6108 6113 6119 6135 6170* 6172 6177 6183 6199 6235* 6247 6252 6258
		6274 6321* 6324 6329 6335 6340 6357 6371 6467 6478 6668* 6670 6675
		6681 6690 8429
RHCS1B	003364	1611* 1989* 1990* 3125* 3247* 3353* 3444* 3552* 3658* 3762* 3864* 3966* 6478*
		6479*
RHCS2	003340	1601* 1993* 2056* 2057* 2085 2088 2111 2121 2152* 2153* 2171* 2182 2218*
		2229 2258* 2269 2295 2300 2316 2321 2326 2331 2337* 2339 2343 2422*
		2423* 2452 2487 2514 2538 2587 2627 2655 2679 2738 2747 2773 2778
		2794 2799 2811 2816 2833 2838 2860* 2888 2972 3039* 3053 3068 3077
		3126 3140* 3175 3190 3199 3248 3261* 3268* 3269 3296 3305 3354 3368*
		3372* 3387 3396 3445 3460* 3495 3504 3553 3568* 3601 3610 3659 3674*
		3705 3714 3763 3774* 3807 3816 3865 3881* 3882* 3884 3889 3909 3918
		3967 3979* 4005 4046* 4070 4119 4169 4219 4250* 4274 4303* 4327 4356*
		4380 4409* 4433 4462* 4486 4515* 4539 4568* 4592 4621* 4645 4674* 4698
		4727* 4751 4780* 4804 4833* 4857 4886* 4910 4938* 4965 5000 5018 5035*
		5062 5097 5115 5127* 5162 5189* 5220 5254* 5295 5328* 5359 5393* 5434
		5467* 5498 5532* 5573 5606* 5637 5671* 5712 5745* 5776 5810* 5851 5884*
		5915 5949* 5990 6023* 6054 6088* 6129 6162* 6193 6227* 6269 6302* 6350
		6695 6710
RHCS3	003362	1610* 1988* 2014* 2026* 2069 2072 2138 2181 2228 2268 2315 2428* 2429
		2431 2437* 2438 2439 2451 2486 2513 2537 2586 2626 2654 2678 2737
		2793 2832 2887 2971 3031 3056* 3067 3178* 3189 3284* 3295 3375* 3386
		3464* 3483* 3494 3589* 3600 3693* 3704 3795* 3806 3897* 3908 4004 4069
		4079 4118 4128 4168 4178 4218 4228 4273 4283 4326 4336 4379 4389
		4432 4442 4485 4495 4538 4548 4591 4601 4644 4654 4697 4707 4750
		4760 4803 4813 4856 4866 4909 4919 4964 4999 5009 5015 5061 5096
		5106 5112 5161 5219 5294 5358 5433 5497 5572 5636 5711 5775 5850

```
RH70TT  006462          2011    2024#
RITEON  033252          5010    5015#
RITURN  046644          6541    6543    6545    6579#
RMBEX = 000040          1547#   2103    3093    3730    3832
RMR   = 000004          1544#   2103    3093    3730    3832
RSTEEN  045524          6403    6444#
R0    =%000000           349#   1750*   1751*   1753*   1757*   1758*   1762*   1803    1830    1832*   6523*   6526    8622
                        8647*   8680    8681*   8682    8685*   8819    8829*   8833    8849    8850    8853*   8882    8883*
                        8884*   8891*   8892*   8893*   8894*   8895*   8896    8901    8906*   8908*   8912    8914    9047
                        9051*   9054    9070*   9081    9082*   9083    9084*   9085*   9086*   9087*
R1    =%000001           350#   1834*   2010    2022*   2031*   2032*   2065    2175    2222    2253    2262    2309    2424
                        2445    2480    2507    2531    2568    2580    2620    2648    2672    2731    2787    2826    2861
                        2831    2939    2944    2965    2977    3013    3029    3035    3061    3141    3183    3263    3289
                        3369    3380    3461    3488    3569    3594    3698    3776    3800    3878    3302    3998    4041
                        4063    4092    4112    4142    4162    4192    4212    4245    4267    4298    4320    4351    4373
                        4404    4426    4457    4479    4510    4532    4563    4585    4616    4638    4669    4691    4722
                        4744    4775    4797    4828    4850    4881    4903    4935    4958    4993    5032    5055    5090
                        5129    5155    5194    5213    5258    5288    5333    5352    5397    5427    5472    5491    5536
                        5566    5611    5630    5675    5705    5750    5769    5814    5844    5889    5908    5953    5983
                        6028    6047    6092    6122    6167    6186    6231    6261    6306    6313    6343    6639    8623
                        8646*   8820    8833*   8834    8838    8862*   9048    9052*   9056*   9058*   9060*   9063*   9066
                        9069*
R2    =%000002           351#   1978*   1979*   1981    6467*   6468*   6469    8624    8645*   8821    8832*   8836*   8839
                        8846*   8847*   8848    8853*   8861*   9049    9053*   9057*   9059*   9061*   9067    9068*
R3    =%000003           352#   2370*   2377*   2385    8625    8644*   8762    8771*   8777*   8778*   8781*   8786*   8787*
                        8788    8797*   8822    8830*   8831*   8845*   8848*   8857*   8858*   8860*   9005    9006*   9007
