

# RH11-RH70

MASSBUS I/O & CTRLR  
CZRHBFO

AH-9178F-MC

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This image shows a microfiche card with a grid of frames. Each frame contains a small, high-contrast image of a document page, likely containing technical specifications or data for the MASSBUS I/O & CTRLR CZRHBFO. The frames are arranged in a regular grid pattern across the card.

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IDENTIFICATION

PRODUCT CODE: AC-9176F-MC  
PRODUCT NAME: CZRMBF0 MASSBUS I/O AND CONTROLLER DIAGNOSTIC  
DATE CREATED: 3-AUG-79  
MAINTAINER: DIAGNOSTIC GROUP

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1.0	ABSTRACT
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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, IN ORDER 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 'WATBIT'
	WHYFO TELLS WHAT REGISTER THE ERROR BIT WAS FOUND IN AND WATBIT TELLS WHAT THE NUMBER OF THE ERROR BITS WHERE.
	EXAMPLE:
	RHCS1 HAS AN ERROR BIT SET
	THESE ARE THE NUMBER OF THE EXTRA BITS
	15 14
	RHCS2 HAS AN ERROR BIT SET
	THESE ARE THE NUMBER OF THE EXTRA BITS
	15
	END EXAMPLE
	THIS PRINTOUT SAYS THAT TRE AND SC IS SET IN RHCS1 AND THAT DATA LATE WAS SET IN RHCS2.

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

2.0 REQUIREMENTS

2.1 HARDWARE

THIS PROGRAM ASSUMES THE FOLLOWING IS IN PROPER WORKING  
CONDITION:

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

2.2 SOFTWARE

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

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

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

3.0 PROGRAM DESCRIPTION

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

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

3.1 SWITCH OPTIONS

SWITCH USE

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15      HALT ON ERROR
14      LOOP ON TEST
13      INHIBIT ERROR TYPEOUTS
11      INHIBIT ITERATIONS
10      BELL ON ERROR
9       LOOP ON ERROR
8       LOOP ON TEST IN SWR<7:0>
1       TO BE USED IF DUAL PORT USED
0       INHIBITS THE PRINTING OF WATBIT
*****
13,8,AND 0  INHIBIT WATBIT PRINTOUT
*****
```

3.2 SYSMAC ROUTINES (USED)

EQUATE, CATCH, COMMON TAGS, SWRHI, SWRLO, SETUP SCOPE,  
TYPE, TRAP, REERROR BITS

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

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

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

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

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

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- TEST 7 - RHDB CLEAR TEST. THIS TEST CHECKS THAT WHEN A CLEAR IS GENERATED OUTPUT READY IS NEGATED.
- TEST 10 - PROM REGISTER DECODE TEST. THIS TEST CHECKS THAT THE PROM CAN ACCESS ALL REGISTERS.
- TEST 11 - RHCS3 TEST. THIS TEST CHECKS THE READ/WRITE BITS IN THE RHCS3 REGISTER CAN BE CLEARED AND SET.
- TEST 12 - RHWC BIT TEST. THIS TEST CHECKS THE WORD COUNT REGISTER TO SEE IF ALL BITS CAN BE SET AND CLEARED AND CHECKS THE REGISTER USING ALTERNATE BITS SET (52525) AND USING (125252) TO MAKE SURE IT WORKS WITH ALTERNATE PATTERN.
- TEST 13 - RHBAE BIT TEST. THIS TEST TESTS THE RHBAE 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 BUFFER REGISTER BY FIRST ALTERNATLY SETTING AND RESETTING 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 REGISTER 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.

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- 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.

\*\*\*\*\*  
ECO HISTORY  
CHGE1 - ADDED CODE TO MAKE BOTH WRITE LOC'S IDENTICAL  
CHGE2 - CHANGED BIT8 FROM LOC TO DATA REFERENCE  
CHGE3 - CHANGED BIT0 FROM LOC TO DATA REFERENCE  
\*\*\*\*\*  
CHGF1 - ADDED SOFTSWR TO .SETUP MACRO  
CHGF2 - ADDED GETSWR FOLLOWING SETUP  
CHGF3 - ADDED JSR PC,\$TKINT FOLLOWING GETSWR  
CHGF4 - ADDED ,X,8.,200 TO .\$READ ARGUMENTS  
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```
.TITLE MASSBUS RH70 AND RH11 DIAGNOSTIC
;*COPYRIGHT (C) 1979
;*DIGITAL EQUIPMENT CORP.
;*MAYNARD, MASS. 01754
;*
;*PROGRAM BY WN D'ENTREMONT
;*
;*THIS PROGRAM WAS ASSEMBLED USING THE PDP-11 MAINDEC SYSMAC
;*PACKAGE (MAINDEC-11-DZQAC-C3), JAN 19, 1977.
;*
.SBTTL OPERATIONAL SWITCH SETTINGS
;*
;*      SWITCH          USE
;*      -----          -
;*      15             HALT ON ERROR
;*      14             LOOP ON TEST
;*      13             INHIBIT ERROR TYPEOUTS
;*      11             INHIBIT ITERATIONS
;*      10             BELL ON ERROR
;*      9              LOOP ON ERROR
;*      8              LOOP ON TEST IN SWR<7:0>
.SBTTL BASIC DEFINITIONS
;*INITIAL ADDRESS OF THE STACK POINTER *** 750 ***
STACK= 750
.EQUIV EMT,ERROR      ;;BASIC DEFINITION OF ERROR CALL
.EQUIV IOT,SCOPE      ;;BASIC DEFINITION OF SCOPE CALL

;*MISCELLANEOUS DEFINITIONS
HT= 11                ;;CODE FOR HORIZONTAL TAB
LF= 12                ;;CODE FOR LINE FEED
CR= 15                ;;CODE FOR CARRIAGE RETURN
CRLF= 200             ;;CODE FOR CARRIAGE RETURN-LINE FEED
```

000750

000011  
000012  
000015  
000200



```
385      177776      PS=      177776      ;;PROCESSOR STATUS WORD
386      .EQUIV PS,PSW
387      177774      STKLMT= 177774      ;;STACK LIMIT REGISTER
388      177772      PIRQ=      177772      ;;PROGRAM INTERRUPT REQUEST REGISTER
389      177570      DSWR=      177570      ;;HARDWARE SWITCH REGISTER
390      177570      DDISP=     177570      ;;HARDWARE DISPLAY REGISTER
391
392      ;*GENERAL PURPOSE REGISTER DEFINITIONS
393      000000      R0=      %0      ;;GENERAL REGISTER
394      000001      R1=      %1      ;;GENERAL REGISTER
395      000002      R2=      %2      ;;GENERAL REGISTER
396      000003      R3=      %3      ;;GENERAL REGISTER
397      000004      R4=      %4      ;;GENERAL REGISTER
398      000005      R5=      %5      ;;GENERAL REGISTER
399      000006      R6=      %6      ;;GENERAL REGISTER
400      000007      R7=      %7      ;;GENERAL REGISTER
401      000006      SP=      %6      ;;STACK POINTER
402      000007      PC=      %7      ;;PROGRAM COUNTER
403
404      ;*PRIORITY LEVEL DEFINITIONS
405      000000      PR0=      0      ;;PRIORITY LEVEL 0
406      000040      PR1=      40     ;;PRIORITY LEVEL 1
407      000100      PR2=      100    ;;PRIORITY LEVEL 2
408      000140      PR3=      140    ;;PRIORITY LEVEL 3
409      000200      PR4=      200    ;;PRIORITY LEVEL 4
410      000240      PR5=      240    ;;PRIORITY LEVEL 5
411      000300      PR6=      300    ;;PRIORITY LEVEL 6
412      000340      PR7=      340    ;;PRIORITY LEVEL 7
413
414      ;*'SWITCH REGISTER' SWITCH DEFINITIONS
415      100000      SW15=     100000
416      040000      SW14=     40000
417      020000      SW13=     20000
418      010000      SW12=     10000
419      004000      SW11=     4000
420      002000      SW10=     2000
421      001000      SW09=     1000
422      000400      SW08=     400
423      000200      SW07=     200
424      000100      SW06=     100
425      000040      SW05=     40
426      000020      SW04=     20
427      000010      SW03=     10
428      000004      SW02=     4
429      000002      SW01=     2
430      000001      SW00=     1
431      .EQUIV SW09,SW9
432      .EQUIV SW08,SW8
433      .EQUIV SW07,SW7
434      .EQUIV SW06,SW6
435      .EQUIV SW05,SW5
436      .EQUIV SW04,SW4
437      .EQUIV SW03,SW3
438      .EQUIV SW02,SW2
439      .EQUIV SW01,SW1
440      .EQUIV SW00,SW0
```

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441
442
443      100000
444      040000
445      020000
446      010000
447      004000
448      002000
449      001000
450      000400
451      000200
452      000100
453      000040
454      000020
455      000010
456      000004
457      000002
458      000001
459
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461
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467
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469
470
471      000004
472      000010
473      000014
474      000014
475      000014
476      000020
477      000024
478      000030
479      000034
480      000060
481      000064
482      000240
483
484
485      000000
486
487
488
489      000174
490      000174 000000
491      000176 000000
492
493      000200 000137 004176
494      000204 000204
495      000204 000137 004144
496      000210 000210

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

.=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
.=174
DISPREG: .WORD 0    ;; SOFTWARE DISPLAY REGISTER
SWREG:   .WORD 0    ;; SOFTWARE SWITCH REGISTER
.SBTTL STARTING ADDRESS(ES)
      JMP @#BEGIN1  ;; JUMP TO STARTING ADDRESS OF PROGRAM
      .=204
      JMP @#BEGIN
      .=210

```



545  
546  
547  
548  
549  
550  
551 001100  
552 001100  
553 001100 000000  
554 001102 000  
555 001103 000  
556 001104 000000  
557 001106 000000  
558 001110 000000  
559 001112 000000  
560 001114 000  
561 001115 001  
562 001116 000000  
563 001120 000000  
564 001122 000000  
565 001124 000000  
566 001126 000000  
567 001130 000000  
568 001132 000000  
569 001134 000  
570 001135 000  
571 001136 000000  
572 001140 177570  
573 001142 177570  
574 001144 177560  
575 001146 177562  
576 001150 177564  
577 001152 177566  
578 001154 000  
579 001155 002  
580 001156 012  
581 001157 000  
582 001160 000000  
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.SBTTL COMMON TAGS

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

                  .=1100  
\$CMTAG:                  ::START OF COMMON TAGS  
\$PASS: .WORD 0          ::CONTAINS PASS COUNT  
\$STNM: .BYTE 0          ::CONTAINS THE TEST NUMBER  
\$ERFLG: .BYTE 0          ::CONTAINS ERROR FLAG  
\$ICNT: .WORD 0          ::CONTAINS SUBTEST ITERATION COUNT  
\$LPADR: .WORD 0          ::CONTAINS SCOPE LOOP ADDRESS  
\$LPERR: .WORD 0          ::CONTAINS SCOPE RETURN FOR ERRORS  
\$ERTTL: .WORD 0          ::CONTAINS TOTAL ERRORS DETECTED  
\$ITEMB: .BYTE 0          ::CONTAINS ITEM CONTROL BYTE  
\$ERMAX: .BYTE 1          ::CONTAINS MAX. ERRORS PER TEST  
\$ERRPC: .WORD 0          ::CONTAINS PC OF LAST ERROR INSTRUCTION  
\$GDADR: .WORD 0          ::CONTAINS ADDRESS OF 'GOOD' DATA  
\$BDADR: .WORD 0          ::CONTAINS ADDRESS OF 'BAD' DATA  
\$GDDAT: .WORD 0          ::CONTAINS 'GOOD' DATA  
\$BDDAT: .WORD 0          ::CONTAINS 'BAD' DATA  
                  .WORD 0          ::RESERVED--NOT TO BE USED  
                  .WORD 0  
\$AUTOB: .BYTE 0          ::AUTOMATIC MODE INDICATOR  
\$INTAG: .BYTE 0          ::INTERRUPT MODE INDICATOR  
                  .WORD 0  
SWR: .WORD DSWR          ::ADDRESS OF SWITCH REGISTER  
DISPLAY: .WORD DDISP      ::ADDRESS OF DISPLAY REGISTER  
\$TKS: 177560              ::TTY KBD STATUS  
\$TKB: 177562              ::TTY KBD BUFFER  
\$TPS: 177564              ::TTY PRINTER STATUS REG. ADDRESS  
\$TPB: 177566              ::TTY PRINTER BUFFER REG. ADDRESS  
\$NULL: .BYTE 0          ::CONTAINS NULL CHARACTER FOR FILLS  
\$FILLS: .BYTE 2          ::CONTAINS # OF FILLER CHARACTERS REQUIRED  
\$FILLC: .BYTE 12          ::INSERT FILL CHARS. AFTER A 'LINE FEED'  
\$TPFLG: .BYTE 0          ::'TERMINAL AVAILABLE' FLAG (BIT<07>=0=YES)  
\$REGAD: .WORD 0          ::CONTAINS THE ADDRESS FROM  
                              ::WHICH (\$REGO) WAS OBTAINED  
\$REG0: .WORD 0          ::CONTAINS ((\$REGAD)+0)  
\$REG1: .WORD 0          ::CONTAINS ((\$REGAD)+2)  
\$REG2: .WORD 0          ::CONTAINS ((\$REGAD)+4)  
\$REG3: .WORD 0          ::CONTAINS ((\$REGAD)+6)  
\$REG4: .WORD 0          ::CONTAINS ((\$REGAD)+10)  
\$REG5: .WORD 0          ::CONTAINS ((\$REGAD)+12)  
\$TMP0: .WORD 0          ::USER DEFINED  
\$TMP1: .WORD 0          ::USER DEFINED  
\$TMP2: .WORD 0          ::USER DEFINED  
\$TMP3: .WORD 0          ::USER DEFINED  
\$TMP4: .WORD 0          ::USER DEFINED  
\$TMP5: .WORD 0          ::USER DEFINED  
\$TIMES: 0              ::MAX. NUMBER OF ITERATIONS  
\$ESCAPE: 0              ::ESCAPE ON ERROR ADDRESS  
\$BELL: .ASCIZ <207><377><377>  ::CODE FOR BELL  
\$QUES: .ASCII /?/      ::QUESTION MARK  
\$CRLF: .ASCII <15>      ::CARRIAGE RETURN

MASSBUS RH70 AND RH11 DIAGNOSTIC  
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COMMON TAGS

SEQ 0012

601 001224 000012  
602

\$LF: .ASCIZ <12> ;:LINE FEED  
;:\*\*\*\*\*

603  
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001226  
  
001226 055074  
  
001230 067636  
001232 072004  
001234 072350  
  
001236 055134  
  
001240 067756  
001242 072016  
001244 072354  
  
001246 055174  
  
001250 070077  
001252 072030  
001254 072360  
  
001256 055250  
  
001260 070217  
001262 072042  
001264 072364  
  
001266 055310  
  
001270 070337  
001272 072054  
001274 072370  
  
001276 055361  
  
001300 070337  
001302 072054  
001304 072370  
  
001306 055575

.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
    
```

\$ERRTB:

```

;ITEM 1
EM1      :CORRECT BIT DID NOT SET
          :IN RH WORD COUNT REGISTER
          DH1
          DT1
          DF1
;ITEM 2
EM2      :CORRECT BIT DID NOT SET
          :IN BUS ADDRESS EXTENTION
          :REGISTER
          DH2
          DT2
          DF2
;ITEM 3
EM3      :CORRECT BIT DID NOT SET
          :IN BUS ADDRESS REGISTER
          DH3
          DT3
          DF3
;ITEM 4
EM4      :CORRECT BIT DID NOT SET
          :IN RHDB REGISTER
          DH4
          DT4
          DF4
;ITEM 5
EM5      :NED DID NOT SET IN
          :RHCS2 REGISTER
          DH5
          DT5
          DF5
;ITEM 6
EM6      :NEM LOGIC TO SET TRE
          :AND SC BITS IN RHCS1
          :IS NOT WORKING
          DH5
          DT5
          DF5
;ITEM 7
EM7      :NEM BIT DOES NOT READ AS SET
    
```

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





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

827					
828	001540	070337	DH5		:MXF AND SC BITS ARE INCORRECT
829	001542	072054	DT5		
830	001544	072370	DF5		
831					
832			:ITEM	33	
833	001546	056607		EM33	:TRE LOGIC ASSOCIATED WITH
834					:MXF IS NOT WORKING
835					:TRE READS AS CLEARED
836					:OR TRE HAS AN OPEN GOING
837					:TO THE BUS
838					
839	001550	070337	DH5		
840	001552	072054	DT5		
841	001554	072370	DF5		
842					
843			:ITEM	34	
844	001556	056657		EM34	:TESTER IS NOT CONNECT
845					:TO THE MASSBUS DEVICE
846					:CODE SHOULD BE A 40
847	001560	070532	DH34		:PC TEST NO. DEVICE CODE
848					
849	001562	072076	DT34		:\$ERRPC,\$TSTNM,DT,0
850					
851	001564	072377	DF34		:0,0,0
852					
853			:ITEM	35	
854	001566	056727		EM35	:BIT IN RHCS3 WILL NOT ET
855					
856					
857	001570	071665	DH171		
858	001572	072326	DT171		
859	001574	072374	DF11		
860					
861			:ITEM	36	
862	001576	056761		EM36	
863					
864	001600	070612	DH36		:PC TEST NO. FAILING ADDRESS
865					
866	001602	072112	DT36		:\$ERRPC,\$TSTNM,RHCS1,0
867					
868	001604	072403	DF36		:0,0,0
869					
870			:ITEM	37	
871	001606	057017		EM37	:DLT DID NOT SET IN RHCS2
872					
873	001610	070607	DH35		
874					
875	001612	072106	DT35		
876					
877	001614	072402	DF35		
878					
879			:ITEM	40	
880	001616	057050		EM40	:DLT IS NOT SET IN RHCS2 BUT
881					:TRE AND SC READ AS SET.TRE
882					:AND SC MUST HAVE BEEN SET BY A DIFFERENT ERROR

883				
884	001620	070607	DH35	
885	001622	072106	DT35	
886	001624	072402	DF35	
887				
888			:ITEM 41	
889	001626	057210	EM41	:OUTPUT READY IN RHCS2
890				:DID NOT SET
891				
892	001630	070673	DH41	:PC TEST NO.
893				
894	001632	072122	DT41	:\$ERRPC,\$TSTNM,0
895				
896	001634	072406	DF41	:
897				
898			:ITEM 42	
899				
900	001636	057313	EM42	:ALL BITS DID NOT LOAD INTO RHWC
901				: (177777)
902				
903	001640	000000	0	
904	001642	000000	0	
905	001644	000000	0	
906				
907			:ITEM 43	
908	001646	057364	EM43	:RHWC DID NOT LOAD ANY BITS (177777)
909	001650	000000	0	
910	001652	000000	0	
911	001654	000000	0	
912				
913			:ITEM 44	
914	001656	057430	EM44	:RHWC
915				:SOME BITS CLEARED AFTER CLEAR
916				:WAS LOADED INTO RHCS2
917	001660	000000	0	
918	001662	000000	0	
919	001664	000000	0	
920				
921			:ITEM 45	
922	001666	057522	EM45	:NON-EXISTANT MEMORY BIT
923				:SET IN RHCS2
924	001670	000000	0	
925	001672	000000	0	
926	001674	000000	0	
927				
928			:ITEM 46	
929	001676	057575	EM46	:RHBA DID NOT CLEAR AFTER CLR
930				:WAS LOADED INTO RHCS2
931	001700	000000	0	
932	001702	000000	0	
933	001704	000000	0	
934				
935			:ITEM 47	
936	001706	057656	EM47	:ALL BITS DID NOT LOAD INTO
937				:RHBA REGISTER (177776)
938	001710	000000	0	