                        9010*   9011    9015    9017    9019*   9021*
R4    =%000004           353#   2358*   2359    2360    2362    2365    2366    2367    3626    8643*   8763    8765*   8766*
                        8767*   8768    8769*   8783    8785*   8793*   8796*
R5    =%000005           354#   8627    8642*   8764    8770*   8772*   8774*   8775*   8776*   8777    8795*   8823    8825*
                        8827*   8834*   8838*   8853    8859*
R6    =%000006           355#   1768*   1769*   1770
R7    =%000007           356#   2039*   2110*   2113*   2115*   2118*   2120*   2123*   2125*   2128*   2132*   2135*   2137*
                        2140*   2144*   2145*   2158*   2196*   2206*   2207*   2208*   2239*   2245*   2246*   2279*   2285*
                        2286*   2347*   2348*   2349*   2413*   2414*   2458*   2459*   2460*   2476*   2503*   2526*   2556*
                        2558*   2576*   2597*   2598*   2633*   2661*   2685*   2698*   2699*   2746*   2756*   2807*   2846*
                        2847*   2848*   2903*   2925*   2926*   2927*   2989*   2994*   2997*   3020*   3021*   3076*   3095*
                        3105*   3109*   3114*   3118*   3129*   3130*   3198*   3217*   3227*   3231*   3236*   3240*   3251*
                        3252*   3304*   3323*   3333*   3337*   3342*   3346*   3357*   3358*   3395*   3414*   3424*   3428*
                        3433*   3437*   3448*   3449*   3503*   3522*   3532*   3536*   3541*   3545*   3556*   3557*   3609*
                        3628*   3638*   3642*   3647*   3651*   3662*   3663*   3713*   3732*   3742*   3746*   3751*   3755*
                        3766*   3767*   3815*   3834*   3844*   3848*   3853*   3857*   3868*   3869*   3917*   3936*   3946*
                        3950*   3955*   3959*   3970*   3971*   4013*   4021*   4030*   4031*   4032*   4078*   4082*   4083*
                        4084*   4127*   4131*   4132*   4133*   4177*   4181*   4182*   4183*   4227*   4231*   4232*   4233*
                        4282*   4286*   4287*   4288*   4335*   4339*   4340*   4341*   4388*   4392*   4393*   4394*   4441*
                        4445*   4446*   4447*   4494*   4498*   4499*   4500*   4547*   4551*   4552*   4553*   4600*   4604*
                        4605*   4606*   4653*   4657*   4658*   4659*   4706*   4710*   4711*   4712*   4759*   4763*   4764*
                        4765*   4812*   4816*   4817*   4818*   4865*   4869*   4870*   4871*   4918*   4922*   4923*   4924*
                        4973*   5008*   5012*   5021*   5022*   5070*   5105*   5109*   5118*   5119*   5179*   5180*   5229*
                        5239*   5244*   5245*   5313*   5318*   5319*   5368*   5378*   5383*   5384*   5452*   5457*   5458*
                        5507*   5517*   5522*   5523*   5591*   5596*   5597*   5646*   5656*   5661*   5662*   5730*   5735*
                        5736*   5785*   5795*   5800*   5801*   5869*   5874*   5875*   5924*   5934*   5939*   5940*   6008*
                        6013*   6014*   6063*   6073*   6078*   6079*   6147*   6152*   6153*   6202*   6212*   6217*   6218*
                        6286*   6291*   6292*   6319*   6387*   6388*   6389*   6579*   6693*   6698*   6703*   6708*   6713*
                        6718*   6738*   6739*   6762*
SA200   005306          1888    1890#
```

```
SC     = 100000          1531* 2081  3079  3083  3087  3100  3201  3205  3209  3222  3307  3311  3315
                         3328  3398  3402  3406  3419  3506  3510  3514  3527  3612  3616  3620  3633
                         3716  3720  3724  3737  3818  3822  3826  3839  3920  3924  3928  3941  4016
SCLK   = 000010          1584* 6379
SEARCH= 000031           1699*
SKIPIN  004636           1831  1834*
SLEUTH  004652           1836  1838*
SLKM   = 001000          1563* 5534  5541  5546  5547  5548  5549  5673  5680  5685  5686  5687  5688
                         5812  5819  5824  5825  5826  5827  5951  5958  5963  5964  5965  5966
SNAFOO  010576           2340  2343*
SP     =%000006           357* 1772* 1789* 1797* 1801  1826* 1845  1851  1857  1874  1878  1882  1896
                         1917  1938  1959  1975* 1991* 2003  2005  2006  2009  2012* 2016  2024* 2029
                         2030  2037  2038  5175  6417* 6423  6429* 6436* 6441* 6452* 6463* 6511* 6518*