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

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

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

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

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



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

1275	002566	063713		EM135		;WCE HI DID NOT SET IN RHCS3
1276	002570	071420		DH132		
1277	002572	072240		DT132		
1278	002574	072431		DF132		
1279			;ITEM	136		
1280	002576	063747		EM136		;WCE HI SET BUT WCE DID NOT SET IN RHCS2
1281	002600	071420		DH132		
1282	002602	072240		DT132		
1283	002604	072431		DF132		
1284			;ITEM	137		
1285	002606	064030		EM137		;WCE LO SET WITH WCE HI IN RHCS3
1286	002610	071420		DH132		
1287	002612	072240		DT132		
1288	002614	072431		DF132		
1289			;ITEM	140		

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

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



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

1514			:WORD COUNT REGISTER (RHWC)	
1515			:EACH BIT IS CALLED BY BIT NUMBER	
1516				
1517				
1518				
1519			:BUS ADDRESS REGISTER (RHBA)	
1520			:EACH BIT IS CALLED BY BIT NUMBER	
1521				
1522				
1523				
1524			:CONTROL AND STATUS REGISTER 2 (RHCS2)	
1525				
1526	000001	US1= 1		:UNIT SELECT (BIT #0)
1527	000002	US2= 2		:UNIT SELECT (BIT #1)
1528	000004	US4= 4		:UNIT SELECT (BIT #2)
1529	000010	BAI= 10		:BUS ADDRESS INCREMENT INHIBIT (BIT #3)
1530	000020	PAT= 20		:INVERT PARITY CHECK FOR MCPE
1531	000040	CLR= 40		:CLEAR (BIT #5)
1532	000100	IR= 100		:INPUT READY (BIT #6)
1533	000200	OR= 200		:OUTPUT READY (BIT #7)
1534	000400	MPE= 400		:MASS BUS PARITY ERROR (BIT #8)
1535	001000	MXF= 1000		:MISSED TRANSFER ERROR (BIT #9)
1536	002000	PGE= 2000		:PROGRAM ERROR (BIT #10)
1537	004000	NEM= 4000		:NON EXISTANT MEMORY (BIT #11)
1538	010000	NED= 10000		:NON EXISTANT DRIVE (BIT #12)
1539	020000	UPE= 20000		:UNIBUS PARITY ERROR (BIT #13)
1540	040000	WCE= 40000		:WRITE CHECK ERROR (BIT #14)
1541	100000	DLT= 100000		:DATA LATE (BIT #15)
1542				
1543			:CONTROL AND STATUS REGISTER 3 (RHCS3)	
1544				
1545	000001	IPCK0= 1		:INVERT PARITY,ON LOW BYTE OF EVEN WORD (BIT #0)
1546	000002	IPCK1= 2		:INVERT PARITY,ON HI BYTE OF EVEN WORD (BIT #1)
1547	000004	IPCK2= 4		:INVERT PARITY,ON LOW BYTE OF ODD WORD (BIT #2)
1548	000010	IPCK3= 10		:INVERT PARITY,ON HI BYTE OF ODD WORD (BIT #3)
1549	000100	IE3= 100		:INTERUPT ENABLE,SAME AS BIT 6 OF RHCS1 (BIT #6)
1550	002000	DBL= 2000		:DOUBLE WORD OPERATION,SET WHEN LAST MEMORY TRANSFER WAS
1551	004000	WCELO= 4000		:WRITE CHECK ERROR EVEN WORD (BIT #11)
1552	010000	WCEHI= 10000		:WRITE CHECK ERROR ODD WORD (BIT #12)
1553	020000	DPELO= 20000		:DATA PARITY ERROR EVEN WORD (BIT #13)
1554	040000	DPEHI= 40000		:DATA PARITY ERROR ODD WORD (BIT #14)
1555	100000	APE= 100000		:ADDRESS PARITY ERROR (BIT #15)
1556			:DATA BUFFER REGISTER (RHDB)	
1557			:EACH BIT IS CALLED BY BIT NUMBER	
1558				
1559				
1560				
1561				
1562				
1563			:CONTROL AND STATUS 1 REGISTER. (#00)	
1564				
1565	000001	GO= 1		:GO (BIT #0)
1566	000100	IE= 100		:INTERRUPT ENABLE (BIT #6)
1567	000200	RDY= 200		:READY (BIT #7)
1568	000400	A16= 400		:HIGH ORDER UNIBUS BITS (BIT #8)
1569	001000	A17= 1000		:HIGH ORDER UNIBUS BITS (BIT #9)

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



1596					
1597					
1598	000001	DMD=	1		:DIAGINOSTIC MODE (BIT #0)
1599	000002	MCLK=	2		:MAINTAINCE CLOCK (BIT #1)
1600	000004	FERR=	4		:FORCE ERROR (BIT #2)
1601	000010	ICPA=	10		:INVERT CONTROL PARITY,CAUSES PARITY TO BE EVEN WHEN SET
1602	000020	IDPA=	20		:INVERT DATA PARITY,CAUSES DATA PARITY TOBE EVEN WHEN SE
1603	000040	DPCA=	40		:DISABLE PARITY CHECK,INHIBITS PARITY CHECK ON BOTH C AN
1604	000100	NEBL=	100		:NO END OF BLOCK,INHIBITS TESTER FROM GENERATING END OF
1605	000200	DTRM=	200		:WHEN SET DELAYS TRA FROM BEING ASSERTED FOR 50ONS (BIT
1606	000400	DOCC=	400		:DISSABLE OCCUPY (BIT #8)
1607	001000	SLKM=	1000		:SYNC CLOCK MINIMUM WIDTH ,WHEN SET CHANGES SYNC CLOCK T
1608	002000	ISLK=	2000		:INVERT SYNC CLOCK,WHEN SET INVERTS SYNC CLOCK,NO EFFECT
1609	004000	ENPS=	4000		:ENABLE PATTERN SHIFT,WHEN SET CAUSES A 16 OR 18 BIT ROT
1610	010000	BMD18=	10000		:18 BIT MODE (BIT #12)
1611					
1612					
1613					
1614	000001	AT0=	1		:DEVICE 0 (BIT #0)
1615	000002	AT1=	2		:DEVICE 1 (BIT #1)
1616	000004	AT2=	4		:DEVICE 2 (BIT #2)
1617	000010	AT3=	10		:DEVICE 3 (BIT #3)
1618	000020	AT4=	20		:DEVICE 4 (BIT #4)
1619	000040	AT5=	40		:DEVICE 5 (BIT #5)
1620	000100	AT6=	100		:DEVICE 6 (BIT #6)
1621	000200	AT7=	200		:DEVICE 7 (BIT #7)
1622					
1623					
1624					
1625	000001	DN0=	1		:DRIVE NUBER BIT #0 (BIT #0)
1626	000002	DN1=	2		:DRIVE NUMBER BIT #1 (BIT #1)
1627	000004	DN2=	4		:DRIVE NUMBER BIT #2 (BIT #2)
1628	000010	SCLK=	10		:SYNC CLOCK RANGE BIT ,WHEN CLEAR SYNC CLOCK IS 0.4-2.6
1629					:WHEN SET 2.0-10.6 MICRO SECONDS (BIT #3)
1630	000020	GAP=	20		:GAP SIZE BIT,SETS GAP SIZE TO 5 MICROSECONDS WHEN CLEAR
1631	000040	BLO=	40		:BLOCK SIZE BIT 0 (BIT #5)
1632	000100	BL1=	100		:BLOCK SIZE BIT 1(BIT #6)
1633	000200	BL2=	200		:BLOCK SIZE BIT 2(BIT #7)
1634					
1635					
1636					
1637	003320	160100	ADD1:	160100	:BASE ADDRESS RH #1
1638	003322	160200	ADD2:	160200	:BASE ADDRESS RH #2
1639	003324	160300	ADD3:	160300	:BASE ADDRESS RH #3
1640	003326	160400	ADD4:	160400	:BASE ADDRESS RH #4
1641	003330	000000	RHCS1:	0	:CONTROL AND STATUS 1
1642	003332	000000	RHWC:	0	:WORD COUNT
1643	003334	000000	RHBA:	0	:BUS ADDRESS
1644	003336	000000	RHMR2:	0	:TRANSFER CONTROL REGISTER
1645	003340	000000	RHCS2:	0	:CONTROL AND STATUS 2
1646	003342	000000	RHST:	0	:TESTER STATUS
1647	003344	000000	RHER:	0	:ERROR REGISTER
1648	003346	000000	RHAS:	0	:ATTENTION SUMMARY REG
1649	003350	000000	RHTDB:	0	:TESTER DATA REGISTER
1650	003352	000000	RHDB:	0	:DATA BUFFER
1651	003354	000000	RHMR1:	0	:DIAGNOSTIC (MAINTENCE) REGISTER

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

```
1708  
1709      000051  
1710      000052  
1711      000053  
1712      000054  
1713      000055  
1714      000056  
1715      000057  
1716  
1717  
1718  
1719      000071  
1720      000072  
1721      000073  
1722      000074  
1723      000075  
1724      000076  
1725      000077  
1726  
1727  
1728  
1729      000061  
1730      000062  
1731      000063  
1732      000064  
1733      000065  
1734      000066  
1735      000067  
1736  
1737  
1738  
1739      000011  
1740  
1741  
1742  
1743      000031  
1744  
1745  
1746  
1747  
1748  
1749  
1750 003446 000000  
1751 003450 000000  
1752 003452 000000  
1753  
1754  
1755  
1756  
1757  
1758 003454 000000  
1759 003456 000000  
1760 003460 000000  
1761  
1762  
1763
```

```
::*****  
WRCH0= 51      ;THESE WRCH BITS ARE WRITE/CHECK  
WRCH1= 52      ;CODES ,IF THE CODE IS AN ODD  
WRCH2= 53      ;NUMBER THE GO BIT IS INCLUDED  
WRCH3= 54      ;IF THEY ARE EVEN GO BIT IS NOT INCLUDED  
WRCH4= 55  
WRCH5= 56  
WRCH6= 57  
  
::*****  
READ0= 71     ;READ CODES  
READ1= 72     ;IF THE CODE IS AN ODD NUMBER  
READ2= 73     ;THE GO BIT IS INCLUDED  
READ3= 74  
READ4= 75  
READ5= 76  
READ6= 77  
  
::*****  
WRITE0= 61    ;WRITE CODES  
WRITE1= 62    ;IF THE CODE IS AN ODD NUMBER  
WRITE2= 63    ;THE GO BIT IS INCLUDED  
WRITE3= 64    ;IF IT IS EVEN THE GO BIT  
WRITE4= 65    ;IS NOT INCLUDED  
WRITE5= 66  
WRITE6= 67  
  
::*****  
DRCLR= 11     ;CLEARS ALL ERROR BITS IN THE DRIVE  
                ;AND SETS THE DRIVE READY BIT  
::*****  
SEARCH= 31    ;SETS A ONE SHOT WHICH SETS  
                ;ATA AFTER 100USEC + OR MINUS 20%  
  
::*****  
                ;WATBIT STORAGE LOCATIONS  
::*****  
BITCNT: 0     ;BIT COUNTER  
LOOCNT: 0     ;LOOP CPUNT  
PASS: 0       ;PASS COUNT FOR THE LARGE TRANSFER TEST  
::*****  
                ;THIS IS WHERE THE TEST NUMBER IS STORED JUST  
                ;BEFORE IT IS PRINTED OUT.....  
::*****  
TSTNM: 0      ;TEST NO. STORAGE  
OFFSET: 0     ;OFFSET FOR ERROR HEADER  
HEDDAD: 0     ;USE TO FIND HEADER ERROR MESSAGE  
::*****  
                ;THESE ARE THE READ WRITE BUFFERS  
::*****
```

1764 004000 004000  
1765 004000 000000  
1766 004002 000000  
1767 004100 004100  
1768 004100 000000  
1769 004102 000000  
1770 004104 000000  
1771 004106 000000  
1772 004110 000000  
1773 004112 000000  
1774 004114 000000  
1775 004116 000000  
1776  
1777  
1778  
1779  
1780  
1781 004120 177777  
1782 004122 000000  
1783  
1784 004124 000000  
1785 004126 000000  
1786 004130 000000  
1787 004132 000000  
1788 004134 000000  
1789 004136 000000  
1790 004140 000000  
1791 004142 000000

. =4000  
EVENAD: 0 ;EVEN ADDRESS  
ODDAD: 0 ;ODD ADDRESS  
. =4100  
RBUF: 0  
RBUF1: 0  
RBUF2: 0  
RBUF3: 0  
RBUF4: 0  
RBUF5: 0  
RBUF6: 0  
RBUF7: 0

::\*\*\*\*\*  
: THESE ARE FOR THE CLEARS TEST  
::~\*\*\*\*\*

MINUS: -1  
BEFORE: 0  
\$CS1: 0  
\$CS2: 0  
\$CS3: 0  
\$ST: 0  
\$ER: 0  
\$RHBA: 0  
\$RHDB: 0  
\$RHWC: 0

```

1792
1793
1794 004144 005000
1795 004146 005100
1796 004150 000421
1797 004152 005000
1798 004154 005037 001174
1799 004160 005137 001174
1800 004164 000413
1801 004166 005000
1802 004170 005100
1803 004172 000137 004602
1804 004176 012737 000074 003404
1805 004204 012737 000774 003406
1806 004212 005000
1807
1808
1809 004214
1810
1811
1812 004214 012706 001100
1813 004220 005026
1814 004222 022706 001140
1815 004226 001374
1816 004230 012706 000750
1817
1818 004234 012737 072644 000020
1819 004242 012737 000340 000022
1820 004250 012737 074322 000030
1821 004256 012737 000340 000032
1822 004264 012737 076030 000034
1823 004272 012737 000340 000036
1824 004300 012737 073116 000024
1825 004306 012737 000340 000026
1826 004314 005037 001212
1827 004320 005037 001214
1828 004324 112737 000001 001115
1829 004332 012737 004332 001106
1830 004340 012737 004340 001110
1831
1832
1833 004346 013746 000004
1834 004352 012737 004406 000004
1835 004360 012737 177570 001140
1836 004366 012737 177570 001142
1837 004374 022777 177777 174536
1838 004402 001012
1839
1840 004404 000403
1841 004406 012716 004414
1842 004412 000002
1843 004414 012737 000176 001140
1844 004422 012737 000174 001142
1845 004430 012637 000004
1846
1847

```

```

;*****
BEGIN: CLR R0 ;GET SKIP FLAG READY
        COM R0 ;SET SKIP FLAG
        BR START ;GO TO START
BEGIN3: CLR R0 ;GET SKIP FLAG READY
        CLR $REG5 ;CLR ALTERNATE START FLAG
        COM $REG5 ;SET FOR ALTERNATE START
        BR START ;START PROGRAM
BEGIN2: CLR R0 ;GET R0 READY
        COM R0 ;TO BE COMPLIMENTED
        JMP @#TST1 ;ENTER DIAG. FOR NEXT PASS
BEGIN1: MOV #74,@#REGEND
        MOV #774,@#VECADD
        CLR R0 ;CLEAR THE SKIP FLAG
;*****

START:
.SBTTL INITIALIZE THE COMMON TAGS
;:CLEAR THE COMMON TAGS ($CMTAG) AREA
        MOV #CMTAG,R6 ;:FIRST LOCATION TO BE CLEARED
        CLR (R6)+ ;:CLEAR MEMORY LOCATION
        CMP #SWR,R6 ;:DONE?
        BNE -6 ;:LOOP BACK IF NO
        MOV #STACK,SP ;:SETUP THE STACK POINTER
;:INITIALIZE A FEW VECTORS
        MOV #SCOPE,@#IOTVEC ;:IOT VECTOR FOR SCOPE ROUTINE
        MOV #340,@#IOTVEC+2 ;:LEVEL 7
        MOV #ERROR,@#EMTVEC ;:EMT VECTOR FOR ERROR ROUTINE
        MOV #340,@#EMTVEC+2 ;:LEVEL 7
        MOV #STRAP,@#TRAPVEC ;:TRAP VECTOR FOR TRAP CALLS
        MOV #340,@#TRAPVEC+2 ;:LEVEL 7
        MOV #SPURDN,@#PURVEC ;:POWER FAILURE VECTOR
        MOV #340,@#PURVEC+2 ;:LEVEL 7
        CLR $TIMES ;:INITIALIZE NUMBER OF ITERATIONS
        CLR $ESCAPE ;:CLEAR THE ESCAPE ON ERROR ADDRESS
        MOVB #1,$ERMAX ;:ALLOW ONE ERROR PER TEST
        MOV #,$SLPADR ;:INITIALIZE THE LOOP ADDRESS FOR SCOPE
        MOV #,$SLPERR ;: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.
        MOV @#ERRVEC,-(SP) ;:SAVE ERROR VECTOR
        MOV #64,$@#ERRVEC ;:SET UP ERROR VECTOR
        MOV #DSWR,SWR ;:SETUP FOR A HARDWARE SWICH REGISTER
        MOV #DDISP,DISPLAY ;:AND A HARDWARE DISPLAY REGISTER
        CMP #-1,@SWR ;:TRY TO REFERENCE HARDWARE SWR
        BNE 66$ ;:BRANCH IF NO TIMEOUT TRAP OCCURRED
        ;:AND THE HARDWARE SWR IS NOT = -1
        BR 65$ ;:BRANCH IF NO TIMEOUT
        64$: MOV #65$,(SP) ;:SET UP FOR TRAP RETURN
        RTI
        65$: MOV #SWREG,SWR ;:POINT TO SOFTWARE SWR
        MOV #DISPREG,DISPLAY
        66$: MOV (SP)+,@#ERRVEC ;:RESTORE ERROR VECTOR
.SBTTL GET VALUE FOR SOFTWARE SWITCH REGISTER