                         6581* 6585* 6601  6603* 6609  6610* 6612* 6628  6630* 6636  6637* 6646* 6653*
                         6660* 6662* 6756* 6769* 8574* 8577  8579  8580  8608  8609  8613* 8622* 8623*
                         8624* 8625* 8626* 8627* 8628* 8629  8637* 8641  8642  8643  8644  8645  8646
                         8647  8680* 8681  8682* 8684  8685  8686* 8688  8690  8692  8698  8700* 8702*
                         8710* 8714  8718  8719  8723  8754* 8755  8756  8757* 8762* 8763* 8764* 8770
                         8795  8796  8797  8798* 8799* 8819* 8820* 8821* 8822* 8823* 8824* 8825  8828*
                         8841  8843* 8845  8855  8857  8859  8860  8861  8862  8863  8865* 8866* 8882*
                         8887* 8908  8912* 8942  8955* 8958* 8977* 8978* 8981* 8982* 8983  8987* 8988*
                         8989  8992  8994  8996* 9005* 9010  9021  9022* 9023* 9024* 9045* 9046* 9047*
                         9048* 9049* 9051  9054* 9062* 9063  9065  9066* 9068  9069  9070  9081* 9082
                         9092* 9093*
SPLIT   034410           5170  5172  5174  5177  5179*
SR0    = 177572           463*
SR1    = 177574           464*
SR2    = 177576           465*
SR3    = 172516           466*
STACK  = 000750           332*  1772  1826
START   004214           1752  1756  1765*
STKLMT= 177774            343*
SUPER   033226           5006  5009*
SWR     001140            528* 1770  1791* 1793  1799* 8569  8583  8585  8591  8598  8628  8641* 8939
                         8945  8950  8953
SWREG   000176            447* 1799
SW0    = 000001           396*
SW00   = 000001           386*  396
SW01   = 000002           385*  395
SW02   = 000004           384*  394
SW03   = 000010           383*  393
SW04   = 000020           382*  392
SW05   = 000040           381*  391
SW06   = 000100           380*  390
SW07   = 000200           379*  389
SW08   = 000400           378*  388
SW09   = 001000           377*  387
SW1    = 000002           395*
SW10   = 002000           376*
SW11   = 004000           375*
SW12   = 010000           374*
SW13   = 020000           373*  2379  6540  6726  6748
SW14   = 040000           372*  3121  3243  3349  3440  3548  3654  3758  3860  3962
SW15   = 100000           371*
SW2    = 000004           394*
SW3    = 000010           393*
```

```
SW4     = 000020            392#
SW5     = 000040            391#
SW6     = 000100            390#
SW7     = 000200            389#
SW8     = 000400            388#  3121  3243  3349  3440  3548  3654  3758  3860  3962
SW9     = 001000            387#  3121  3243  3349  3440  3548  3654  3758  3860  3962
TBITVE= 000014              429#
TC      003440             1646#  2186*  2233*  2273*  2320*  2456*  2491*  2518*  2542*  2591*  2631*  2659*  2683*
                           2742*  2798*  2837*  2892*  2976*  3072*  3194*  3300*  3391*  3499*  3605*  3709*  3811*
                           3913*  4009*  4074*  4123*  4173*  4223*  4278*  4331*  4384*  4437*  4490*  4543*  4596*
                           4649*  4702*  4755*  4808*  4861*  4914*  4969*  5004*  5066*  5101*  5166*  5224*  5299*
                           5363*  5438*  5502*  5577*  5641*  5716*  5780*  5855*  5919*  5994*  6058*  6133*  6197*
                           6272*  6354*
TCR     003442             1647#  2185*  2232*  2272*  2319*  2455*  2490*  2517*  2541*  2590*  2630*  2658*  2682*
                           2741*  2797*  2836*  2891*  2975*  3071*  3193*  3299*  3390*  3498*  3604*  3708*  3810*
                           3912*  4008*  4073*  4122*  4172*  4222*  4277*  4330*  4383*  4436*  4489*  4542*  4595*
                           4648*  4701*  4754*  4807*  4860*  4913*  4968*  5003*  5065*  5100*  5165*  5223*  5298*
                           5362*  5437*  5501*  5576*  5640*  5715*  5779*  5854*  5918*  5993*  6057*  6132*  6196*
                           6271*  6353*
THREE   025302             4149   4154   4156   4158#
TIEOUT  046666             1828   1870   1873   1877   1881   6592#
TKVEC = 000060              436#
TOIT    010030             2235   2240   2244#
TPVEC = 000064              437#
TRAPED  047536             6640   6662#
TRAPVE= 000034              435#  1778*  1779*
TRE   = 040000             1529#  2081   3079   3081   3087   3098   3201   3203   3209   3220   3307   3309   3315