```

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

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1904 005014 104412          RDOCT
1905 005016 012637 003406  MOV      (SP)+,VECADD      ;GET VECTOR ADDRESS
1906 005022 104401 005030  TYPE      ,69$           ;;TYPE ASCIZ STRING
1907 005026 000426          BR        68$           ;;GET OVER THE ASCIZ
1908          ;;69$: .ASCIZ <15><12>/HOW MANY REGISTERS ARE YOU JUMPERED FOR /
1909          68$:
1910 005104 104412          RDOCT
1911 005106 012637 003404  MOV      (SP)+,REGEND      ;GET NUMBER OF REG
1912 005112 006137 003404  ROL      REGEND           ;MULT BY 2
1913 005116 000137 005436  JMP      G11              ;GO CREATE ADDRESSES
1914 005122 013737 003320 003366 AD1ERR: MOV      ADD1,DEVIC1    ;SETUP DEVICE 1
1915 005130 012737 005222 000004  MOV      #AD2ERR,ERRVEC    ;FOR TIMEOUT
1916 005136 005777 176160  TST      @ADD2            ;IS THERE A DEVICE
1917 005142 013737 003322 003370  MOV      ADD2,DEVIC2      ;YES
1918 005150 012737 005242 000004  MOV      #AD3ERR,ERRVEC    ;FOR TIMEOUT
1919 005156 005777 176142  TST      @ADD3            ;IS THERE A DEVICE
1920 005162 013737 003324 003372  MOV      ADD3,DEVIC3      ;YES
1921 005170 012737 005262 000004  MOV      #AD4ERR,ERRVEC    ;FOR TIMEOUT
1922 005176 005777 176124  TST      @ADD4            ;IS THERE A DEVICE
1923 005202 013737 003326 003374  MOV      ADD4,DEVIC4      ;YES
1924 005210 012737 047002 000004  MOV      #TIEOUT,ERRVEC    ;REPLACE TIMEOUT
1925 005216 000137 006110  JMP      RESTAR           ;TEST DEVICES
1926 005222 005037 003370  AD2ERR: CLR      DEVIC2      ;NO DEVICE 2
1927 005226 012737 047002 000004  MOV      #TIEOUT,ERRVEC    ;REPLACE TIMEOUT
1928 005234 022626          CMP      (SP)+,(SP)+      ;CORRECT STACK
1929 005236 000137 006110  JMP      RESTAR           ;TEST DEVICES
1930 005242 005037 003372  AD3ERR: CLR      DEVIC3      ;NO DEVICE 3
1931 005246 012737 047002 000004  MOV      #TIEOUT,ERRVEC    ;REPLACE TIMEOUT
1932 005254 022626          CMP      (SP)+,(SP)+      ;CORRECT STACK
1933 005256 000137 006110  JMP      RESTAR           ;TEST DEVICES
1934 005262 005037 003374  AD4ERR: CLR      DEVIC4      ;NO DEVICE 4
1935 005266 012737 047002 000004  MOV      #TIEOUT,ERRVEC    ;REPLACE TIMEOUT
1936 005274 022626          CMP      (SP)+,(SP)+      ;CORRECT STACK
1937 005276 000137 006110  JMP      RESTAR           ;TEST DEVICES
1938 005302 005737 000042  G1G0:  TST      @#42        ;IS THERE A MONITOR
1939 005306 001402          BEQ      G1G1              ;NO
1940 005310 000137 046206          JMP      $EOP              ;YES EXIT
1941 005314 022737 160100 003366 G1G1:  CMP      #160100,DEVIC1 ;ARE WE HERE AFTER 210
1942 005322 001402          BEQ      SA200             ;NO, 200
1943 005324 000137 004700          JMP      KONG              ;GET NEW ADDRESS FOR 210
1944 005330          SA200:
1945 005330 104401 005336          TYPE      ,65$           ;;TYPE ASCIZ STRING
1946 005334 000420          BR        64$           ;;GET OVER THE ASCIZ
1947          ;;65$: .ASCIZ <15><12>/TYPE BASE ADDRESS FOR RH #1 /
1948          64$:
1949 005376 104412          RDOCT
1950 005400 012637 003366  MOV      (SP)+,DEVIC1      ;GET BASE ADDRESS FOR RH1
1951 005404 105737 001103  TSTB     $ERFLG           ;ARE WE HERE BECAUSE OF AN ADDRESS ERROR
1952 005410 001405          BEQ      G01              ;NO,GET READY FOR NEXT ADDRESS
1953 005412 005737 003366  TST      DEVIC1           ;IS IT A ZERO
1954 005416 001007          BNE     G11              ;NO
1955 005420 000137 005314          JMP      G1G1              ;NEED FIRST ADDRESS
1956 005424 005737 003366  G01:  TST      DEVIC1      ;DID HE CORRECT WITH A 0
1957 005430 001012          BNE     G1G01             ;GET BASE FOR RH # 2
1958 005432 000137 005314          JMP      G1G1              ;NEED ADDRESS
1959 005436 013737 003366 003400 GI1:  MOV      DEVIC1,DEVIC5    ;GET READY TO CREATE REG. ADDRESS

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1960 005444 012737 005302 003410      MOV      #GIG0,RETAIN      :SAVE RETURN ADDRESS
1961 005452 000137 006202              JMP      GIG04             :CONSTRUCT REGISTER ADDRESSES
1962 005456 005737 000042      GIG01:  TST      @#42        :IS THER A MONITOR
1963 005462 001402              BEQ      GIG2             :NO
1964 005464 000137 046206              JMP      $EOP             :EXIT
1965 005470              GIG2:
1966 005470 104401 005476      TYPE      ,65$           ::TYPE ASCIZ STRING
1967 005474 000420      BR        64$           ::GET OVER THE ASCIZ
1968              ::65$: .ASCIZ <15><12>/TYPE BASE ADDRESS FOR RH #2 /
1969 005536 64$:
1970 005536 104412      RDOCT
1971 005540 012637 003370      MOV      (SP)+,DEVIC2    :GET VALUE
1972 005544 105737 001103      TSTB     $ERFLG         :SAVE ADDRESS
1973 005550 001405      BEQ      G02            :ARE WE HERE BECAUSE OF ERROR
1974 005552 005737 003370      TST      DEVIC2         :NO
1975 005556 001007      BNE      G12            :IS IT 0
1976 005560 000137 045430      JMP      RESTAT         :NO
1977 005564 005737 003370      G02:    TST      DEVIC2    :SET UP FOR RH #1
1978 005570 001012      BNE      GIG02         :IS IT 0
1979 005572 000137 006110      JMP      RESTAR        :NO,GET NEXT ADDRESS
1980 005576 013737 003370 003400  G12:    MOV      DEVIC2,DEVIC5  :CREATE ADDRESS FOR RH#1
1981 005604 012737 005456 003410  MOV      #GIG01,RETAIN  :GET READY TO CREATE
1982 005612 000137 006202      JMP      GIG04         :SAVE RETURN ADDRESS
1983 005616 005737 000042      GIG02:  TST      @#42        :CREATE REG. ADDRESSES
1984 005622 001402              BEQ      GIG3           :IS THERE A MONITOR
1985 005624 000137 046206              JMP      $EOP           :NO
1986 005630              GIG3:
1987 005630 104401 005636      TYPE      ,65$           ::TYPE ASCIZ STRING
1988 005634 000420      BR        64$           ::GET OVER THE ASCIZ
1989              ::65$: .ASCIZ <15><12>/TYPE BASE ADDRESS FOR RH #3 /
1990 005676 64$:
1991 005676 104412      RDOCT
1992 005700 012637 003372      MOV      (SP)+,DEVIC3    :SAVE ADDRESS
1993 005704 105737 001103      TSTB     $ERFLG         :ARE WE HERE DO TO ERROR
1994 005710 001405      BEQ      G03            :NO
1995 005712 005737 003372      TST      DEVIC3         :IS IT 0
1996 005716 001007      BNE      G13            :NO
1997 005720 000137 045430      JMP      RESTAT         :RESTART PASS
1998 005724 005737 003372      G03:    TST      DEVIC3    :IS IT 0
1999 005730 001012      BNE      GIG03         :GET NEXT ADDRESS
2000 005732 000137 006110      JMP      RESTAR        :CREATE RH#1 ADDRESSES
2001 005736 013737 003372 003400  G13:    MOV      DEVIC3,DEVIC5  :SETUP TO CREATE ADDRESS
2002 005744 012737 005616 003410  MOV      #GIG02,RETAIN  :SAVE RETURN ADDRESS
2003 005752 000137 006202      JMP      GIG04         :CREATE ADDRESSES
2004 005756 005737 000042      GIG03:  TST      @#42        :IS THERE A MONITOR
2005 005762 001402              BEQ      GIG4           :NO
2006 005764 000137 046206              JMP      $EOP           :EXIT
2007 005770              GIG4:
2008 005770 104401 005776      TYPE      ,65$           ::TYPE ASCIZ STRING
2009 005774 000420      BR        64$           ::GET OVER THE ASCIZ
2010              ::65$: .ASCIZ <15><12>/TYPE BASE ADDRESS FOR RH #4 /
2011 006036 64$:
2012 006036 104412      RDOCT
2013 006040 012637 003374      MOV      (SP)+,DEVIC4    :SAVE ADDRESS
2014 006044 105737 001103      TSTB     $ERFLG         :ARE WE HERE BECAUSE OF ERROR
2015 006050 001405      BEQ      G04            :NO

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2016 006052 005737 003374      TST      DEVIC4      ;IS IT 0
2017 006056 001004      BNE      GI4         ;NO
2018 006060 000137 045430      JMP      RESTAT      ;RESTART PASS
2019 006064 000137 006110      JMP      RESTAR      ;GO SET UP REG. ADDRESSES
2020 006070 013737 003374 003400  GI4:     MOV      DEVIC4,DEVIC5 ;GET READY TO CREATE REG. ADDRESSES
2021 006076 012737 005756 003410      MOV      #GIG03,RETAIN ;STORE RETURN ADDRESS
2022 006104 000137 006202      JMP      GIG04        ;GO CREATE ADDRESSES
2023 006110 013737 003366 003400  RESTAR: MOV      DEVIC1,DEVIC5 ;GET READY TO CREATE REG. ADDRESSES
2024 006116 012737 005302 003410      MOV      #GIGO,RETAIN ;SAVE RETURN ADDRESS
2025 006124 104401 006132      TYPE     ,65$        ;:TYPE ASCIZ STRING
2026 006130 000421      BR       64$         ;:GET OVER THE ASCIZ
2027      ;:65$: .ASCIZ <15><12>/TESTING RH #1 AT BASE ADDRESS /
2028      64$:
2029 006174 013746 003366      MOV      DEVIC1,-(SP) ;:SAVE DEVIC1 FOR TYPEOUT
2030 006200 104402      TYPOC   ;:GO TYPE--OCTAL ASCII(ALL DIGITS)
2031 006202 013737 003400 003402  GIG04:  MOV      DEVIC5,@#OFF11 ;:SETUP FOR ADDRESSES
2032 006210 012702 003330      MOV      #RHCS1,R2    ;:SET UP WHERE TO PUT THEM
2033 006214 013722 003402      4$:     MOV      @#OFF11,(R2)+ ;:SETUP ADDRESS
2034 006220 062737 000002 003402      ADD      #TWO,@#OFF11 ;:SETUP NEXT ADDRESS
2035 006226 022702 003360      CMP      #RHBAE,R2    ;:ARE ALL ADDRESSES SET UP
2036 006232 001401      BEQ     3$           ;:IS INFORMATION CORRECT?
2037 006234 000767      BR       4$         ;:NO SETUP NEW ADDRESS
2038 006236 013737 003400 003402  3$:     MOV      DEVIC5,@#OFF11
2039 006244 063737 003404 003402      ADD      REGEND,@#OFF11
2040 006252 013737 003402 003360      MOV      @#OFF11,RHBAE ;:WITH CORRECT ADDRESS
2041 006260 062737 000002 003402      ADD      #2,@#OFF11    ;:SETUP RHCS3 ADDRESS
2042 006266 013737 003402 003362      MOV      @#OFF11,RHCS3 ;:WITH CORRECT ADDRESS
2043 006274 013737 003330 003364      MOV      RHCS1,RHCS1B ;:SETUP RHCS1B WITH
2044 006302 005237 003364      INC      RHCS1B       ;:HIGH BYTE ADDRESS OF RHCS1
2045 006306 013746 000004      TSTADD: MOV      @#ERRVEC,-(SP) ;:SAVE TIOUT VALUE
2046 006312 012737 006372 000004      MOV      #ADDERR,@#ERRVEC ;:SETUP NEW TIOUT VALUE
2047 006320 012777 000007 175012      MOV      #7,@RHCS2    ;:SETUP UNIT NO.
2048 006326 005777 174776      TST      @RHCS1       ;:WILL RH RESPOND
2049 006332 022777 000040 175016      CMP      #40,@RHDT    ;:IS A TESTER THERE
2050 006340 001403      BEQ     1$           ;:YES,CONTINUE
2051 006342 104034      ERROR   34           ;:TESTER IS NOT CONNECTED
2052 006344 000137 006374      JMP      ADDERR+2     ;:BAD ADDRESS
2053 006350 122777 000007 174760  1$:     CMPB    #7,@RHMR2    ;:IS THERE ALSO A 7 FOR UNIT NO.
2054 006356 001403      BEQ     2$           ;:YES,CONTINUE
2055 006360 104071      ERROR   71           ;:BAD ADDRESS
2056 006362 000137 006374      JMP      ADDERR+2
2057 006366 005726      2$:     TST      (SP)+      ;:CORRECT STACK
2058 006370 000406      BR       RHTEST      ;:YES AN RH IS THERE
2059 006372 022626      ADDERR: CMP      (SP)+,(SP)+ ;:CORRECT STACK
2060 006374 012637 000004      MOV      (SP)+,@#ERRVEC ;:REPLACE OLD TIOUT VALUE
2061 006400 104036      ERROR   36           ;:RH DID NOT RESPOND
2062 006402 000177 175002      JMP      @RETAIN      ;:GET CORRECT BASE ADDRESS
2063 006406 012637 000004      RHTEST: MOV      (SP)+,@#ERRVEC ;:REPLACE TIEOUT VALUE
2064 006412 005701      TST      R1          ;:IS IT A 70
2065 006414 001433      BEQ     RH70TT       ;:YES,LETS MAKE SURE
2066 006416 013746 000004      MOV      @#ERRVEC,-(SP) ;:SAVE TIME OUT VALUE
2067 006422 012737 006574 000004      MOV      #RH11,@#ERRVEC ;:CHECK FOR AN RH11
2068 006430 012777 000117 174724      MOV      #IPCK0!IPCK1!IPCK2!IPCK3!IE3,@RHCS3 ;:SET ALL BITS IN RHCS3
2069      ;:REPLACE TIMEOUT
2070 006436 012637 000004      RH11BA: MOV      (SP)+,@#ERRVEC
2071 006442

```

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2072 006442 104401 006450
2073 006446 000413
2074
2075 006476
2076 006476 005001
2077 006500 000137 006602
2078 006504 013746 000004
2079 006510 012737 006530 000004
2080 006516 012777 000117 174636
2081
2082 006524 000137 006576
2083 006530 022626
2084 006532 012637 000004
2085 006536 005001
2086 006540 005101
2087 006542 104401 006550
2088 006546 000411
2089
2090 006572
2091 006572 000403
2092 006574 022626
2093 006576 012637 000004
2094 006602 004737 050244
2095
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2097
2098
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2100
2101
2102 006606 000004
2103 006610 012737 000001 001212
2104 006616 005037 001210
2105 006622 005137 001210
2106
2107
2108
2109
2110
2111 006626 012777 000040 174504
2112 006634 012777 000007 174476
2113 006642 122777 000007 174466
2114 006650 001107
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2119
2120 006652 005701
2121 006654 100417
2122 006656 005737 004122
2123 006662 001406
2124 006664 033777 004130 174470
2125 006672 001410
2126 006674 000137 007230
2127 006700 032777 174000 174454
    
```

```

TYPE ,65$ ;:TYPE ASCIZ STRING
BR 64$ ;:GET OVER THE ASCIZ
::65$: .ASCIZ <15><12>/TESTING FOR AN RH70/
64$:
CLR R1 ;SET UP RH70 FLAG
JMP RH11+6 ;EXIT
RH70TT: MOV @#ERRVEC,-(SP) ;SAVE LOCATION 4
MOV #FAKE70,@#ERRVEC ;REPLACE ADDRESS
MOV #IPCK0!IPCK1!IPCK2!IPCK3!IE3,@RHCS3
JMP RH11+2 ;SET ALL BITS
FAKE70: CMP (SP)+,(SP)+ ;EXIT TEST
MOV (SP)+,@#ERRVEC ;CORRECT STACK
RH70BA: CLR R1 ;CORRECT TIMEOUT
COM R1 ;GET FLAG READY
TYPE ,65$ ;SET FOR RH11
BR 64$ ;:TYPE ASCIZ STRING
::65$: .ASCIZ <15><12>/TESTING AN RH11/
64$:
BR ERR1
RH11: CMP (SP)+,(SP)+ ;CORRECT STACK POINTER
MOV (SP)+,@#ERRVEC ;REPLACE TIMEOUT VALUE
ERR1: JSR R7,ERRTST
:*****
:*TEST 2 CLEAR TEST
; *THIS TEST CHECKS THAT ALL
; *ERROR BITS ARE CLEARED AFTER
; *THE CLEAR BIT WAS LOADED INTO
; *RHCS2 REGISTER.....
:*****
TST2: SCOPE
MOV #1,$TIMES ;:DO 1 ITERATION
CLR $TMP5 ;GET READY TO
COM $TMP5 ;SET UP FOR JSR ROUTINE
:*****
; *THIS TEST IS ALSO ENTERED AT THE LABEL CLEAR
; *AT THE END OF ALL THE ERROR BIT TESTS TO SEE
; *THAT A CLEAR WILL CLEAR THE ERROR BIT SET
:*****
CLEAR: MOV #CLR,@RHCS2 ;TELL IT TO CLEAR
MOV #7,@RHCS2 ;SETJP UNIT NO.
CMPB #7,@RHMR2 ;HAS DEVICE BEEN SET TO 7
BNE 1$ ;NO,FIND WHAT BIT WAS NOT SET
:*****
; *THE TEST IS ENTERED HERE IF THE ERROR BIT BEING
; *FORCED SET DID NOT SET TO SEE IF ANY OTHER ERROR
; *BIT DID SET.....
:*****
12$: TST R1 ;IS IT AN 11 OR A 70
BMI 15$ ;IT'S A 70
TST BEFORE ;ARE WE HERE FOR SHORTS
BEQ 14$ ;NO
BIT $CS3,@RHCS3 ;ANY EXTRA ERROR BITS
BEQ 15$ ;NO
JMP 13$ ;WE FOUND AN ERROR
14$: BIT #WCELO!WCEHI!DPELO!DPEHI!APE,@RHCS3
    
```



```

2184 007176 005737 001210          TST      $TMP5          ;IS IT BEING USED AS A SUBROUTINE
2185 007202 001430          BEQ      LEAVE          ;YES
2186 007204 000430          BR       ERR2           ;WAS THERE ANY ERRORS
2187 007206 004737 050044 9$:    JSR      R7,FIND        ;RHST HAS AN ERROR BIT SET
2188 007212 017737 174124 004100  MOV      @RHST,RBUF     ;GET CONTENTS
2189 007220 104075          ERROR    75             ;ERROR IN RHST
2190 007222 004737 046416  JSR      R7,WATBIT      ;TELL WHAT BIT
2191 007226 000676          BR       T8$            ;CONTINUE TEST
2192 007230 004737 050114 13$:    JSR      R7,CS3ERR      ;CLEAR UNWANTED BITS
2193 007234 017737 174122 004100  MOV      @RHCS3,RBUF    ;GET REG. CONTENTS
2194 007242 104176          ERROR    176           ;RHCS3 HAS AN ERROR BIT SET
2195 007244 004737 046416  JSR      R7,WATBIT      ;TELL WHAT BITS
2196 007250 000137 006714  JMP      15$            ;CONT CHECK
2197 007254 000137 006652  JMP      12$            ;START JSR WHYFO
2198 007260 000137 007254  WHYFO:  JMP      -4             ;FIND ERROR BITS SET
2199 007264 000207          LEAVE:   RTS            ;GO BACK TO PROGRAM THAT SENT YOU HERE
2200 007266 004737 050244  ERR2:   JSR      R7,ERRTST
2201
2202  ;*****
2203  ;*TEST 3      THIS TEST SEES IF THE TESTER IS CONNECTED
2204  ;*THIS TEST SEES IF THE DEVICE CODE IS
2205  ;*A 40 TO SAY AN RH SIMULATOR IS ATTACHED
2206  ;*****
2206 007272 000004  TST3:   SCOPE
2207 007274 012777 000040 174036  MOV      #CLR,@RHCS2    ;CLEAR TESTER
2208 007302 012777 000007 174030  MOV      #7,@RHCS2     ;UNIT SEVEN
2209 007310 017737 174042 001172  MOV      @RHDT,$REG4   ;GET DRIVE TYPE
2210 007316 022737 000040 001172  CMP      #40,$REG4     ;IS IT THE TESTER
2211 007324 001401          BEQ      ERR4           ;WAS THERE AN ERROR
2212 007326 104034          ERROR    34            ;TESTER NOT CONNECTED
2213 007330 004737 050244  ERR4:   JSR      R7,ERRTST
2214
2215
2216  ;*****
2217  ;*TEST 4      WC CLEAR TEST
2218  ;*THIS TEST WILL SEE THAT WHEN A CLEAR IS GIVEN
2219  ;*THE WORD COUNT REGISTER REMAINS THE SAME
2220  ;*****
2221 007334 000004  TST4:   SCOPE
2222 007336 012737 000001 001212  MOV      #1,$TIMES     ;;DO 1 ITERATION
2223 007344 012777 177777 173760  MOV      #-1,@RHWC     ;MAKE WC NEGATIVE
2224 007352 022777 177777 173752  CMP      #-1,@RHWC     ;WAS IT LOADED CORRECTLY
2225 007360 001056          BNE      WCERR1        ;NO,ALL BITS DID NOT SET
2226 007362 012777 000040 173750  HERE:   MOV      #CLR,@RHCS2  ;TELL DEVICE TO CLEAR
2227 007370 017737 173734 003420  MOV      @RHCS1,CS1    ;SAVE RHCS1
2228 007376 017737 173730 003444  MOV      @RHWC,WC      ;SAVE WORD COUNT
2229 007404 017737 173724 003414  MOV      @RHBA,BA      ;SAVE BUS ADDRESS
2230 007412 005701          TST      R1            ;IS IT AN RH11
2231 007414 001406          BEQ      87$           ;NO IT'S A 70
2232 007416 005037 003416  CLR      BAE           ;CLEAR BAE
2233 007422 005037 003424  CLR      CS3           ;CLEAR CS3
2234 007426 000137 007446  JMP      86$           ;CONTINUE
2235 007432 017737 173722 003416  87$:   MOV      @RHBAE,BAE    ;SAVE BUS ADDRESS EXTENSION
2236 007440 017737 173716 003424  MOV      @RHCS3,CS3    ;SAVE RHCS3
2237 007446 017737 173666 003422  86$:   MOV      @RHCS2,CS2    ;SAVE CS2
2238 007454 017737 173662 003432  MOV      @RHST,DS1     ;SAVE TESTER STATUS
2239 007462 017737 173656 003436  MOV      @RHER,ER1     ;SAVE ERROR REGISTER

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2240	007470	017737	173654	003442		MOV	@RHTDB,TDR	:SAVE TESTER DATA REG.
2241	007476	017737	173634	003440		MOV	@RHM2,TC	:SAVE MR2 TESTER REG.
2242	007504	005777	173622			TST	@RHWC	:DID IT CLEAR
2243	007510	001434				BEQ	WCERR2	:YES,CLEAR SHOULD NOT CLEAR WC
2244	007512	000137	007632			JMP	@#DOIT	:GO TO NEXT CHECK
2245	007516	005777	173610		WCERR1:	TST	@RHWC	:DID ANY BITS LOAD
2246	007522	001416				BEQ	1\$	:NO
2247	007524	012737	177777	001162		MOV	#-1,\$REG0	:SAVE WHAT WC SHOULD HAVE BEEN
2248	007532	017737	173574	003444		MOV	@RHWC,WC	:SAVE CONTENTS OF WC
2249	007540	104042				ERROR	42	:ALL BITS DID NOT SET
2250	007542	013737	003444	001200		MOV	WC,\$TMP1	:SETUP FOR WATBIT
2251	007550	004737	046416			JSR	R7,WATBIT	:FIND THE BIT(S)
2252	007554	000137	007362			JMP	@#HERE	:SEE IF BITS SET CLEAR
2253	007560	013737	177777	001162	1\$:	MOV	-1,\$REG0	:SETUP FOR ERROR
2254	007566	017737	173540	003444		MOV	@RHWC,WC	:GET BAD DATA
2255	007574	104043				ERROR	43	:WC DID NOT LOAD ANY BITS
2256	007576	000137	007632			JMP	@#DOIT	:GO TO NEXT REG. TEST
2257	007602	012737	177777	001162	WCERR2:	MOV	#-1,\$REG0	:SETUP GOOD DATA
2258	007610	017737	173516	003444		MOV	@RHWC,WC	:GET BAD DATA
2259	007616	013737	003444	001200		MOV	WC,\$TMP1	:SETUP FOR WATBIT
2260	007624	104044				ERROR	44	:SOME BITS CLEARED IN WC
2261	007626	004737	046416			JSR	R7,WATBIT	:FIND THE BITS THAT CLEARED
2262	007632	004737	006626		DOIT:	JSR	R7,CLEER	:CLEAR ERRORS
2263	007636	004737	050244			JSR	R7,ERRTST	

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2265  
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2271 007642 000004  
2272 007644 012777 177776 173462  
2273 007652 022777 177776 173454  
2274 007660 001066  
2275 007662 012777 000040 173450  
2276 007670 017737 173434 003420  
2277 007676 017737 173430 003444  
2278 007704 017737 173424 003414  
2279 007712 005701  
2280 007714 001406  
2281 007716 005037 003416  
2282 007722 005037 003424  
2283 007726 000137 007746  
2284 007732 017737 173422 003416  
2285 007740 017737 173416 003424  
2286 007746 017737 173366 003422  
2287 007754 017737 173362 003432  
2288 007762 017737 173356 003436  
2289 007770 017737 173354 003442  
2290 007776 017737 173334 003440  
2291 010004 005777 173324  
2292 010010 001421  
2293 010012 005037 001162  
2294 010016 017737 173312 001200  
2295 010024 104045  
2296 010026 004737 046416  
2297 010032 000137 010054  
2298 010036 012737 177776 001162  
2299 010044 017737 173264 001200  
2300 010052 104046  
2301 010054  
2302 010054 004737 006626  
2303 010060 004737 050244  
2304  
2305  
2306  
2307  
2308  
2309 010064 000004  
2310 010066 005701  
2311 010070 100510  
2312 010072 012777 000077 173260  
2313 010100 022777 000077 173252  
2314 010106 001066  
2315 010110 012777 000040 173222  
2316 010116 017737 173206 003420  
2317 010124 017737 173202 003444  
2318 010132 017737 173176 003414  
2319 010140 005701

\*\*\*\*\*  
:\*TEST 5 RHBA CLEAR TEST

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

\*\*\*\*\*

TST5: SCOPE  
ITDO: MOV #-2,@RHBA ;SET ALL BITS IN RHBA  
CMP #-2,@RHBA ;ARE THEY ALL SET  
BNE 1\$ ;ALL THE BITS DID NOT SET  
MOV #CLR,@RHCS2 ;TELL IT TO CLEAR  
MOV @RHCS1,CS1 ;SAVE RHCS1  
MOV @RHWC,WC ;SAVE WORD COUNT  
MOV @RHBA,BA ;SAVE BUS ADDRESS  
TST R1 ;IS IT AN RH11  
BEQ 87\$ ;NO IT'S A 70  
CLR BAE ;CLEAR BAE  
CLR CS3 ;CLEAR CS3  
JMP 86\$ ;CONTINUE  
87\$: MOV @RHBAE,BAE ;SAVE BUS ADDRESS EXTENSION  
MOV @RHCS3,CS3 ;SAVE RHCS3  
86\$: MOV @RHCS2,CS2 ;SAVE CS2  
MOV @RHST,DS1 ;SAVE TESTER STATUS  
MOV @RHER,ER1 ;SAVE ERROR REGISTER  
MOV @RHTDB,TDR ;SAVE TESTER DATA REG.  
MOV @RHMR2,TC ;SAVE MR2 TESTER REG.  
TST @RHBA ;IS IT ZERO  
BEQ TOIT ;TEST IS GOOD  
CLR \$REGO ;CREATE GOOD DATA  
MOV @RHBA,\$TMP1 ;SETUP FOR WATBIT  
ERROR 45 ;RHBA DID NOT CLEAR  
JSR R7,WATBIT ;FIND BITS STILL SET  
JMP @TOIT ;GO TO NEXT REG. TEST  
1\$: MOV #-2,\$REGO ;SETUP GOOD DATA  
MOV @RHBA,\$TMP1 ;SETUP FOR WATBIT  
ERROR 46 ;BITS DID NOT SET IN RHBA  
TOIT: JSR R7,CLEER ;CLEAR ERRORS  
JSR R7,ERRTST

\*\*\*\*\*  
:\*TEST 6 RHBAE CLEAR TEST

:\*THIS TEST CHECKS THAT WHEN A CLEAR IS GENERATED  
:\*THE BUS ADDRESS EXTENSION REGISTER IS CLEARED

\*\*\*\*\*

TST6: SCOPE  
WATFOR: TST R1 ;IS IT A 70 OR AN 11  
BMI TST7 ;:SKIP OVER TEST FOR RH11  
MOV #77,@RHBAE ;SET ALL BITS IN RHBAE  
CMP #77,@RHBAE ;ARE THEY ALL SET  
BNE 1\$ ;ALL THE BITS DID NOT SET  
MOV #CLR,@RHCS2 ;TELL IT TO CLEAR  
MOV @RHCS1,CS1 ;SAVE RHCS1  
MOV @RHWC,WC ;SAVE WORD COUNT  
MOV @RHBA,BA ;SAVE BUS ADDRESS  
TST R1 ;IS IT AN RH11

```
2320 010142 001406 BEQ 87$ :NO IT'S A 70
2321 010144 005037 003416 CLR BAE :CLEAR BAE
2322 010150 005037 003424 CLR CS3 :CLEAR CS3
2323 010154 000137 010174 JMP 86$ :CONTINUE
2324 010160 017737 173174 003416 87$: MOV @RHBAE,BAE :SAVE BUS ADDRESS EXTENSION
2325 010166 017737 173170 003424 MOV @RHCS3,CS3 :SAVE RHCS3
2326 010174 017737 173140 003422 86$: MOV @RHCS2,CS2 :SAVE CS2
2327 010202 017737 173134 003432 MOV @RHST,DS1 :SAVE TESTER STATUS
2328 010210 017737 173130 003436 MOV @RHER,ER1 :SAVE ERROR REGISTER
2329 010216 017737 173126 003442 MOV @RHTDB,TDR :SAVE TESTER DATA REG.
2330 010224 017737 173106 003440 MOV @RHMR2,TC :SAVE MR2 TESTER REG.
2331 010232 005777 173122 TST @RHBAE :IS IT ZERO
2332 010236 001421 BEQ WATFIV :TEST IS GOOD
2333 010240 005037 001162 CLR $REGO :CREATE GOOD DATA
2334 010244 017737 173110 001200 MOV @RHBAE,$TMP1 :SETUP FOR WATBIT
2335 010252 104100 ERROR 100 :RHBAE DID NOT CLEAR
2336 010254 004737 046416 JSR R7,WATBIT :FIND BITS STILL SET
2337 010260 000137 010302 JMP @WATFIV :GO TO NEXT REG. TEST
2338 010264 012737 000077 001162 1$: MOV #77,$REGO :SETUP GOOD DATA
2339 010272 017737 173062 001200 MOV @RHBAE,$TMP1 :SETUP FOR WATBIT
2340 010300 104101 ERROR 101 :BITS DID NOT SET IN RHBAE
2341 010302 WATFIV: JSR R7,CLEER :CLEAR ERRORS
2342 010302 004737 006626 JSR R7,ERRTST
2343 010306 004737 050244
2344 *****
2345 :*TEST 7 RHDB CLEAR TEST
2346 :*THIS TEST CHECKS THAT WHEN A CLEAR IS GENERATED
2347 :*OUTPUT READY IS NEGATED
2348 *****
2349 TST7: SCOPE
2350 010312 000004 MOV #-1,@RHDB :SET ALL BITS IN RHDB
2351 010314 012777 177777 173030 CLR BITCNT :CLEAR BIT COUNTER
2352 010322 005037 003446 BIT #OR,@RHCS2 :IS OR SET
2353 010326 032777 000200 173004 18$: BNE DBMG :BIT IS SET
2354 010334 001015 INC BITCNT :COUNT UP
2355 010336 005237 003446 BNE 18$ :NOT FINISHED COUNTING
2356 010342 001371 CLR BITCNT :GET READY TO DO IT AGAIN
2357 010344 005037 003446 BIT #OR,@RHCS2 :IS IT SET YET?
2358 010350 032777 000200 172762 19$: BNE DBMG :YES
2359 010356 001004 INC BITCNT :COUNT UP
2360 010360 005237 003446 BEQ DBMG :BIT IS NOT GOING TO SET
2361 010364 001401 BR 19$
2362 010366 000770 DBMG:
2363 010370 017737 172734 003420 MOV @RHCS1,CS1 :SAVE RHCS1
2364 010376 017737 172730 003444 MOV @RHWC,WC :SAVE WORD COUNT
2365 010404 017737 172724 003414 MOV @RHBA,BA :SAVE BUS ADDRESS
2366 010412 005701 TST R1 :IS IT AN RH11
2367 010414 001406 BEQ 87$ :NO IT'S A 70
2368 010416 005037 003416 CLR BAE :CLEAR BAE
2369 010422 005037 003424 CLR CS3 :CLEAR CS3
2370 010426 000137 010446 JMP 86$ :CONTINUE
2371 010432 017737 172722 003416 87$: MOV @RHBAE,BAE :SAVE BUS ADDRESS EXTENSION
2372 010440 017737 172716 003424 MOV @RHCS3,CS3 :SAVE RHCS3
2373 010446 017737 172666 003422 86$: MOV @RHCS2,CS2 :SAVE CS2
2374 010454 017737 172662 003432 MOV @RHST,DS1 :SAVE TESTER STATUS
2375 010462 017737 172656 003436 MOV @RHER,ER1 :SAVE ERROR REGISTER
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2376 010470 017737 172654 003442      MOV      @RHTDB,TDR      :SAVE TESTER DATA REG.
2377 010476 017737 172634 003440      MOV      @RHMR2,TC      :SAVE MR2 TESTER REG.
2378 010504 032777 000200 172626      BIT      #OR,@RHCS2     :IS OUTPUT READY SET
2379 010512 001001                BNE      HURTS          :YES,CONTINUE TEST
2380 010514 104041                ERROR    41            :OUTPUT READY DID NOT SET
2381 010516 022777 177777 172626 HURTS:  CMP      #-1,@RHDB   :DID INFO GET LOADED TO DB
2382 010524 005037 003446                CLR      BITCNT        :CLEAR BIT COUNTER
2383 010530 032777 000200 172602 18$:   BIT      #OR,@RHCS2     :IS OR SET
2384 010536 001015                BNE      DBMSG         :BIT IS SET
2385 010540 005237 003446                INC      BITCNT        :COUNT UP
2386 010544 001371                BNE      18$          :NOT FINISHED COUNTING
2387 010546 005037 003446                CLR      BITCNT        :GET READY TO DO IT AGAIN
2388 010552 032777 000200 172560 19$:   BIT      #OR,@RHCS2     :IS IT SET YET?
2389 010560 001004                BNE      DBMSG         :YES
2390 010562 005237 003446                INC      BITCNT        :COUNT UP
2391 010566 001401                BEQ      DBMSG         :BIT IS NOT GOING TO SET
2392 010570 000770                BR       19$
2393 010572                DBMSG:
2394 010572 012777 000040 172540      MOV      #CLR,@RHCS2    :TELL IT TO CLEAR
2395 010600 005037 003446                CLR      BITCNT        :CLEAR THE COUNTER
2396 010604 032777 000200 172526 18$:   BIT      #OR,@RHCS2     :DID OUTPUT READY CLEAR
2397 010612 001403                BEQ      SNAFOO        :YES GET OUT OF LOOP
2398 010614 005237 003446                INC      BITCNT        :INCREMENT COUNT LOOP
2399 010620 001371                BNE      18$          :CONTINUE LOOP IF NO CARRY
2400 010622 032777 000200 172510 SNAFOO: BIT      #OR,@RHCS2     :IS OUTPUT READY CLEARED
2401 010630 001403                BEQ      1$           :YES,EXIT TEST
2402 010632 104114                ERROR    114          :OUTPUT READY NOT CLEARED
2403                :BY SETTING CLR IN RHCS2
2404 010634 004737 007260                JSR      R7,WHYFO      :ANY ERROR BITS SET
2405 010640 004737 006626 1$:     JSR      R7,CLEER      :CLEAR ERRORS
2406 010644 004737 050244                JSR      R7,ERRTST
2407                :*****
2408                :*TEST 10      PROM REGISTER DECODE TEST
2409                :*THIS TEST CHECKS THAT THE PROM
2410                :*CAN ACCESS ALL REGISTERS
2411                :*****
2412 010650 000004                TST10: SCOPE
2413 010652 023727 003366 160100      CMP      DEVIC1,#160100 :CHECK FOR WHAT REG END
2414 010660 001000                BNE      1$           :WE ARE OK
2415 010662 013704 003356 1$:     MOV      RHDT,R4        :SETUP TO TEST RH11
2416 010666 005724                TST      (R4)+         :CORRECT ADDRESS
2417 010670 023704 003360                CMP      RHBAE,R4      :ARE ALL REGISTERS CHECKED
2418 010674 001526                BEQ      ERR3         :WERE THERE ANY ERRORS
2419 010676 005724 2$:     TST      (R4)+         :TEST REGISTER
2420 010700 001004                BNE      3$           :SOME INFORMATION WAS FOUND
2421 010702 023704 003360                CMP      RHBAE,R4      :ARE ALL REGISTERS CHECKED
2422 010706 001521                BEQ      ERR3         :WAS THERE ANY ERRORS
2423 010710 000772                BR       2$           :TEST NOT COMPLETED
2424 010712 005744 3$:     TST      -(R4)        :CORRECT ADDRESS
2425 010714 010437 003416                MOV      R4,BAE        :SAVE ADDRESS
2426 010720 011437 001162                MOV      (R4),$REGO    :GET CONTENTS
2427 010724 017737 172416 003412      MOV      @RHAS,AS      :GET ATTENTION SUMMARY
2428 010732 104052                ERROR    52            :FALSE INFO IN FAKE REGISTER
2429 010734 005003                CLR      R3           :GET OFFSET READY
2430 010736 013737 003330 003420      MOV      RHCS1,CS1     :GET ADDRESS TO START CHECKING
2431 010744 027737 172450 001162 29$:   CMP      @CS1,$REGO    :HAS A REGISTER BEEN FOUND THAT COMPARES