                           3326   3398   3400   3406   3417   3506   3508   3514   3525   3612   3614   3620   3631
                           3716   3718   3724   3735   3818   3820   3826   3837   3920   3922   3928   3939   4018
TREB  = 000100             1530#  3125   3247   3353   3444   3552   3658   3762   3864   3966
TRTVEC= 000014              430#
TSTADD  006264             1991#  6485
TSTIE   034230             5142   5147   5149   5151#
TSTNM   003454             1714#  6724*  6725*  6730   6750*  6751*  6756   8414   8416   8418   8420   8422   8424
                           8426   8429   8431   8432   8434   8436   8438   8440   8442   8444   8446   8449   8451
                           8453   8457   8459
TSTNMA  050122             6727   6729   6738#
TSTNMB  050024             6724#  8947
TST1    004560             1759   1823#
TST10   010624             2355#
TST11   011130             2421#
TST12   011416             2425   2470#
TST13   012260             2567#
TST14   012476             2569   2609#
TST15   013346             2710#
TST16   014436             2858#
TST17   015022             2936#
TST2    006562             1833   2047#
TST20   015470             3028#
TST21   016270             3138#
TST22   017160             3260#
TST23   017752             3366#
TST24   020444             3458#
TST25   021234             3566#
TST26   022012             3672#
TST27   022564             3773#
```

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TST3    007246          2151#
TST30   023342          3877#
TST31   024102          3978#
TST32   024434          4040#
TST33   024726          4042    4091#
TST34   025204          4093    4141#
TST35   025462          4143    4191#
TST36   025740          4193    4244#
TST37   026232          4246    4297#
TST4    007310          2166#
TST40   026524          4299    4350#
TST41   027016          4352    4403#
TST42   027310          4405    4456#
TST43   027602          4458    4509#
TST44   030074          4511    4562#
TST45   030366          4564    4615#
TST46   030660          4617    4668#
TST47   031152          4670    4721#
TST5    007616          2214#
TST50   031444          4723    4774#
TST51   031736          4776    4827#
TST52   032230          4829    4880#
TST53   032522          4882    4933#
TST54   033306          5031#
TST55   034064          5126#
TST56   034420          5188#
TST57   034762          5253#
TST6    010040          2252#
TST60   035414          5327#
TST61   035756          5392#
TST62   036410          5466#
TST63   036752          5531#
TST64   037404          5605#
TST65   037746          5670#
TST66   040400          5744#
TST67   040742          5809#
TST7    010266          2254    2292#
TST70   041374          5883#
TST71   041736          5948#
TST72   042370          6022#
TST73   042732          6087#
TST74   043364          6161#
TST75   043726          6226#
TST76   044360          6299#
TST77   045060          6396#
TWANG   033264          5014    5018#
TWANGY  033276          5016    5019    5021#
TWO   = 000002          1658#   1980    2376    2611    6471    6602    6629
TYPDS = 104405          6513    6520    6582    6586    9108#
TYPE  = 104401          1805    1809    1840    1846    1852    1891    1912    1933    1954    1971    2018    2033    2381
                        6409    6413    6425    6437    6448    6459    6507    6514    6521    6552    6567    6578    6593
                        6597    6605    6620    6624    6632    6641    6648    6655    6735    6736    6752    6758    8650
                        8693    8789    8864    8881    8898    8900    8903    8905    8909    8916    8940    8948    9013
                        9016    9020    9104#
TYPOC = 104402          1976    6418    6430    6442    6453    6464    6604    6611    6631    6638    6647    6654    6661
                        6757    8889    8913    9105#
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TYPON = 104404          9107#
TYPOS = 104403          9106#
UPE   = 020000          1495#  2088   3090   3212   3318   3372   3396   3445   3504   3553   3623   3727   3829
                        3931   4019   6711
UPETRE  017306          3252   3277   3279   3281#
US1   = 000001          1482#  6696
US2   = 000002          1483#  6696
US4   = 000004          1484#  6696