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2432 010752 001412          BEQ      28$          ;YES,PRINT IT OUT
2433 010754 023737 003356 003420 30$:  CMP      RHD,CS1    ;IS IT LAST REG IN RH11
2434 010762 001473          BEQ      ERR3        ;WAS THERE ANY ERRORS
2435 010764 062737 000002 003420    ADD      #TWO,CS1    ;NO,CORRECT FOR NEXT CHECK
2436 010772 062703 000004          ADD      #4,R3       ;CORRECT OFFSET
2437 010776 000762          BR       29$         ;CONTINUE TEST
2438 011000 032737 020000 177570 28$:  BIT      #SW13,@#177570 ;SKIP ERROR PRINTOUT
2439 011006 001024          BNE     55$         ;SKIP MESSAGE
2440 011010 104401 011016          TYPE    ,65$        ;:TYPE ASCIZ STRING
2441 011014 000421          BR      64$         ;:GET OVER THE ASCIZ
2442          ;:65$: .ASCIZ <15><12>/REGISTER CONTENTS COMPARES TO:/
2443          64$:
2444 011060 000163 011064          JMP     27$(R3)     ;PRINT REGISTER
2445 011064 104053          ERROR   53         ;RHCS1
2446 011066 000732          BR     30$         ;CONTINUE TEST
2447 011070 104054          ERROR   54         ;RHC
2448 011072 000730          BR     30$         ;CONTINUE TEST
2449 011074 104055          ERROR   55         ;RHBA
2450 011076 000726          BR     30$         ;CONTINUE TEST
2451 011100 104056          ERROR   56         ;RHMR2
2452 011102 000724          BR     30$         ;CONTINUE TEST
2453 011104 104057          ERROR   57         ;RHCS2
2454 011106 000722          BR     30$         ;CONTINUE TEST
2455 011110 104060          ERROR   60         ;RHST
2456 011112 000720          BR     30$         ;CONTINUE TEST
2457 011114 104061          ERROR   61         ;RHER
2458 011116 000716          BR     30$         ;CONTINUE TEST
2459 011120 104062          ERROR   62         ;RHAS
2460 011122 000714          BR     30$         ;CONTINUE TEST
2461 011124 104063          ERROR   63         ;RHTDB
2462 011126 000712          BR     30$         ;CONTINUE TEST
2463 011130 104064          ERROR   64         ;RHDB
2464 011132 000710          BR     30$         ;CONTINUE TEST
2465 011134 104065          ERROR   65         ;RHMR1
2466 011136 000706          BR     30$         ;CONTINUE TEST
2467 011140 104066          ERROR   66         ;RHDT
2468 011142 000704          BR     30$         ;CONTINUE TEST
2469 011144 104067          ERROR   67         ;RHBAE
2470 011146 000702          BR     30$         ;CONTINUE TEST
2471 011150 104070          ERROR   70         ;RHCS3
2472 011152 004737 050244  ERR3:  JSR     R7,ERRTST
2473 011156 004737 006626          JSR     R7,CLEER   ;CLEAR ERRORS
2474
2475          ;:*****
2476          ;*TEST 11      RHCS3 TEST
2477          ;*THIS TEST CHECKS THE READ/WRITE BITS
2478          ;*IN THE RHCS3 REGISTER CAN BE CLEARED AND SET.
2479          ;:*****
2480 011162 000004          TST11: SCOPE
2481 011164 012777 000040 172146    MOV     #CLR,@RHCS2 ;CLEAR TESTER
2482 011172 012777 000007 172140    MOV     #7,@RHCS2  ;SETUP UNIT SEVEN
2483 011200 005701          TST     R1         ;IS IT AN RH70
2484 011202 001122          BNE     TST12      ;:THIS IS A RH11
2485 011204 012737 000004 003450    MOV     #4,LOOCNT  ;SETUP LOOP COUT OF FOUR
2486 011212 012737 000001 001162    MOV     #1,$REGO   ;SETUP BIT TO BE TESTED
2487 011220 013777 001162 172134    MOV     $REGO,@RHCS3 ;SET THE BIT
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2488 011226 017737 172130 003424 MOV @RHCS3,CS3 ;SAVE CONTENTS OF RHCS3
2489 011234 013737 003424 001200 MOV CS3,$TMP1 ;SETUP FOR WHAT BIT IF NEEDED
2490 011242 123777 001162 172112 CMPB $REGO,@RHCS3 ;IS THE BIT SET?
2491 011250 001022 BNE 2$ ;NO,GO TO ERROR
2492 011252 006137 001162 ROL $REGO ;SETUP TO TEST NEXT BIT
2493 011256 005337 003450 DEC LOOCNT ;-1 TO THE LOOP COUNT
2494 011262 001356 BNE 1$ ;TEST NEXT BIT
2495 011264 012737 000100 001162 MOV #IE3,$REGO ;SET INTERRUPT BIT
2496 011272 013777 001162 172062 MOV $REGO,@RHCS3 ;SET BIT
2497 011300 017737 172056 003424 MOV @RHCS3,CS3 ;SAVE CONTENTS
2498 011306 023777 001162 172046 CMP $REGO,@RHCS3 ;IS BIT SET?
2499 011314 001451 BEQ ERR5 ;WAS THERE AN ERROR
2500 011316
2501 011316 017737 172006 003420 2$: MOV @RHCS1,CS1 ;SAVE RHCS1
2502 011324 017737 172002 003444 MOV @RHWC,WC ;SAVE WORD COUNT
2503 011332 017737 171776 003414 MOV @RHBA,BA ;SAVE BUS ADDRESS
2504 011340 005701 TST R1 ;IS IT AN RH11
2505 011342 001406 BEQ 87$ ;NO IT'S A 70
2506 011344 005037 003416 CLR BAE ;CLEAR BAE
2507 011350 005037 003424 CLR CS3 ;CLEAR CS3
2508 011354 000137 011374 JMP 86$ ;CONTINUE
2509 011360 017737 171774 003416 87$: MOV @RHBAE,BAE ;SAVE BUS ADDRESS EXTENSION
2510 011366 017737 171770 003424 MOV @RHCS3,CS3 ;SAVE RHCS3
2511 011374 017737 171740 003422 86$: MOV @RHCS2,CS2 ;SAVE CS2
2512 011402 017737 171734 003432 MOV @RHST,DS1 ;SAVE TESTER STATUS
2513 011410 017737 171730 003436 MOV @RHER,ER1 ;SAVE ERROR REGISTER
2514 011416 017737 171726 003442 MOV @RHTDB,TDR ;SAVE TESTER DATA REG.
2515 011424 017737 171706 003440 MOV @RHMR2,TC ;SAVE MR2 TESTER REG.
2516 011432 104035 ERROR 35 ;BIT DID NOT SET
2517 011434 004737 046416 JSR R7,WATBIT ;TELL WHAT BIT POSITION IS NO GOOD
2518 011440 004737 050244 ERR5: JSR R7,ERRTST
2519 011444 004737 006626 JSR R7,CLEER ;CLEAR ERRORS
2520
2521
2522 :*****
2523 :*TEST 12 RHWC BIT TEST
2524 :*THIS TEST CHECKS THE WORD COUNT REGISTER
2525 :*TO SEE IF ALL BITS CAN BE SET AND CLEARED
2526 :*AND CHECKS THE REGISTER USING ALTERNATE BITS
2527 :*SET (52525) AND USING (125252) TO MAKE SURE
2528 :*IT WORKS WITH ALTERNATE PATTERN.
2529 :*****
2529 011450 000004 TST12: SCOPE
2530 011452 012737 000001 001162 MOV #ONE,$REGO ;SET UP REFERANCE WORD
2531 011460 013777 001162 171644 RHWCT: MOV $REGO,@RHWC ;MOVE BIT INTO WORD COUNT REGISTER
2532 011466 023777 001162 171636 CMP $REGO,@RHWC ;IS BIT SET?
2533 011474 001454 BEQ 1$ ;YES,CONTINUE BIT TEST
2534 011476 013737 003444 001200 MOV WC,$TMP1 ;SETUP FOR WATBIT PROG.
2535 011504 004737 046416 JSR R7,WATBIT ;GO TO WATBIT PROGRAM
2536 011510 017737 171614 003420 MOV @RHCS1,CS1 ;SAVE RHCS1
2537 011516 017737 171610 003444 MOV @RHWC,WC ;SAVE WORD COUNT
2538 011524 017737 171604 003414 MOV @RHBA,BA ;SAVE BUS ADDRESS
2539 011532 005701 TST R1 ;IS IT AN RH11
2540 011534 001406 BEQ 87$ ;NO IT'S A 70
2541 011536 005037 003416 CLR BAE ;CLEAR BAE
2542 011542 005037 003424 CLR CS3 ;CLEAR CS3
2543 011546 000137 011566 JMP 86$ ;CONTINUE
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2544 011552 017737 171602 003416 87$: MOV @RHBAE,BAE ;SAVE BUS ADDRESS EXTENSION
2545 011560 017737 171576 003424 MOV @RHCS3,CS3 ;SAVE RHCS3
2546 011566 017737 171546 003422 86$: MOV @RHCS2,CS2 ;SAVE CS2
2547 011574 017737 171542 003432 MOV @RHST,DS1 ;SAVE TESTER STATUS
2548 011602 017737 171536 003436 MOV @RHER,ER1 ;SAVE ERROR REGISTER
2549 011610 017737 171534 003442 MOV @RHTDB,TDR ;SAVE TESTER DATA REG.
2550 011616 017737 171514 003440 MOV @RHMR2,TC ;SAVE MR2 TESTER REG.
2551 011624 104001 ERROR 1 ;BIT WAS NOT SET IN RHWC REG
2552 011626 005737 001162 1$: TST $REGO ;WAS IT BIT 15 THAT WAS LAST TESTED
2553 011632 100403 BMI RHWCA ;YES,GO TO NEXT PART OF TEST
2554 011634 006137 001162 ROL $REGO ;NO,THEN TEST NEXT BIT
2555 011640 000707 BR RHWCT ;DO BIT TEST AGAIN
2556 011642 012737 052525 001162 RHWCA: MOV #AB,$REGO ;SET UP ALTERNATE BIT PATTERN
2557 011650 013777 001162 171454 MOV $REGO,@RHWC ;SET ALTERNATE BITS
2558 011656 017737 171450 003444 MOV @RHWC,WC ;SAVE RHWC CONTENTS
2559 011664 023777 001162 171440 CMP $REGO,@RHWC ;ARE THEY ALL SET?
2560 011672 001457 BEQ 1$ ;YES,CONTINUE TEST
2561 011674 013737 003444 001200 MOV WC,$TMP1 ;SETUP FOR WATBIT PROG.
2562 011702 004737 046416 JSR R7,WATBIT ;GO TO WATBIT PROGRAM
2563 011706 017737 171416 003420 MOV @RHCS1,CS1 ;SAVE RHCS1
2564 011714 017737 171412 003444 MOV @RHWC,WC ;SAVE WORD COUNT
2565 011722 017737 171406 003414 MOV @RHBA,BA ;SAVE BUS ADDRESS
2566 011730 005701 TST R1 ;IS IT AN RH11
2567 011732 001406 BEQ 87$ ;NO IT'S A 70
2568 011734 005037 003416 CLR BAE ;CLEAR BAE
2569 011740 005037 003424 CLR CS3 ;CLEAR CS3
2570 011744 000137 011764 JMP 86$ ;CONTINUE
2571 011750 017737 171404 003416 87$: MOV @RHBAE,BAE ;SAVE BUS ADDRESS EXTENSION
2572 011756 017737 171400 003424 MOV @RHCS3,CS3 ;SAVE RHCS3
2573 011764 017737 171350 003422 86$: MOV @RHCS2,CS2 ;SAVE CS2
2574 011772 017737 171344 003432 MOV @RHST,DS1 ;SAVE TESTER STATUS
2575 012000 017737 171340 003436 MOV @RHER,ER1 ;SAVE ERROR REGISTER
2576 012006 017737 171336 003442 MOV @RHTDB,TDR ;SAVE TESTER DATA REG.
2577 012014 017737 171316 003440 MOV @RHMR2,TC ;SAVE MR2 TESTER REG.
2578 012022 104001 ERROR 1 ;TEST FAILED
2579 012024 012737 125252 001162 MOV #OAB,$REGO ;SET UP ALTERNATE OPPISITE BITS
2580 012032 013777 001162 171272 1$: MOV $REGO,@RHWC ;SET OPPISITE ALTERNATE BITS
2581 012040 017737 171266 003444 MOV @RHWC,WC ;SAVE CONTENTS OF RHWC
2582 012046 023777 001162 171256 CMP $REGO,@RHWC ;ARE CORRECT BITS SET?
2583 012054 001454 BEQ ERR6 ;WAS THERE AN ERROR
2584 012056 013737 003444 001200 MOV WC,$TMP1 ;SETUP FOR WATBIT PROG.
2585 012064 004737 046416 JSR R7,WATBIT ;GO TO WATBIT PROGRAM
2586 012070 GOOF:
2587 012070 017737 171234 003420 MOV @RHCS1,CS1 ;SAVE RHCS1
2588 012076 017737 171230 003444 MOV @RHWC,WC ;SAVE WORD COUNT
2589 012104 017737 171224 003414 MOV @RHBA,BA ;SAVE BUS ADDRESS
2590 012112 005701 TST R1 ;IS IT AN RH11
2591 012114 001406 BEQ 87$ ;NO IT'S A 70
2592 012116 005037 003416 CLR BAE ;CLEAR BAE
2593 012122 005037 003424 CLR CS3 ;CLEAR CS3
2594 012126 000137 012146 JMP 86$ ;CONTINUE
2595 012132 017737 171222 003416 87$: MOV @RHBAE,BAE ;SAVE BUS ADDRESS EXTENSION
2596 012140 017737 171216 003424 MOV @RHCS3,CS3 ;SAVE RHCS3
2597 012146 017737 171166 003422 86$: MOV @RHCS2,CS2 ;SAVE CS2
2598 012154 017737 171162 003432 MOV @RHST,DS1 ;SAVE TESTER STATUS
2599 012162 017737 171156 003436 MOV @RHER,ER1 ;SAVE ERROR REGISTER

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2600 012170 017737 171154 003442      MOV      @RHTDB,TDR      ;SAVE TESTER DATA REG.
2601 012176 017737 171134 003440      MOV      @RHMR2,TC      ;SAVE MR2 TESTER REG.
2602 012204 104001                ERROR      1              ;OPPOSITE BIT TEST FAILED
2603 012206 013737 003332 004142  ERR6:  MOV      RHWC,$RHWC      ;GET READY TO TEST BYTES
2604 012214 012777 000000 171110      MOV      #ZERO,@RHWC    ;CLEAR WC FIRST
2605 012222 113777 004120 171712      MOV      MINUS,@$RHWC   ;CHECK LOBYTE
2606 012230 022777 000377 171074      CMP      #377,@RHWC     ;ANY EXTRA BITS
2607 012236 001401                BEQ      HIBYTE         ;OK SO FAR
2608 012240 104200                ERROR      200         ;HIBYTE GATE NOT WORKING PROPERLY
2609 012242 005237 004142                HIBYTE: INC      $RHWC      ;GET READY FOR NEXT BYTE
2610 012246 012777 000000 171056      MOV      #ZERO,@RHWC    ;CLEAR WC
2611 012254 113777 004121 171660      MOV      MINUS+1,@$RHWC ;CHECK THE HI BYTE
2612 012262 022777 177400 171042      CMP      #177400,@RHWC ;IS IT OK
2613 012270 001401                BEQ      ALRIGT        ;ITS OK
2614 012272 104200                ERROR      200         ;LOBYTE GATE NOT WORKING PROPERLY
2615 012274 004737 050244                ALRIGT: JSR      R7,ERRST
2616 012300 012777 000000 171024      MOV      #ZERO,@RHWC    ;CLEAR WORD COUNT
2617 012306 004737 006626                JSR      R7,CLEER      ;CLEAR ERRORS
2618
2619
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2625
2626 012312 000004                ;*****
2627 012314 005701                ;*TEST 13      RHBAE BIT TEST
2628 012316 001104                ;*THIS TEST TESTS THE RHBAE REGISTER
2629 012320 012737 000001 001162                ;*ONLY IF THE RH IS AN RH70,RH11'S
2630 012326 013777 001162 171024                ;*DO NOT HAVE AN RHBAE REGISTER
2631 012334 017737 171020 003416                ;*****
2632 012342 023777 001162 171010                TST13: SCOPE
2633 012350 001454                TST      R1              ;IS RH AN RH70
2634 012352 013737 003416 001200                BNE      TST14          ;:NO PASS OVER TEST
2635 012360 004737 046416                MOV      #1,$REGO       ;SET UP BIT TEST
2636 012364 017737 170740 003420                BAETST: MOV      $REGO,@RHBAE ;SET BIT IN RHBAE REGISTER
2637 012372 017737 170734 003444                MOV      @RHBAE,BAE     ;SAVE CONTENTS OF RHBAE REGISTER
2638 012400 017737 170730 003414                CMP      $REGO,@RHBAE   ;IS IT SET?
2639 012406 005701                BEQ      1$             ;YES CONTINUE TEST
2640 012410 001406                MOV      BAE,$TMP1      ;SETUP FOR WATBIT PROG.
2641 012412 005037 003416                JSR      R7,WATBIT      ;GO TO WATBIT PROGRAM
2642 012416 005037 003424                MOV      @RHCS1,CS1     ;SAVE RHCS1
2643 012422 000137 012442                MOV      @RHWC,WC       ;SAVE WORD COUNT
2644 012426 017737 170726 003416                MOV      @RHBA,BA      ;SAVE BUS ADDRESS
2645 012434 017737 170722 003424                TST      R1              ;IS IT AN RH11
2646 012442 017737 170672 003422                BEQ      87$           ;NO IT'S A 70
2647 012450 017737 170666 003432                CLR      BAE           ;CLEAR BAE
2648 012456 017737 170662 003436                CLR      CS3           ;CLEAR CS3
2649 012464 017737 170660 003442                JMP      86$           ;CONTINUE
2650 012472 017737 170640 003440                87$:  MOV      @RHBAE,BAE ;SAVE BUS ADDRESS EXTENSION
2651 012500 104002                MOV      @RHCS3,CS3    ;SAVE RHCS3
2652 012502 022737 000040 001162                86$:  MOV      @RHCS2,CS2    ;SAVE CS2
2653 012510 001403                MOV      @RHST,DS1     ;SAVE TESTER STATUS
2654 012512 006137 001162                MOV      @RHER,ER1     ;SAVE ERROR REGISTER
2655 012516 000703                MOV      @RHTDB,TDR    ;SAVE TESTER DATA REG.
                                MOV      @RHMR2,TC      ;SAVE MR2 TESTER REG.
                                ERROR      2              ;BIT DID NIT SET
                                1$:  CMP      #40,$REGO     ;IS IT LAST BIT TO BE TESTED
                                BEQ      ERR7              ;WAS THERE AN ERROR
                                ROL      $REGO           ;NO,SET UP FOR NEXT BIT
                                BR       BAETST          ;CONTINUE TEST
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2656 012520 004737 006626  
2657 012524 004737 050244  
2658  
2659  
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2661  
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2666  
2667  
2668 012530 000004  
2669  
2670 012532 012737 000002 001162  
2671 012540 013777 001162 170566  
2672 012546 017737 170562 003414  
2673 012554 023777 001162 170552  
2674 012562 001454  
2675 012564 013737 003414 001200  
2676 012572 017737 170532 003420  
2677 012600 017737 170526 003444  
2678 012606 017737 170522 003414  
2679 012614 005701  
2680 012616 001406  
2681 012620 005037 003416  
2682 012624 005037 003424  
2683 012630 000137 012650  
2684 012634 017737 170520 003416  
2685 012642 017737 170514 003424  
2686 012650 017737 170464 003422  
2687 012656 017737 170460 003432  
2688 012664 017737 170454 003436  
2689 012672 017737 170452 003442  
2690 012700 017737 170432 003440  
2691 012706 104003  
2692 012710 004737 046416  
2693 012714 005737 001162  
2694 012720 100403  
2695 012722 006137 001162  
2696 012726 000704  
2697 012730 012737 052525 001162  
2698 012736 042737 000001 001162  
2699 012744 013777 001162 170362  
2700 012752 017737 170356 003414  
2701 012760 023777 001162 170346  
2702 012766 001454  
2703 012770 013737 003414 001200  
2704 012776 017737 170326 003420  
2705 013004 017737 170322 003444  
2706 013012 017737 170316 003414  
2707 013020 005701  
2708 013022 001406  
2709 013024 005037 003416  
2710 013030 005037 003424  
2711 013034 000137 013054

ERR7: JSR R7,CLEER ;CLEAR ERRORS  
JSR R7,ERRTST

\*\*\*\*\*  
\*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).  
\*\*\*\*\*

TST14: SCOPE

BATST: MOV #TWO,\$REGO ;SET UP BIT TEST  
MOV \$REGO,@RHBA ;SET BIT IN RHBA REGISTER  
MOV @RHBA,BA ;SAVE CONTENTS OF BA REGISTER  
CMP \$REGO,@RHBA ;ARE CORRECT BITS SET  
BEQ 1\$ ;YES,CONTINUE TEST  
MOV BA,\$TMP1 ;SETUP FOR WATBIT PROG.  
MOV @RHCS1,CS1 ;SAVE RHCS1  
MOV @RHWC,WC ;SAVE WORD COUNT  
MOV @RHBA,BA ;SAVE BUS ADDRESS  
TST R1 ;IS IT AN RH11  
BEQ 87\$ ;NO IT'S A 70  
CLR BAE ;CLEAR BAE  
CLR CS3 ;CLEAR CS3  
JMP 86\$ ;CONTINUE  
87\$: MOV @RHBAE,BAE ;SAVE BUS ADDRESS EXTENSION  
MOV @RHCS3,CS3 ;SAVE RHCS3  
86\$: MOV @RHCS2,CS2 ;SAVE CS2  
MOV @RHST,DS1 ;SAVE TESTER STATUS  
MOV @RHER,ER1 ;SAVE ERROR REGISTER  
MOV @RHTDB,TDR ;SAVE TESTER DATA REG.  
MOV @RHMR2,TC ;SAVE MR2 TESTER REG..  
ERROR 3 ;NO,CORRECT BITS ARE NOT SET  
JSR R7,WATBIT ;GO TO WATBIT PROGRAM  
1\$: TST \$REGO ;WAS BIT 15 THE LAST BIT TESTED  
BMI BATSTA ;YES,GO TO ALTERNATE BIT TEST  
ROL \$REGO ;NO,SET UP TO TEST NEXT BIT  
BR BATST ;CONTINUE BIT TEST  
BATSTA: MOV #AB,\$REGO ;SET UP BIT PATTERN  
BIC #ONE,\$REGO ;CLEAR BIT 0 POSITION  
MOV \$REGO,@RHBA ;SET BITS IN RHBA REGISTER  
MOV @RHBA,BA ;SAVE CONTENTS OF BA REGISTER  
CMP \$REGO,@RHBA ;ARE CORRECT BITS SET  
BEQ 1\$ ;YES,CONTINUE TEST  
MOV BA,\$TMP1 ;SETUP FOR WATBIT PROG.  
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

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

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2760
2761
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2769 013400 000004
2770
2771
2772 013402 005037 003450 CLR LOOCNT ;CLEAR LOOP COUNT
2773 013406 012737 000001 001162 MOV #ONE,$REGO ;SET UP BIT TEST
2774 013414 013777 001162 167730 DBTST: MOV $REGO,@RHDB ;SET BIT IN RHDB REGISTER
2775 013422 005037 003446 CLR BITCNT ;CLEAR BIT COUNTER
2776 013426 032777 000200 167674 18$: BIT #RDY,@RHCS1 ;IS RDY SET
2777 013434 001015 BNE ABLE ;BIT IS SET
2778 013436 005237 003446 INC BITCNT ;COUNT UP
2779 013442 001371 BNE 18$ ;NOT FINISHED COUNTING
2780 013444 005037 003446 CLR BITCNT ;GET READY TO DO IT AGAIN
2781 013450 032777 000200 167652 19$: BIT #RDY,@RHCS1 ;IS IT SET YET?
2782 013456 001004 BNE ABLE ;YES
2783 013460 005237 003446 INC BITCNT ;COUNT UP
2784 013464 001401 BEQ ABLE ;BIT IS NOT GOING TO SET
2785 013466 000770 BR 19$
2786 013470
2787 013470 017737 167634 003420 ABLE: MOV @RHCS1,CS1 ;SAVE RHCS1
2788 013476 017737 167630 003444 MOV @RHWC,WC ;SAVE WORD COUNT
2789 013504 017737 167624 003414 MOV @RHBA,BA ;SAVE BUS ADDRESS
2790 013512 005701 TST R1 ;IS IT AN RH11
2791 013514 001406 BEQ 87$ ;NO IT'S A 70
2792 013516 005037 003416 CLR EIAE ;CLEAR BAE
2793 013522 005037 003424 CLR CS3 ;CLEAR CS3
2794 013526 000137 013546 JMP 86$ ;CONTINUE
2795 013532 017737 167622 003416 87$: MOV @RHBAE,BAE ;SAVE BUS ADDRESS EXTENSION
2796 013540 017737 167616 003424 MOV @RHCS3,CS3 ;SAVE RHCS3
2797 013546 017737 167566 003422 86$: MOV @RHCS2,CS2 ;SAVE CS2
2798 013554 017737 167562 003432 MOV @RHST,DS1 ;SAVE TESTER STATUS
2799 013562 017737 167556 003436 MOV @RHER,ER1 ;SAVE ERROR REGISTER
2800 013570 017737 167554 003442 MOV @RHTDB,TDR ;SAVE TESTER DATA REG.
2801 013576 017737 167534 003440 MOV @RHMR2,TC ;SAVE MR2 TESTER REG.
2802 013604 032777 000200 167516 BIT #RDY,@RHCS1 ;IS READY SET
2803 013612 001003 BNE RDYSET ;SKIP ERROR
2804 013614 104102 ERROR 102 ;READY DID NOT SET
2805 013616 004737 007260 JSR R7,WHYFO ;ANY ERRORS SET
2806 013622 032777 000200 167510 RDYSET: BIT #OR,@RHCS2 ;IS OR SET?
2807 013630 001004 BNE ORSET ;YES,IT'S SET
2808 013632 017737 167514 003426 MOV @RHDB,DB ;SAVE CONTENTS OF RHDB REGISTER
2809 013640 104041 ERROR 41 ;OUTPUT READY DID NOT SET
2810 013642 017737 167504 003426 ORSET: MOV @RHDB,DB ;SAVE CONTENTS OF REGISTER
2811 013650 023737 001162 003426 CMP $REGO,DB ;IS CORRECT BIT SET?
2812 013656 001406 BEQ 1$ ;YES,CONTINUE TEST
2813 013660 013737 003426 001200 MOV DB,$TMP1 ;SETUP FOR WATBIT PROG.
2814 013666 104004 ERROR 4 ;NO,CORRECT BIT IS NOT SET
2815 013670 004737 046416 JSR R7,WATBIT ;GO TO WATBIT PROGRAM

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2816	013674	005737	001162		1\$:	TST	\$REGO	:	WAS BIT 15 THE LAST BIT TESTED
2817	013700	100415				BMI	DBTSTA	:	YES, GO TO ALTERNATE BIT PATTERN TEST
2818	013702	022737	000001	003450		CMP	#ONE, LOOCNT	:	IS IT FIRST TIME
2819	013710	001404				BEQ	2\$	:	NO, IT'S SECOND
2820	013712	005237	003450			INC	LOOCNT	:	YES
2821	013716	000137	013414			JMP	DBTST	:	CONTINUE TEST
2822	013722	005037	003450		2\$:	CLR	LOOCNT	:	CLEAR LOOP COUNT
2823	013726	006137	001162			ROL	\$REGO	:	NO, SET UP TO TEST NEXT BIT
2824	013732	000630				BR	DBTST	:	GO AND TEST BIT
2825	013734	022737	000001	003450	DBTSTA:	CMP	#ONE, LOOCNT	:	IS IT FIRST TIME
2826	013742	001404				BEQ	1\$	:	NO
2827	013744	005237	003450			INC	LOOCNT	:	INCREMENT LOOP COUNTER
2828	013750	000137	013414			JMP	DBTST	:	DO AGAIN
2829	013754	012737	052525	001162	1\$:	MOV	#AB, \$REGO	:	SET UP BIT PATTERN TEST
2830	013762	013777	001162	167362		MOV	\$REGO, @RHDB	:	SET BITS IN REGISTER
2831	013770	005037	003446			CLR	BITCNT	:	CLEAR BIT COUNTER
2832	013774	032777	000200	167336	18\$:	BIT	#OR, @RHCS2	:	IS OR SET
2833	014002	001015				BNE	DBOUT	:	BIT IS SET
2834	014004	005237	003446			INC	BITCNT	:	COUNT UP
2835	014010	001371				BNE	18\$	:	NOT FINISHED COUNTING
2836	014012	005037	003446			CLR	BITCNT	:	GET READY TO DO IT AGAIN
2837	014016	032777	000200	167314	19\$:	BIT	#OR, @RHCS2	:	IS IT SET YET?
2838	014024	001004				BNE	DBOUT	:	YES
2839	014026	005237	003446			INC	BITCNT	:	COUNT UP
2840	014032	001401				BEQ	DBOUT	:	BIT IS NOT GOING TO SET
2841	014034	000770				BR	19\$	:	
2842	014036				DBOUT:			:	
2843	014036	017737	167266	003420		MOV	@RHCS1, CS1	:	SAVE RHCS1
2844	014044	017737	167262	003444		MOV	@RHWC, WC	:	SAVE WORD COUNT
2845	014052	017737	167256	003414		MOV	@RHBA, BA	:	SAVE BUS ADDRESS
2846	014060	005701				TST	R1	:	IS IT AN RH11
2847	014062	001406				BEQ	87\$	:	NO IT'S A 70
2848	014064	005037	003416			CLR	BAE	:	CLEAR BAE
2849	014070	005037	003424			CLR	CS3	:	CLEAR CS3
2850	014074	000137	014114			JMP	86\$	:	CONTINUE
2851	014100	017737	167254	003416	87\$:	MOV	@RHBAE, BAE	:	SAVE BUS ADDRESS EXTENSION
2852	014106	017737	167250	003424		MOV	@RHCS3, CS3	:	SAVE RHCS3
2853	014114	017737	167220	003422	86\$:	MOV	@RHCS2, CS2	:	SAVE CS2
2854	014122	017737	167214	003432		MOV	@RHST, DS1	:	SAVE TESTER STATUS
2855	014130	017737	167210	003436		MOV	@RHER, ER1	:	SAVE ERROR REGISTER
2856	014136	017737	167206	003442		MOV	@RHTDB, TDR	:	SAVE TESTER DATA REG.
2857	014144	017737	167166	003440		MOV	@RMR2, TC	:	SAVE MR2 TESTER REG.
2858	014152	032777	000200	167160		BIT	#OR, @RHCS2	:	IS OUTPUT READY ?
2859	014160	001001				BNE	2\$	:	YES CONTINUE TEST
2860	014162	104041				ERROR	41	:	OUTPUT READY DID NOT SET
2861	014164	023777	001162	167160	2\$:	CMP	\$REGO, @RHDB	:	ARE CORRECT BITS SET?
2862	014172	001411				BEQ	1\$	:	YES, CONTINUE TESTS
2863	014174	017737	167152	003426		MOV	@RHDB, DB	:	SAVE CONTENTS OF REGISTER
2864	014202	013737	003426	001200		MOV	DB, \$TMP1	:	SETUP FOR WATBIT TEST
2865	014210	104004				ERROR	4	:	NO, CORRECT BITS ARE NOT SET
2866	014212	004737	046416			JSR	R7, WATBIT	:	GO TO WATBIT PROGRAM
2867	014216	012737	125252	001162	1\$:	MOV	#OAB, \$REGO	:	SET UP OPPOSITE ALTERNATE BIT PATTERN TEST
2868	014224	013777	001162	167120		MOV	\$REGO, @RHDB	:	SET BITS IN REGISTER
2869	014232	005037	003446			CLR	BITCNT	:	CLEAR BIT COUNTER
2870	014236	032777	000200	167074	18\$:	BIT	#OR, @RHCS2	:	IS OR SET
2871	014244	001015				BNE	OABTST	:	BIT IS SET