VECADD  003406          1628#  1761#  1851#  5132#  6311#
VOUS    033000          4971   4974#
WATBIT  046302          2113   2118   2123   2128   2135   2140   2196   2206   2239   2279   2458   2476   2503
                        2526   2576   2633   2661   2685   2756   2807   2846   6540#
WATFIV  010256          2275   2280   2284#
WATFOR  010046          2255#
WC      003444          1648#  2173#  2193#  2195   2199#  2203#  2204   2220#  2260#  2307#  2443#  2475   2478#
                        2499#  2502   2505#  2522#  2525   2529#  2578#  2618#  2646#  2670#  2729#  2785#  2824#
                        2879#  2963#  3059#  3181#  3287#  3378#  3486#  3592#  3696#  3798#  3900#  3996#  4061#
                        4110#  4160#  4210#  4265#  4318#  4371#  4424#  4477#  4530#  4583#  4636#  4689#  4742#
                        4795#  4848#  4901#  4956#  4991#  5053#  5088#  5153#  5211#  5286#  5350#  5425#  5489#
                        5564#  5628#  5703#  5767#  5842#  5906#  5981#  6045#  6120#  6184#  6259#  6341#  8414
                        8438   8440   8451
WCE   = 040000          1496#  2088   3090   3199   3248   3318   3409   3517   3623   3727   3829   3931   4019
                        5018   5115   6711
WCEERR  033652          5077   5082   5084   5086#
WCEHI = 010000          1508#  2072   3091   3319   3518   3624   5015   5106
WCELO = 004000          1507#  2072   3091   3319   3518   3624   5009   5112
WCEOWT  033424          5042   5047   5049   5051#
WCERR1  007472          2170   2190#
WCERR2  007556          2188   2202#
WCETRE  016506          3165   3170   3172   3174#
WCETST  016410          3149   3154   3156   3158#
WHYFO   007234          2142#  2347   2746   2903   2925   2989   2994   2997   3076   3095   3105   3109   3114
                        3118   3198   3217   3227   3231   3236   3240   3304   3323   3333   3337   3342   3346
                        3395   3414   3424   3428   3433   3437   3503   3522   3532   3536   3541   3545   3609
                        3628   3638   3642   3647   3651   3713   3732   3742   3746   3751   3755   3815   3834
                        3844   3848   3853   3857   3917   3936   3946   3950   3955   3959   4013   4021   4030
                        4078   4082   4127   4131   4177   4181   4227   4231   4282   4286   4335   4339   4398
                        4392   4441   4445   4494   4498   4547   4551   4600   4604   4653   4657   4706   4710
                        4759   4763   4812   4816   4865   4869   4918   4922   4973   5008   5012   5070   5105
                        5109   5229   5239   5313   5368   5378   5452   5507   5517   5591   5646   5656   5730
                        5785   5795   5869   5924   5934   6008   6063   6073   6147   6202   6212   6286   6387
WRCH0 = 000051          1665#  3162   4977   5074
WRCH1 = 000052          1666#
WRCH2 = 000053          1667#
WRCH3 = 000054          1668#
WRCH4 = 000055          1669#
WRCH5 = 000056          1670#
WRCH6 = 000057          1671#
WRITE0= 000061          1685#  2865   2946   2948   3146   3468   3574   3678   3779   3780   4047   4096   4146
                        4196   4304   4410   4942   5039   5135   5262   5753   6321   6668
WRITE1= 000062          1686#
WRITE2= 000063          1687#  5540   5892
WRITE3= 000064          1688#
WRITE4= 000065          1689#  5818   6031
WRITE5= 000066          1690#
WRITE6= 000067          1691#  4357   4463   4516   4569   6096   6170
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ZERO  = 000000          1656*  2545   2551   2557   2687   2693   2863   3143   3265   3466   3568   3571   3622
                        3677   3778   4045   4249   4302   4355   4408   4461   4514   4567   4620   4673   4726
                        4779   4832   4885   4939   5131   5192   5196   5260   5272   5331   5335   5399   5411
                        5470   5474   5538   5550   5609   5613   5677   5689   5749   5752   5816   5828   5888
                        5891   5955   5967   6027   6030   6094   6106   6166   6169   6233   6245   6308   6701

$AUTOB  001134           525*
$BDADR  001122           520*
$BDDAT  001126           522*
$BELL   001216           554*  8940   8961
$CHARC  073372          8695*  8705*  8712   8721*  8726*
$CKSWR= ****** L        9111
$CMTAG  001100           508*  1767   1768   1776   1782   1783