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2872 014246 005237 003446      INC      BITCNT      :COUNT UP
2873 014252 001371              BNE      18$         :NOT FINISHED COUNTING
2874 014254 005037 003446      CLR      BITCNT      :GET READY TO DO IT AGAIN
2875 014260 032777 000200 167052 19$:  BIT      #OR,@RHCS2  :IS IT SET YET?
2876 014266 001004              BNE      OABTST      :YES
2877 014270 005237 003446      INC      BITCNT      :COUNT UP
2878 014274 001401              BEQ      OABTST      :BIT IS NOT GOING TO SET
2879 014276 000770              BR       19$
2880 014300              OABTST:
2881 014300              MYSTIC:
2882 014300 017737 167024 003420      MOV      @RHCS1,CS1  :SAVE RHCS1
2883 014306 017737 167020 003444      MOV      @RHWC,WC    :SAVE WORD COUNT
2884 014314 017737 167014 003414      MOV      @RHBA,BA    :SAVE BUS ADDRESS
2885 014322 005701              TST      R1          :IS IT AN RH11
2886 014324 001406              BEQ      87$         :NO IT'S A 70
2887 014326 005037 003416      CLR      BAE         :CLEAR BAE
2888 014332 005037 003424      CLR      CS3        :CLEAR CS3
2889 014336 000137 014356              JMP      86$         :CONTINUE
2890 014342 017737 167012 003416 87$:  MOV      @RHBAE,BAE   :SAVE BUS ADDRESS EXTENSION
2891 014350 017737 167006 003424      MOV      @RHCS3,CS3  :SAVE RHCS3
2892 014356 017737 166756 003422 86$:  MOV      @RHCS2,CS2  :SAVE CS2
2893 014364 017737 166752 003432      MOV      @RHST,DS1   :SAVE TESTER STATUS
2894 014372 017737 166746 003436      MOV      @RHER,ER1   :SAVE ERROR REGISTER
2895 014400 017737 166744 003442      MOV      @RHTDB,TDR  :SAVE TESTER DATA REG.
2896 014406 017737 166724 003440      MOV      @RHMR2,TC   :SAVE MR2 TESTER REG.
2897 014414 032777 000200 166716      BIT      #OR,@RHCS2  :IS OUTPUT READY SET
2898 014422 001001              BNE      2$         :YES
2899 014424 104041              ERROR    41         :OUTPUT READY DID NOT SET
2900 014426 017737 166720 003426 2$:  MOV      @RHDB,DB    :SAVE CONTENTS OF REGISTER
2901 014434 023737 001162 003426      CMP      $REG0,DB    :ARE CORRECT BITS SET?
2902 014442 001406              BEQ      ERR11       :WAS THERE AN ERROR
2903 014444 013737 003426 001200      MOV      DB,$TMP1    :SETUP FOR WATBIT PROG.
2904 014452 104004              ERROR    4          :CORRECT BITS ARE NOT SET
2905 014454 004737 046416      JSR      R7,WATBIT   :GO TO WATBIT PROGRAM
2906 014460 004737 006626      ERR11: JSR      R7,CLEER   :CLEAR ERRORS
2907 014464 004737 050244      JSR      R7,ERRTST
2908
2909
2910
2911
2912
2913
2914
2915
2916
2917 014470 000004              TST16: SCOPE
2918 014472 012777 177777 166632      MOV      #-1,@RHWC   :SETUP FOR 1 WORD
2919 014500 012777 000007 166632      MOV      #7,@RHCS2  :SETUP UNIT 7
2920 014506 005701              TST      R1          :IS IT AN RH11
2921 014510 100403              BMI     1$          :YES
2922 014512 012777 000000 166640      MOV      #ZERO,@RHBAE :SETUP BUS ADDRESS EXTENSION
2923 014520 012777 001204 166606 1$:  MOV      #$TMP3,@RHBA :SETUP BUS ADDRESS
2924 014526 012777 000061 166574      MOV      #WRITE0,@RHCS1
2925 014534 005037 003446      CLR      BITCNT      :CLEAR BIT COUNTER
2926 014540 032777 000200 166562 18$:  BIT      #RDY,@RHCS1 :IS RDY SET
2927 014546 001015              BNE      6$         :BIT IS SET

```

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:*****
:*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
:*****

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2984 015040 004737 007260
2985 015044 004737 006626
2986 015050 004737 050244
2987
2988
2989
2990
2991
2992
2993
2994
2995 015054 000004
2996 015056 012737 000001 001212
2997
2998 015064 005701
2999 015066 100403
3000 015070 012777 000037 166262
3001 015076 012777 177776 166230
3002 015104 012777 177777 166220
3003 015112 005701
3004 015114 001404
3005 015116 012777 000461 166204
3006 015124 000403
3007 015126 112777 000061 166174
3008 015134
3009 015134 005037 003446
3010 015140 032777 000200 166162
3011 015146 001015
3012 015150 005237 003446
3013 015154 001371
3014 015156 005037 003446
3015 015162 032777 000200 166140
3016 015170 001004
3017 015172 005237 003446
3018 015176 001401
3019 015200 000770
3020 015202
3021 015202 017737 166122 003420
3022 015210 017737 166116 003444
3023 015216 017737 166112 003414
3024 015224 005701
3025 015226 001406
3026 015230 005037 003416
3027 015234 005037 003424
3028 015240 000137 015260
3029 015244 017737 166110 003416
3030 015252 017737 166104 003424
3031 015260 017737 166054 003422
3032 015266 017737 166050 003432
3033 015274 017737 166044 003436
3034 015302 017737 166042 003442
3035 015310 017737 166022 003440
3036 015316 005701
3037 015320 001406
3038 015322 032777 001000 166000
3039 015330 001022

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      JSR      R7,WHYFO      ;WAS AN ERROR SET
8$:     JSR      R7,CLEER    ;CLEAR ERRORS
      JSR      R7,ERRTST    ;WAS THER ANY ERRORS

*****
:*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 REGISTER OR BIT A17
      ;*IN THE RHCS1 REGISTER AFTER IT IS INCREMENTED
*****
TST17:  SCOPE
      MOV      #1,$TIMES    ;;DO 1 ITERATION

      TST      R1           ;IS IT AN 11 OR A 70
      BMI     1$           ;IT'S AN RH11
      MOV     #37,@RHBAE    ;SETUP BAE IN RH70
1$:     MOV     #177776,@RHBA ;SETUP BA
      MOV     #-1,@RHWC    ;SETUP WORD COUNT
      TST      R1           ;IS IT A RH70
      BEQ     34$          ;YES
      MOV     #A16!WRITE0,@RHCS1 ;TELL IT TO WRITE
      BR      35$          ;SKIP OVER 70 CODE
34$:    MOVVB  #WRITE0,@RHCS1 ;TELL IT TO WRITE
35$:

      CLR     BITCNT       ;CLEAR BIT COUNTER
      BIT     #RDY,@RHCS1  ;IS RDY SET
      BNE     2$           ;BIT IS SET
      INC     BITCNT       ;COUNT UP
      BNE     18$         ;NOT FINISHED COUNTING
      CLR     BITCNT       ;GET READY TO DO IT AGAIN
18$:    BIT     #RDY,@RHCS1 ;IS IT SET YET?
      BNE     2$           ;YES
      INC     BITCNT       ;COUNT UP
      BEQ     2$           ;BIT IS NOT GOING TO SET
      BR      19$

2$:     MOV     @RHCS1,CS1  ;SAVE RHCS1
      MOV     @RHWC,WC     ;SAVE WORD COUNT
      MOV     @RHBA,BA     ;SAVE BUS ADDRESS
      TST      R1           ;IS IT AN RH11
      BEQ     87$         ;NO IT'S A 70
      CLR     BAE          ;CLEAR BAE
      CLR     CS3         ;CLEAR CS3
      JMP     86$         ;CONTINUE
87$:    MOV     @RHBAE,BAE  ;SAVE BUS ADDRESS EXTENSION
      MOV     @RHCS3,CS3  ;SAVE RHCS3
86$:    MOV     @RHCS2,CS2 ;SAVE CS2
      MOV     @RHST,DS1   ;SAVE TESTER STATUS
      MOV     @RHER,ER1   ;SAVE ERROR REGISTER
      MOV     @RHTDB,TDR  ;SAVE TESTER DATA REG.
      MOV     @RHMR2,TC   ;SAVE MR2 TESTER REG.
      TST      R1           ;IS IT AN 11 OR A 70
      BEQ     12$         ;DO RH70 PART OF TEST
      BIT     #A17,@RHCS1 ;DID A17 GET SET
      BNE     4$           ;YES

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

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3096 015552 012777 000077 165600      MOV      #77,@RHBAE      ;SET UP BAE REGISTER
3097 015560 012777 177777 165544 9$:      MOV      #-1,@RHWC      ;SET WORD COUNT TO ONE WORD
3098 015566 012777 000007 165544      MOV      #7,@RHCS2      ;SET UNIT NUMBER
3099 015574 012777 001471 165526      MOV      #A16!A17!READ0,@RHCS1 ;TELL IT TO READ
3100 015602 005037 003446      CLR      BITCNT        ;CLEAR BIT COUNTER
3101 015606 032777 000200 165514 18$:      BIT      #RDY,@RHCS1    ;IS RDY SET
3102 015614 001015      BNE      DELTA         ;BIT IS SET
3103 015616 005237 003446      INC      BITCNT        ;COUNT UP
3104 015622 001371      BNE      18$          ;NOT FINISHED COUNTING
3105 015624 005037 003446      CLR      BITCNT        ;GET READY TO DO IT AGAIN
3106 015630 032777 000200 165472 19$:      BIT      #RDY,@RHCS1    ;IS IT SET YET?
3107 015636 001004      BNE      DELTA         ;YES
3108 015640 005237 003446      INC      BITCNT        ;COUNT UP
3109 015644 001401      BEQ      DELTA         ;BIT IS NOT GOING TO SET
3110 015646 000770      BR
3111 015650      DELTA:
3112 015650 017737 165464 003422      MOV      @RHCS2,CS2     ;SAVE CONTENTS OF RHCS2
3113 015656 017737 165446 001162      MOV      @RHCS1,$REGO   ;SET UP NEEDED BITS ONLY
3114 015664 042737 027777 001162      BIC      #GO!IE!RDY!A16!A17!PSEL!DVA!MCPE!READ6,$REGO ;CLEAR BITS NOT NEEDED
3115      ;
3116 015672 017737 165432 003420      MOV      @RHCS1,CS1     ;SAVE RHCS1
3117 015700 017737 165426 003444      MOV      @RHWC,WC       ;SAVE WORD COUNT
3118 015706 017737 165422 003414      MOV      @RHBA,BA       ;SAVE BUS ADDRESS
3119 015714 005701      TST      R1             ;IS IT AN RH11
3120 015716 001406      BEQ      87$           ;NO IT'S A 70
3121 015720 005037 003416      CLR      BAE           ;CLEAR BAE
3122 015724 005037 003424      CLR      CS3           ;CLEAR CS3
3123 015730 000137 015750      JMP      86$           ;CONTINUE
3124 015734 017737 165420 003416 87$:      MOV      @RHBAE,BAE     ;SAVE BUS ADDRESS EXTENSION
3125 015742 017737 165414 003424      MOV      @RHCS3,CS3     ;SAVE RHCS3
3126 015750 017737 165364 003422 86$:      MOV      @RHCS2,CS2     ;SAVE CS2
3127 015756 017737 165360 003432      MOV      @RHST,DS1      ;SAVE TESTER STATUS
3128 015764 017737 165354 003436      MOV      @RHER,ER1      ;SAVE ERROR REGISTER
3129 015772 017737 165352 003442      MOV      @RHTDB,TDR     ;SAVE TESTER DATA REG.
3130 016000 017737 165332 003440      MOV      @RHMR2,TC      ;SAVE MR2 TESTER REG.
3131 016006 032777 000200 165314      BIT      #RDY,@RHCS1    ;IS READY SET
3132 016014 001003      BNE      99$           ;YES CONTINUE TEST
3133 016016 104102      ERROR    102          ;READY NOT SET
3134 016020 004737 007260      JSR      R7,WHYFO       ;ANY ERRORS SET
3135 016024 032777 004000 165306 99$:      BIT      #NEM,@RHCS2    ;IS NEM SET
3136 016032 001016      BNE      1$           ;YES CHECK TRE AND SC
3137 016034 022737 140000 001162      CMP      #SC!TRE,$REGO  ;IS THE SC AND TRE BITS SET
3138 016042 001460      BEQ      2$           ;YES NEM IS IN ERROR
3139 016044 032737 040000 001162      BIT      #TRE,$REGO     ;IS JUST THE TRE BIT SET
3140 016052 001060      BNE      3$           ;TRE BIT MUST BE IN ERROR
3141 016054 032737 100000 001162      BIT      #SC,$REGO      ;IS JUST THE SC BIT SET
3142 016062 001060      BNE      4$           ;SC BIT SET ERRONIOUSLY
3143 016064 104005      ERROR    5            ;NEM NOT SET IN RHCS2
3144 016066 000467      BR      8$           ;SET UP TO TEST AGAIN
3145 016070 022737 140000 001162 1$:      CMP      #SC!TRE,$REGO  ;IS SC AND TRE SET
3146 016076 001030      BNE      22$          ;FIND THE ERROR
3147 016100 012737 020000 004124      MOV      #MCPE,$CS1     ;TEST FOR SHORTS
3148 016106 012737 173400 004126      MOV      #MPE!MXF!PGE!NED!UPE!WCE!DLT,$CS2
3149 016114 012737 174000 004130      MOV      #WCELO!WCEHI!DPELO!DPEHI!APE,$CS3
3150 016122 012737 000000 004132      MOV      #0,$ST
3151 016130 012737 030175 004134      MOV      #ILF!RMR!CPE!DPE!RMBEX!RFAIL!DTE!OPI,$ER

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3152 016136 012737 177777 004122      MOV    #-1,BEFORE      :TELL WHYFO ITS FOR SHORTS
3153 016144 004737 007260              JSR    R7,WHYFO        :TEST FOR SHORTS
3154 016150 005037 004122              CLR    BEFORE          :WE HAVE CHECKED FOR SHORTS
3155 016154 000137 016246              JMP    8$              :LEAVE THE TEST
3156 016160 032737 040000 001162 22$:  BIT    #TRE,$REGO      :THEN IS THE TRE BIT SET
3157 016166 001022 000000              BNE    6$              :SC BIT DID NOT SEE TRE BIT
3158 016170 032737 100000 001162      BIT    #SC,$REGO      :IS THE SC BIT SET
3159 016176 001022 000000              BNE    7$              :TRE HAS AN OPEN GOING TO BUS
3160 016200 104006 000000              ERROR  6              :TRE SET LOGIC NOT WORKING
3161 016202 000421 000000              BR     8$              :SET UP TO TEST AGAIN
3162 016204 104007 000000 2$:    ERROR  7              :NEM HAS OPEN IN LINE GOING TO BUS
3163 016206 004737 007260              JSR    R7,WHYFO        :SEE IF ANY OTHER ERROR BIT IS
3164                                :SET OTHER THAN NEM
3165 016212 000415 000000              BR     8$              :SET UP TO TEST AGAIN
3166 016214 104010 000000 3$:    ERROR  10             :SOMTHING WRONG WITH TRE BIT
3167 016216 004737 007260              JSR    R7,WHYFO        :SEE IF AN ERROR BIT IS SET
3168                                :OR BOTH NEM IN RHCS2 AND SC IN
3169                                :RHCS1 HAS AN OPEN BETWEEN IT AND THE BUS
3170 016222 000411 000000              BR     8$              :SET UP TO TEST AGAIN
3171 016224 104011 000000 4$:    ERROR  11             :SC BIT WAS SET BY EITHER ATTN OR
3172 016226 004737 007260              JSR    R7,WHYFO        :FIND WHAT ERROR BIT IS SET
3173                                :MCPE ERROR OR SC IS SHORTED TO +5 VOLTS
3174 016232 000405 000000              BR     8$              :SETUP TO TEST AGAIN
3175 016234 104012 000000 6$:    ERROR  12             :TRE WAS SET BY OTHER THAN NEM
3176 016236 004737 007260              JSR    R7,WHYFO        :FIND ERROR BIT THAT SET TRE
3177 016242 000401 000000              BR     8$              :SETUP TO TEST AGAIN
3178 016244 104013 000000 7$:    ERROR  13             :TRE HAS AN OPEN GOING TO THE BUS
3179 016246 032737 041400 177570 8$:    BIT    #SW14!SW9!SW8,@#177570 :ANY LOOPING BEEING DONE
3180 016254 001003 000000              BNE    21$             :YES,LOAD TRE NO MATTER WHAT
3181 016256 105737 001103              TSTB   $ERFLG         :WAS THERE AN ERROR
3182 016262 001010 000000              BNE    9$              :SKIP TRE CHECK
3183 016264 112777 000100 165072 21$:  MOVB   #TREB,@RHCS1B   :LOAD TRE
3184 016272 032777 004000 165040      BIT    #NEM,@RHCS2    :DID ERROR CLEAR
3185 016300 001401 000000              BEQ    9$              :YES EXIT TEST
3186 016302 104050 000000              ERROR  50             :LOADING TRE DID NOT CLEAR ERROR
3187 016304 004737 006626 9$:    JSR    R7,CLEER        :SEE IF ERRORS ARE CLEARED
3188 016310 004737 050244              JSR    R7,ERRTST
3189
3190
3191
3192
3193
3194
3195

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

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3196 016314 000004 000000 165006 TST21: SCOPE
3197 016316 012777 177777 165006      MOV    #-1,@RHWC      :ONE WORD TRANSFER
3198 016324 012777 000007 165006      MOV    #7,@RHCS2     :TO UNIT ONE
3199 016332 005701 000000              TST    R1             :IS IT AN RH70
3200 016334 001003 000000              BNE    9$             :NO
3201 016336 012777 000000 165014      MOV    #ZERO,@RHBAE   :SETUP RHBAE REGISTER
3202 016344 012777 001172 164762 9$:    MOV    #$REG4,@RHBA  :SETUP BUS ADDRESS
3203 016352 012737 052525 001172      MOV    #AB,$REG4     :CREATE INFORMATION
3204 016360 012777 000061 164742      MOV    #WRITE0,@RHCS1 :TELL IT TO WRITE
3205 016366 005037 003446              CLR    BITCNT         :CLEAR BIT COUNTER
3206 016372 032777 000200 164730 18$:  BIT    #RDY,@RHCS1   :IS RDY SET
3207 016400 001015 000000              BNE    WCETST        :BIT IS SET

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3208 016402 005237 003446      INC      BITCNT      ;COUNT UP
3209 016406 001371              BNE      18$        ;NOT FINISHED COUNTING
3210 016410 005037 003446      CLR      BITCNT      ;GET READY TO DO IT AGAIN
3211 016414 032777 000200 164706 19$:  BIT      #RDY,@RHCS1 ;IS IT SET YET?
3212 016422 001004              BNE      WCETST     ;YES
3213 016424 005237 003446      INC      BITCNT      ;COUNT UP
3214 016430 001401              BEQ      WCETST     ;BIT IS NOT GOING TO SET
3215 016432 000770              BR
3216 016434              WCESTST:
3217 016434 052777 000040 164676  BIS      #40,@RHCS2 ;DO A CONTROLER CLEAR
3218 016442 005037 003446      CLR      BITCNT     ;SET UP FOR DELAY
3219 016446 005237 003446 17$:  INC      BITCNT     ;COUNT UP
3220 016452 001375              BNE      17$
3221 016454 012777 000007 164656  MOV      #7,@RHCS2  ;SELECT UNIT #
3222 016462 005037 003446      CLR      BITCNT     ;CLEAR BIT COUNTER
3223 016466 032777 000200 164634 18$:  BIT      #RDY,@RHCS1 ;IS RDY SET
3224 016474 001015              BNE      WCTST      ;BIT IS SET
3225 016476 005237 003446      INC      BITCNT     ;COUNT UP
3226 016502 001371              BNE      18$        ;NOT FINISHED COUNTING
3227 016504 005037 003446      CLR      BITCNT     ;GET READY TO DO IT AGAIN
3228 016510 032777 000200 164612 19$:  BIT      #RDY,@RHCS1 ;IS IT SET YET?
3229 016516 001004              BNE      WCTST      ;YES
3230 016520 005237 003446      INC      BITCNT     ;COUNT UP
3231 016524 001401              BEQ      WCTST      ;BIT IS NOT GOING TO SET
3232 016526 000770              BR
3233 016530              WCTST:
3234 016530 032777 000200 164572  BIT      #RDY,@RHCS1 ;IS READY SET
3235 016536 001003              BNE      20$        ;YES
3236 016540 104102              ERROR    102        ;READY NOT SET
3237 016542 004737 007260      JSR      R7,WHYFO   ;ANY ERRORS SET
3238 016546 012777 177777 164556 20$:  MOV      #-1,@RHWC  ;RESET WORD COUNT
3239 016554 012777 001172 164552  MOV      #$REG4,@RHBA ;RESET BUS ADDRESS
3240 016562 012737 125252 001172  MOV      #OAB,$REG4  ;CREATE WRITE CHECK ERROR
3241 016570 012777 000051 164532  MOV      #WRCHO,@RHCS1 ;MAKE THE ERROR
3242 016576 005037 003446      CLR      BITCNT     ;CLEAR BIT COUNTER
3243 016602 032777 000200 164520 18$:  BIT      #RDY,@RHCS1 ;IS RDY SET
3244 016610 001015              BNE      WCETRE     ;BIT IS SET
3245 016612 005237 003446      INC      BITCNT     ;COUNT UP
3246 016616 001371              BNE      18$        ;NOT FINISHED COUNTING
3247 016620 005037 003446      CLR      BITCNT     ;GET READY TO DO IT AGAIN
3248 016624 032777 000200 164476 19$:  BIT      #RDY,@RHCS1 ;IS IT SET YET?
3249 016632 001004              BNE      WCETRE     ;YES
3250 016634 005237 003446      INC      BITCNT     ;COUNT UP
3251 016640 001401              BEQ      WCETRE     ;BIT IS NOT GOING TO SET
3252 016642 000770              BR
3253 016644              WCETRE:
3254 016644 017737 164470 003422  MOV      @RHCS2,CS2  ;SAVE CONTENTS
3255 016652 017737 164452 001162  MOV      @RHCS1,$REG0 ;SET UP NEEDED BITS ONLY
3256 016660 042737 027777 001162  BIC      #GO!IE!RDY!A16!A17!PSEL!DVA!MCPE!READ6,$REG0 ;CLEAR BITS NOT NEEDED
3257
3258 016666 017737 164436 003420  MOV      @RHCS1,CS1  ;SAVE RHCS1
3259 016674 017737 164432 003444  MOV      @RHWC,W     ;SAVE WORD COUNT
3260 016702 017737 164426 003414  MOV      @RHBA,BA    ;SAVE BUS ADDRESS
3261 016710 005701              TST      R1          ;IS IT AN RH11
3262 016712 001406              BEQ      87$        ;NO IT'S A 70
3263 016714 005037 003416      CLR      BAE        ;CLEAR BAE

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



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3320 017240 104013 7$: ERROR 13 ;TRE HAS AN OPEN GOING TO THE BUS
3321 017242 032737 041400 177570 8$: BIT #SW14!SW9!SW8,@#177570 ;ANY LOOPING BEEING DONE
3322 017250 001003 BNE 21$ ;YES,LOAD TRE NO MATTER WHAT
3323 017252 105737 001103 TSTB $ERFLG ;WAS THERE AN ERROR
3324 017256 001010 BNE 9$ ;SKIP TRE CHECK
3325 017260 112777 000100 164076 21$: MOVB #TREB,@RHCS1B ;LOAD TRE
3326 017266 032777 040000 164044 BIT #WCE,@RHCS2 ;DID ERROR CLEAR
3327 017274 001401 BEQ 9$ ;YES EXIT TEST
3328 017276 104050 ERROR 50 ;LOADING TRE DID NOT CLEAR ERROR
3329 017300 004737 006626 9$: JSR R7,CLEER ;SEE IF ERRORS ARE CLEARED
3330 017304 004737 050244 JSR R7,ERRTST
3331
3332 ;*****
3333 ;*TEST 22 MDPE ,TRE AND SC BIT TEST
3334 ;*THIS TEST CHECKS THAT MDPE CAN BE SET IN
3335 ;*RHCS2,AND THAT MDPE SETS TRE AND SC
3336 ;*IN THE RHCS1 REGISTER.....
3337 ;*****
3338 017310 000004 TST22: SCOPE
3339 017312 012777 000007 164020 MOV #7,@RHCS2 ;SET UNIT #
3340 017320 012777 177774 164004 MOV #-4,@RHWC ;SET UP WORD COUNT
3341 017326 005701 TST R1 ;IS IT AN RH70
3342 017330 001003 BNE 9$ ;NO ITS AN RH11
3343 017332 012777 000000 164020 MOV #ZERO,@RHBAE ;SET UP BAE REGISTER
3344 017340 012777 004100 163766 9$: MOV #RBUF,@RHBA ;SET UP BUS ADDRESS
3345 017346 012777 000071 163754 MOV #READ0,@RHCS1 ;TELL IT TO READ
3346 017354 012777 000027 163756 MOV #PAT!7,@RHCS2 ;INVERT PARITY
3347 017362 017737 163752 003422 MOV @RHCS2,CS2 ;SAVE CONTENTS
3348 017370 005037 003446 CLR BITCNT ;CLEAR BIT COUNTER
3349 017374 032777 000200 163726 18$: BIT #RDY,@RHCS1 ;IS RDY SET
3350 017402 001015 BNE UPETRE ;BIT IS SET
3351 017404 005237 003446 INC BITCNT ;COUNT UP
3352 017410 001371 BNE 18$ ;NOT FINISHED COUNTING
3353 017412 005037 003446 CLR BITCNT ;GET READY TO DO IT AGAIN
3354 017416 032777 000200 163704 19$: BIT #RDY,@RHCS1 ;IS IT SET YET?
3355 017424 001004 BNE UPETRE ;YES
3356 017426 005237 003446 INC BITCNT ;COUNT UP
3357 017432 001401 BEQ UPETRE ;BIT IS NOT GOING TO SET
3358 017434 000770 BR 19$
3359 017436 UPETRE:
3360 017436 017737 163666 001162 MOV @RHCS1,$REGO ;SET UP NEEDED BITS ONLY
3361 017444 042737 027777 001162 BIC #GO!IE!RDY!A16!A17!PSEL!DVA!MCPE!READ6,$REGO ;CLEAR BITS NOT NEEDED
3362
3363 017452 017737 163652 003420 MOV @RHCS1,CS1 ;SAVE RHCS1
3364 017460 017737 163646 003444 MOV @RHWC,WC ;SAVE WORD COUNT
3365 017466 017737 163642 003414 MOV @RHBA,BA ;SAVE BUS ADDRESS
3366 017474 005701 TST R1 ;IS IT AN RH11
3367 017476 001406 BEQ 87$ ;NO IT'S A 70
3368 017500 005037 003416 CLR BAE ;CLEAR BAE
3369 017504 005037 003424 CLR CS3 ;CLEAR CS3
3370 017510 000137 017530 JMP 86$ ;CONTINUE
3371 017514 017737 163640 003416 87$: MOV @RHBAE,BAE ;SAVE BUS ADDRESS EXTENSION
3372 017522 017737 163634 003424 MOV @RHCS3,CS3 ;SAVE RHCS3
3373 017530 017737 163604 003422 86$: MOV @RHCS2,CS2 ;SAVE CS2
3374 017536 017737 163600 003432 MOV @RHST,DS1 ;SAVE TESTER STATUS
3375 017544 017737 163574 003436 MOV @RHER,ER1 ;SAVE ERROR REGISTER
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3432 020060 001401          BEQ      9$          :YES EXIT TEST
3433 020062 104050          ERROR    50          :LOADING TRE DID NOT CLEAR ERROR
3434 020064 004737 006626    9$: JSR      R7,CLEER  :SEE IF ERRORS ARE CLEARED
3435 020070 004737 050244    JSR      R7,ERRTST
3436
3437
3438
3439
3440
3441
3442
3443 020074 000004          :*****
3444
3445 020076 012777 000007 163234  :*TEST 23          UPE,TRE,SC ERROR TEST (RH11)
3446 020104 005701          :*THIS TEST CHECKS THE UPE BIT IN RHCS2
3447 020106 100402          :*TO SEE IF IT SETS AND WHEN IT SETS IS
3448 020110 000137 020560          :*TRE AND SC BITS SET IN RHCS1.....
3449 020114 012777 020007 163216  FITIT:
3450 020122 017737 163202 001162  MOV      #UPE!7,@RHCS2  :SET UP UNIT 7
3451 020130 042737 027777 001162  MOV      @RHCS1,$REGO   :IS IT AN RH11
3452
3453 020136 017737 163166 003420  BIC      #GO!IE!RDY!A16!A17!PSEL!DVA!MCPE!READ6,$REGO :IT'S AN RH11,DO THE TEST
3454 020144 017737 163162 003444  MOV      @RHCS1,CS1     :IT'S AN RH70, EXIT TEST
3455 020152 017737 163156 003414  MOV      @RHWC,WC       :SET PARITY ERROR IN RH11'S CS2 REG
3456 020160 005701          MOV      @RHBA,BA       :SET UP NEEDED BITS ONLY
3457 020162 001406          TST      R1             :CLEAR BITS NOT NEEDED
3458 020164 005037 003416  BEQ      87$           :SAVE RHCS1
3459 020170 005037 003424  CLR      BAE           :SAVE WORD COUNT
3460 020174 000137 020214  CLR      CS3           :SAVE BUS ADDRESS
3461 020200 017737 163154 003416 87$: JMP      86$           :IS IT AN RH11
3462 020206 017737 163150 003424  MOV      @RHBAE,BAE     :NO IT'S A 70
3463 020214 017737 163120 003422 86$: MOV      @RHCS3,CS3    :CLEAR BAE
3464 020222 017737 163114 003432  MOV      @RHCS2,CS2    :CLEAR CS3
3465 020230 017737 163110 003436  MOV      @RHST,DS1     :CONTINUE
3466 020236 017737 163106 003442  MOV      @RHER,ER1     :SAVE BUS ADDRESS EXTENSION
3467 020244 017737 163066 003440  MOV      @RHTDB,TDR    :SAVE RHCS3
3468 020252 032777 000200 163050  MOV      @RHM2,TC      :SAVE CS2
3469 020260 001003          BIT      #RDY,@RHCS1   :SAVE TESTER STATUS
3470 020262 104102          BNE      99$          :SAVE ERROR REGISTER
3471 020264 004737 007260          ERROR    102         :SAVE TESTER DATA REG.
3472 020270 032777 020000 163042 99$: JSR      R7,WHYFO     :SAVE MR2 TESTER REG.
3473 020276 001016          BIT      #UPE,@RHCS2   :IS READY SET
3474 020300 022737 140000 001162  BNE      1$           :YES CONTINUE TEST
3475 020306 001460          CMP      #SC!TRE,$REGO :READY NOT SET
3476 020310 032737 040000 001162  BEQ      2$           :ANY ERRORS SET
3477 020316 001060          BIT      #TRE,$REGO   :IS UPE SET
3478 020320 032737 100000 001162  BNE      3$           :YES CHECK TRE AND SC
3479 020326 001060          BIT      #SC,$REGO    :IS THE SC AND TRE BITS SET
3480 020330 104020          BNE      4$           :YES UPE IS IN ERROR
3481 020332 000467          ERROR    20         :IS JUST THE TRE BIT SET
3482 020334 022737 140000 001162 1$: BR      8$           :TRE BIT MUST BE IN ERROR
3483 020342 001030          MOV      $CS1,$CS1    :SET UP TO TEST AGAIN
3484 020344 013737 004124 004124  MOV      #MPE!MXF!PGE!NEM!NED!WCE!DLT,$CS2 :IS SC AND TRE SET
3485 020352 012737 157400 004126  MOV      $CS3,$CS3    :FIND THE ERROR
3486 020360 013737 004130 004130  MOV      $ST,$ST      :TEST FOR SHORTS
3487 020366 013737 004132 004132  MOV      $ST,$ST
```

```
3488 020374 013737 004134 004134 MOV $ER,$ER
3489 020402 012737 177777 004122 MOV #-1,BEFORE ;TELL WHYFO ITS FOR SHORTS
3490 020410 004737 007260 JSR R7,WHYFO ;TEST FOR SHORTS
3491 020414 005037 004122 CLR BEFORE ;WE HAVE CHECKED FOR SHORTS
3492 020420 000137 020512 JMP 8$ ;LEAVE THE TEST
3493 020424 032737 040000 001162 22$: BIT #TRE,$REGO ;THEN IS THE TRE BIT SET
3494 020432 001022 BNE 6$ ;SC BIT DID NOT SEE TRE BIT
3495 020434 032737 100000 001162 BIT #SC,$REGO ;IS THE SC BIT SET
3496 020442 001022 BNE 7$ ;TRE HAS AN OPEN GOING TO BUS
3497 020444 104006 ERROR 6 ;TRE SET LOGIC NOT WORKING
3498 020446 000421 BR 8$ ;SET UP TO TEST AGAIN
3499 020450 104021 2$: ERROR 21 ;UPE HAS OPEN IN LINE GOING TO BUS
3500 020452 004737 007260 JSR R7,WHYFO ;SEE IF ANY OTHER ERROR BIT IS
3501 ;SET OTHER THAN UPE
3502 020456 000415 BR 8$ ;SET UP TO TEST AGAIN
3503 020460 104023 3$: ERROR 23 ;SOMTHING WRONG WITH TRE BIT
3504 020462 004737 007260 JSR R7,WHYFO ;SEE IF AN ERROR BIT IS SET
3505 ;OR BOTH UPE IN RHCS2 AND SC IN
3506 ;RHCS1 HAS AN OPEN BETWEEN IT AND THE BUS
3507 020466 000411 BR 8$ ;SET UP TO TEST AGAIN
3508 020470 104011 4$: ERROR 11 ;SC BIT WAS SET BY EITHER ATTN OR
3509 020472 004737 007260 JSR R7,WHYFO ;FIND WHAT ERROR BIT IS SET
3510 ;MCPE ERROR OR SC IS SHORTED TO +5 VOLTS
3511 020476 000405 BR 8$ ;SETUP TO TEST AGAIN
3512 020500 104022 6$: ERROR 22 ;TRE WAS SET BY OTHER THAN UPE
3513 020502 004737 007260 JSR R7,WHYFO ;FIND ERROR BIT THAT SET TRE
3514 020506 000401 BR 8$ ;SETUP TO TEST AGAIN
3515 020510 104013 7$: ERROR 13 ;TRE HAS AN OPEN GOING TO THE BUS
3516 020512 032737 041400 177570 8$: BIT #SW14!SW9!SW8,@#177570 ;ANY LOOPING BEEING DONE
3517 020520 001003 BNE 21$ ;YES,LOAD TRE NO MATTER WHAT
3518 020522 105737 001103 TSTB $ERFLG ;WAS THERE AN ERROR
3519 020526 001010 BNE 9$ ;SKIP TRE CHECK
3520 020530 112777 000100 162626 21$: MOVB #TREB,@RHCS1B ;LOAD TRE
3521 020536 032777 020000 162574 BIT #UPE,@RHCS2 ;DID ERROR CLEAR
3522 020544 001401 BEQ 9$ ;YES EXIT TEST
3523 020546 104050 ERROR 50 ;LOADING TRE DID NOT CLEAR ERROR
3524 020550 004737 006626 9$: JSR R7,CLEER ;SEE IF ERRORS ARE CLEARED
3525 020554 004737 050244 JSR R7,ERRTST
```

```
3526
3527 020560
3528
3529
3530
3531
3532
3533
3534 020560 000004
3535
3536 020562 012777 000007 162550
3537 020570 005701
3538 020572 001402
3539 020574 000137 021342
3540 020600 012777 000004 162554 PLACE:
3541 020606 012777 177776 162516
3542 020614 012777 000000 162536
3543 020622 012777 001162 162504
```

```
FIT:
:*****
:*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.....
:*****
TST24: SCOPE
```

```
MOV #7,@RHCS2 ;SETUP UNIT 7
TST R1 ;IS IT AN RH11
BEQ PLACE ;IT'S AN RH70
JMP FANGIE ;IT'S AN RH11, EXIT TEST
MOV #IPCK2,@RHCS3 ;SETUP FOR PARITY ERROR
MOV #-2,@RHWC ;SETUP WORD COUNT TO TWO WORDS
MOV #ZERO,@RHBAE ;SETUP BAE
MOV #$REGO,@RHBA ;SETUP ADDRESS
```

```

3544 020630 012777 000061 162472      MOV      #WRITE0,@RHCS1 ;TELL IT TO WRITE
3545 020536 005037 003446      CLR      BITCNT        ;CLEAR BIT COUNTER
3546 020642 032777 000200 162460 18$:  BIT      #RDY,@RHCS1   ;IS RDY SET
3547 020650 001015      BNE      DYN0          ;BIT IS SET
3548 020652 005237 003446      INC      BITCNT        ;COUNT UP
3549 020656 001371      BNE      18$          ;NOT FINISHED COUNTING
3550 020660 005037 003446      CLR      BITCNT        ;GET READY TO DO IT AGAIN
3551 020664 032777 000200 162436 19$:  BIT      #RDY,@RHCS1   ;IS IT SET YET?
3552 020672 001004      BNE      DYN0          ;YES
3553 020674 005237 003446      INC      BITCNT        ;COUNT UP
3554 020700 001401      BEQ      DYN0          ;BIT IS NOT GOING TO SET
3555 020702 000770      BR       19$
3556 020704      DYN0:
3557 020704 017737 162420 001162      MOV      @RHCS1,$REG0  ;SET UP NEEDED BITS ONLY
3558 020712 042737 027777 001162      BIC      #GO!IE!RDY!A16!A17!PSEL!DVA!MCPE!READ6,$REG0
3559      ;CLEAR BITS NOT NEEDED
3560 020720 017737 162404 003420      MOV      @RHCS1,CS1   ;SAVE RHCS1
3561 020726 017737 162400 003444      MOV      @RHWC,WC     ;SAVE WORD COUNT
3562 020734 017737 162374 003414      MOV      @RHBA,BA     ;SAVE BUS ADDRESS
3563 020742 005701      TST      R1           ;IS IT AN RH11
3564 020744 001406      BEQ      87$          ;NO IT'S A 70
3565 020746 005037 003416      CLR      BAE          ;CLEAR BAE
3566 020752 005037 003424      CLR      CS3          ;CLEAR CS3
3567 020756 000137 020776      JMP      86$          ;CONTINUE
3568 020762 017737 162372 003416 87$:  MOV      @RHBAE,BAE   ;SAVE BUS ADDRESS EXTENSION
3569 020770 017737 162366 003424      MOV      @RHCS3,CS3   ;SAVE RHCS3
3570 020776 017737 162336 003422 86$:  MOV      @RHCS2,CS2   ;SAVE CS2
3571 021004 017737 162332 003432      MOV      @RHST,DS1    ;SAVE TESTER STATUS
3572 021012 017737 162326 003436      MOV      @RHER,ER1    ;SAVE ERROR REGISTER
3573 021020 017737 162324 003442      MOV      @RHTDB,TDR   ;SAVE TESTER DATA REG.
3574 021026 017737 162304 003440      MOV      @RHMR2,TC    ;SAVE MR2 TESTER REG.
3575 021034 032777 000200 162266      BIT      #RDY,@RHCS1 ;IS READY SET
3576 021042 001003      BNE      99$          ;YES CONTINUE TEST
3577 021044 104102      ERROR   102          ;READY NOT SET
3578 021046 004737 007260      JSR      R7,WHYFO     ;ANY ERRORS SET
3579 021052 032777 020000 162260 99$:  BIT      #UPE,@RHCS2 ;IS UPE SET
3580 021060 001016      BNE      1$           ;YES CHECK TRE AND SC
3581 021062 022737 140000 001162      CMP      #SC!TRE,$REG0 ;IS THE SC AND TRE BITS SET
3582 021070 001460      BEQ      2$           ;YES UPE IS IN ERROR
3583 021072 032737 040000 001162      BIT      #TRE,$REG0   ;IS JUST THE TRE BIT SET
3584 021100 001060      BNE      3$           ;TRE BIT MUST BE IN ERROR
3585 021102 032737 100000 001162      BIT      #SC,$REG0    ;IS JUST THE SC BIT SET
3586 021110 001060      BNE      4$           ;SC BIT SET ERRONIOUSLY
3587 021112 104020      ERROR   20           ;UPE NOT SET IN RHCS2
3588 021114 000467      BR       8$           ;SET UP TO TEST AGAIN
3589 021116 022737 140000 001162 1$:  CMP      #SC!TRE,$REG0 ;IS SC AND TRE SET
3590 021124 001030      BNE      22$          ;FIND THE ERROR
3591 021126 013737 004124 004124      MOV      $CS1,$CS1    ;TEST FOR SHORTS
3592 021134 012737 157400 004126      MOV      #MPE!MXF!PGE!NEM!NED!WCE!DLT,$CS2
3593 021142 012737 134100 004130      MOV      #APE!DPELO!WCEHI!WCELO!IE3,$CS3
3594 021150 013737 004132 004132      MOV      $ST,$ST
3595 021156 013737 004134 004134      MOV      $ER,$ER
3596 021164 012737 177777 004122      MOV      #-1,BEFORE  ;TELL WHYFO ITS FOR SHORTS
3597 021172 004737 007260      JSR      R7,WHYFO     ;TEST FOR SHORTS
3598 021176 005037 004122      CLR      BEFORE      ;WE HAVE CHECKED FOR SHORTS
3599 021202 000137 021274      JMP      8$           ;LEAVE THE TEST