$CM1  = 000006           540*   541*   542*   543*   544*   545*   546*
$CM2  = 000014           540*   541*   542*   543*   544*   545*   546*
$CM3  = 000006           538*   540
$CM4  = 000006           546*   547*   548*   549*   550*   551*   552*
$CNTLG  074603          9030*
$CNTLU  074576          9029*
$CRLF   001223           556*  6521   6578   6735   8694   8729   8881   8900   8905   8909   8948   8961   9029
$CS1    004124          1740*  2078   3089*  3211*  3317*  3408*  3516*  3622*  3726*  3828*  3930*  4018*
$CS2    004126          1741*  2085   3090*  3212*  3318*  3409*  3517*  3623*  3727*  3829*  3931*  4019*
$CS3    004130          1742*  2069   3091*  3213*  3319*  3410*  3518*  3624*  3728*  3830*  3932*
$DBLK   074040          8830   8864   8872*
$DOAGN  046272          6503   6524   6530*
$DTBL   074030          8833   8863*
$ENDAD  046262           497   6526*
$ENDCT  046126          6505*
$ENULL  046276          6533*
$EOP    046072          1886   1910   1931   1952   6484   6495*
$EOPCT  046120          6502*  6506
$ER     004134          1744*  2100   3093*  3215*  3321*  3412*  3520*  3626*  3730*  3832*  3934*
$ERFLG  001103           511*  1897   1918   1939   1960   3123   3245   3351   3442   3550   3656   3760   3862
                        3964   5013   5110   5171   5176   5240   5314   5379   5453   5518   5592   5657   5731
                        5796   5870   5935   6009   6074   6148   6213   6287   6369   6728   6746   8559   8587
                        8589   8595*  8616   8935*  8961
$ERMAX  001115           517*  1784*  8589   8611*  8616
$ERROR  074204          1776   8934*
$ERRPC  001116           518*  8414   8416   8418   8420   8422   8424   8426   8428   8429   8431   8432   8434
                        8436   8438   8440   8442   8444   8446   8449   8451   8453   8457   8459   8887   8942*
                        8943*  8944   8961
$ERRTB  001226           573*  8895
$ERRTY  074050          6738   8880*
$ERTTL  001112           515*  6518   6522*  8941*  8961
$ESCAP  001214           553*  1783*  8610*  8956   8958   8961
$FILLC  001156           536*  8698   8729
$FILLS  001155           535*  8729
$GDADR  001120           519*
$GDDAT  001124           521*
$GET42  046252          6523*
$GTSWR= ****** U        9110
$HD   = 000000           318
$HIOCT  074732          9067*  9072*
$ICNT   001104           512*  8602*  8603   8605*  8615
$ILLUP  07314C          8620   8636   8653*
$INTAG  00113E           526*
$ITEMB  001114           516*  8884   8944*  8961
```

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$$$$    000000                 557#  9729    8961    9020    9029
$$$$CR  000000                1113#  1785#   6612    6662    8593#   8608#   8613    8615
$$$$CRF 000000                1113#  1786#   8593    8619#   8615    8955
$$$$T = ******                 9003   8609    8692    8950
$$$$ET  000000                9033#
$$$$FR  000000                9031#
$$$$LF  000000                8606    8615#
$$$$TT  000000                 534#   8730    9729
$$$$TT = 000000                1815#  1816    2040#   2042    2146#   2148    2161#   2163    2209#   2211    2247#   2249    2251#
                               2288#  2350#   2352    2416#   2418    2462#   2464    2561#   2563    2601#   2623    2625#   2627#
                               3085#  3085    3029#   2931    3023#   3025    3133#   3135    3254#   3256    3350#   3362    3364#
                               3454   3561#   3563    3666#   3668    3768#   3770    3870#   3872    3973#   3975    4076#   4078#
                               4285#  4287    4134#   4136    4194#   4186    4236#   4238    4289#   4291    4342#   4344    4346#
                               4397#  4446#   4450    4501#   4503    4554#   4556    4607#   4609    4660#   4662    4713#   4715#
                               4766#  4768    4819#   4821    4873#   4874    4925#   4927    5024#   5026    5131#   5133#   5135#
                               5183   5246#   5248    5320#   5322    5385#   5387    5459#   5461    5524#   5526    5588#   5590#
                               5663#  5665    5717#   5739    5802#   5804    5876#   5878    5941#   5943    6015#   6017    6019#
                               6082   6154#   6156    6219#   6221    6293#   6295    6391#   6393
$$CNT   000626                 8761#  8790#   8803#
$$MODE  000626                 8756#  8760#   8765    8769#   8779#   8805#
$$VER   072766                 8578   8586    8594    8604    8612#
$PASS   001100                  529#  6499#   6503#   6511    6533    8600    8616
$POWER  073146                 8655   8656#
$PWRON  073000                 8620#  9648
$PWRNG  073134                 8655#
$PWRUP  073052                 8630   8636#
$SAVE   001222                  555#  8729    9961    9013    9029
$SRCHR  074340                 8977#  9111
$SRCDEC= ******                9114
$SRCLIN 074460                 8005#  9112
$SRCCT  074632                 9045#  9113
$SPOSZ = 000010                8998#
$SPEC   001660                  538#
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                               2433#  2436#  2437    2439    2471#   2472    2473    2493    2495#   2497#   2498    2500    2502#
                               2521   2523   2570#   2571    2573    2593    2595#   2611#   2612    2614    2634    2636#   2638#
                               2639#  2640   2642    2662#   2663    2665    2714#   2715    2752    2757    2754#   2770#   2772#
                               2802   2808#  2809    2842    2901#   2906#   2914#   3054#   3055#   3079    3081    3083    3085#
                               3098   3100   3176#   3177#   3201    3203    3205    3209    3220    3222    3282#   3283#   3335#
                               3309   3311   3315    3326    3329    3373#   3374#   3398    3400    3402    3406    3417    3419#
                               3467   3481#  3482#   3506    3508    3510    3514    3525    3527    3587#   3588#   3613    3615#
                               3616   3620   3631    3633    3691#   3692#   3716    3718    3720    3724    3735    3737    3739#
                               3794#  3818   3920    3822    3826    3837    3839    3895#   3896#   3920    3922    3924    3926#
                               3939   3941   3981    3982    5225#   5320#   5364#   5439#   5503#   5578#   5642#   5717#   5781#
                               5856#  5920#  5995#   6059#   6134#   6198#   6273#   6547    6549    6689#   6694#   6699#   6774#
                               6709#  6714#  8414    8416    8418    8420    8422    8432    8449    8453
$SPEC   001664                  541#
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$SPHDR  004136                 1745#  2686#  2688#   2692#   2694#
$SPHDR  004140                 1746#
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$SPVAC  046274                 6532#
$SPSP = ******                 9114
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CROSS REFERENCE TABLE -- USER SYMBOLS

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$$$.BC=  000144             8629*  9637    8638*   8639*   8655*
$$$.BD=  000130             1774   9568#
$$$.BE=  000130             1766#  1773    1774    1776    1778    1780    1782    1783    1785    6497    9569    8935    8953
                            9360   8966    9035
$$$.BF=  000000             18038
$$$.BG=  000000             1743#  2093    3092*   3214*   3320*   3411*   3519*   3625*   3729*   3831*   3933*
$$$.BH=  000000             1766#
$$$.BI=  000134             9578   9607#
$$$.BJ=  000000              436#   500
$$$.BK=  000000              307#   318     322     323     324     325     326     327     328     552     553     554     1782
                             1782   1795    1796    1824    2048    2152    2167    2215    2253    2293    2356    2422    2471
                            2568    2610    2711    2859    2937    3029    3139    3261    3367    3459    3567    3673    3774
                            3878    3949    4041    4092    4142    4192    4245    4298    4351    4404    4457    4513    4563
                            4616    4669    4722    4775    4828    4881    4934    5032    5127    5189    5254    5320    5393
                            5467    5522    5606    5671    5745    5810    5884    5949    6023    6088    6162    6227    6303
                            6397    6452    6498    6526    6531    6533    8560    8561    8562    8563    8564    8569    8581
                            8583    8594    8587    8588    8589    8596    8597    8598    8609    8612    8615    8632    8636
                            8927    8928    8929    8930    8938    8945    8950    8953    8961
$$$PDL=  000000              328     329     9564    8565    8585
$$$PES   001212              552#   1782*   1824*   2048*   2167*   2937*   4934*   6482*   6498*   9596*   8603    8626*   8618
$$$PKB   001146              530#   8964    8981    8987
$$$PKS   001144              530#   8964    8979    8985
$$$PPD   001276              546#
$$$PPI   001200              547#   2195*   2204*   2237*   2242*   2277*   2282*   2430*   2475*   2502*   2525*   2576*   2611*
                            2644*   2667*   2754*   2805*   2944*   6548    6564    6690*   6691*   6695*   6696*   6700*   6701*
                            6705*   6706*   6710*   6711*   6715*   6716*
$$$PP2   001202              548#   6547*   6564*   6565    6571    6573*
$$$PP3   001204              549#   2854    2904    2909    6548*   6549*   6552    6556    6558*
$$$PP4   001206              550#   6601*   6602*   6603    6609*   6610
$$$PP5   001210              551#   2049*   2050*   2136    2108*   2129
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                            2253#   2254    2287    2293#   2350    2356#   2416    2422#   2425    2462    2471#   2561    2568#
                            2569    2601    2610    2702    2711#   2852    2859#   2929    2937#   3023    3029#   3133    3139#
                            3254    3261#   3360    3367#   3452    3459#   3561    3567#   3666    3673#   3768    3774#   3870
                            3878#   3973    3979#   4034    4041#   4042    4085    4092#   4093    4134    4142#   4143    4184
                            4192#   4193    4236    4245#   4246    4289    4298#   4299    4342    4351#   4352    4395    4404#
                            4425    4448    4457#   4458    4501    4510#   4511    4554    4553#   4564    4607    4616#   4617
                            4660    4669#   4670    4713    4722#   4723    4766    4775#   4776    4819    4828#   4829    4872
                            4881#   4882    4925    4934#   5024    5032#   5121    5127#   5181    5189#   5246    5254#   5320
                            5326#   5385    5393#   5459    5467#   5524    5532#   5598    5606#   5663    5671#   5737    5745#
                            5802    5810#   5876    5884#   5941    5949#   6015    6023#   6080    6088#   6154    6162#   6219
                            6227#   6293    6300#   6391    6397#
$$$PP8   001152              533#   8718*   8729
$$$PPFLG 001157              537#   8676    8729
$$$PPS   001150              532#   8716    8729
$$$RAP   074734             1778    9081#
$$$RAP2  074756             9092#   9103
$$$PP    =  000011          9096#   9105#   9106#   9107#   9108#   9109#   9111    9112#   9113#   9114#
$$$PPAC  074770             9086    9103#
$$$SYM   001102              510#   6480*   6481*   6497*   6724    6750    8559    8585    9607*   8612    8615    8937    9961
$$$TYIN  074566             9006    9007    9024    9028#
$$$TYPEN=  ******  G        9109
$$$TYPOS 073624             8818#   9108
$$$TYPE  073156             8676#   9096    9104
$$$TYPEC 073326             8697    8704    8711    8716#   8717
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$TYPON  003436          8760    8761#   9137
$TYPOS  003446          8744#   9136
        000254          8523#
$$$$$4= 000005          8525#
        017362          8559#   8759#   8769    8804#
$$$$$$= ******          8569    8947
        000012           445#    445#    450#    452#    495     496#    498#    500#    507#    558     1720#   1723#   1771
                        1755    1786    1808#   1955#   1894#   1915#   1936#   1957#   1974#   2143    2384#   6429#   6440#
                        6461#   6462#   6510#   6533    6534#   6555#   6570#   6644#   6761#   8413#   8615    8616    8632
                        8681    8729    8972#   9019#   8961    8964    9028#   9029    9035
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SETTRA  9096#  9105   9106   9107   9108   9111   9112   9113
SETUP      1#   439#  1766
SKIP       1#   439#  2254   2425   2569   4042   4093   4143   4193   4246   4299   4352   4405   4458   4511
        4564    4617  4670   4723   4776   4829   4882
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ERRORS DETECTED: 0
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