```

```
3600 021206 032737 040000 001162 22$: BIT #TRE,$REG0 ;THEN IS THE TRE BIT SET
3601 021214 001022 BNE 6$ ;SC BIT DID NOT SEE TRE BIT
3602 021216 032737 100000 001162 BIT #SC,$REG0 ;IS THE SC BIT SET
3603 021224 001022 BNE 7$ ;TRE HAS AN OPEN GOING TO BUS
3604 021226 104006 ERROR 6 ;TRE SET LOGIC NOT WORKING
3605 021230 000421 BR 8$ ;SET UP TO TEST AGAIN
3606 021232 104021 2$: ERROR 21 ;UPE HAS OPEN IN LINE GOING TO BUS
3607 021234 004737 007260 JSR R7,WHYFO ;SEE IF ANY OTHER ERROR BIT IS
3608 ;SET OTHER THAN UPE
3609 021240 000415 BR 8$ ;SET UP TO TEST AGAIN
3610 021242 104023 3$: ERROR 23 ;SOMTHING WRONG WITH TRE BIT
3611 021244 004737 007260 JSR R7,WHYFO ;SEE IF AN ERROR BIT IS SET
3612 ;OR BOTH UPE IN RHCS2 AND SC IN
3613 ;RHCS1 HAS AN OPEN BETWEEN IT AND THE BUS
3614 021250 000411 BR 8$ ;SET UP TO TEST AGAIN
3615 021252 104011 4$: ERROR 11 ;SC BIT WAS SET BY EITHER ATTN OR
3616 021254 004737 007260 JSR R7,WHYFO ;FIND WHAT ERROR BIT IS SET
3617 ;MCPE ERROR OR SC IS SHORTED TO +5 VOLTS
3618 021260 000405 BR 8$ ;SETUP TO TEST AGAIN
3619 021262 104022 6$: ERROR 22 ;TRE WAS SET BY OTHER THAN UPE
3620 021264 004737 007260 JSR R7,WHYFO ;FIND ERROR BIT THAT SET TRE
3621 021270 000401 BR 8$ ;SETUP TO TEST AGAIN
3622 021272 104013 7$: ERROR 13 ;TRE HAS AN OPEN GOING TO THE BUS
3623 021274 032737 041400 177570 8$: BIT #SW14!SW9!SW8,@#177570 ;ANY LOOPING BEEING DONE
3624 021302 001003 BNE 21$ ;YES,LOAD TRE NO MATTER WHAT
3625 021304 105737 001103 TSTB $ERFLG ;WAS THERE AN ERROR
3626 021310 001010 BNE 9$ ;SKIP TRE CHECK
3627 021312 112777 000100 162044 21$: MOVB #TREB,@RHCS1B ;LOAD TRE
3628 021320 032777 020000 162012 BIT #UPE,@RHCS2 ;DID ERROR CLEAR
3629 021326 001401 BEQ 9$ ;YES EXIT TEST
3630 021330 104050 ERROR 50 ;LOADING TRE DID NOT CLEAR ERROR
3631 021332 004737 006626 9$: JSR R7,CLEER ;SEE IF ERRORS ARE CLEARED
3632 021336 004737 050244 JSR R7,ERRTST
```

```
3633
3634 021342 FANGIE:
3635
3636 ;*****
3637 ;*TEST 25 NED BIT TEST
3638 ;*THIS TEST WILL CHECK THAT NED (NON-EXISTANT DRIVE)
3639 ;*SETS TRE AND SC BITS IN RHCS1.....
3640 ;*****
```

```
3641 021342 000004 TST25: SCOPE
3642
3643 021344 012777 000000 161766 MOV #ZERO,@RHCS2 ;SETUP NED
3644 021352 005701 TST R1 ;RH11 OR RH70
3645 021354 100403 BMI NEDERR ;IT'S AN RH11
3646 021356 012777 000000 161774 MOV #ZERO,@RHBAE ;SETUP BA EXTENSION
3647 021364 012777 177777 161740 NEDERR: MOV #-1,@RHWC ;FOR A 1 WORD TRANSFER
3648 021372 012777 001172 161734 MOV #SREG4,@RHBA ;SETUP BA
3649 021400 012777 000061 161722 MOV #WRITE0,@RHCS1 ;TELL IT TO WRITE
3650 021406 005037 003446 CLR BITCNT ;CLEAR BIT COUNTER
3651 021412 032777 000200 161710 18$: BIT #RDY,@RHCS1 ;IS RDY SET
3652 021420 001015 BNE BAKER ;BIT IS SET
3653 021422 005237 003446 INC BITCNT ;COUNT UP
3654 021426 001371 BNE 18$ ;NOT FINISHED COUNTING
3655 021430 005037 003446 CLR BITCNT ;GET READY TO DO IT AGAIN
```

```

3656 021434 032777 000200 161666 19$: BIT #RDY,@RHCS1 ;IS IT SET YET?
3657 021442 001004 BNE BAKER ;YES
3658 021444 005237 003446 INC BITCNT ;COUNT UP
3659 021450 001401 BEQ BAKER ;BIT IS NOT GOING TO SET
3660 021452 000770 BR 19$
3661 021454 BAKER:
3662 021454 017737 161650 001162 MOV @RHCS1,$REGO ;SET UP NEEDED BITS ONLY
3663 021462 042737 027777 001162 BIC #GO!IE!RDY!A16!A17!PSEL!DVA!MCPE!READ6,$REGO ;CLEAR BITS NOT NEEDED
3664 ;SAVE RHCS1
3665 021470 017737 161634 003420 MOV @RHCS1,CS1 ;SAVE WORD COUNT
3666 021476 017737 161630 003444 MOV @RHWC,WC ;SAVE BUS ADDRESS
3667 021504 017737 161624 003414 MOV @RHBA,BA ;IS IT AN RH11
3668 021512 005701 TST R1 ;NO IT'S A 70
3669 021514 001406 BEQ 87$ ;CLEAR BAE
3670 021516 005037 003416 CLR BAE ;CLEAR CS3
3671 021522 005037 003424 CLR CS3 ;CONTINUE
3672 021526 000137 021546 JMP 86$ ;SAVE BUS ADDRESS EXTENSION
3673 021532 017737 161622 003416 87$: MOV @RHBAE,BAE ;SAVE RHCS3
3674 021540 017737 161616 003424 MOV @RHCS3,CS3 ;SAVE CS2
3675 021546 017737 161566 003422 86$: MOV @RHCS2,CS2 ;SAVE TESTER STATUS
3676 021554 017737 161562 003432 MOV @RHST,DS1 ;SAVE ERROR REGISTER
3677 021562 017737 161556 003436 MOV @RHER,ER1 ;SAVE TESTER DATA REG.
3678 021570 017737 161554 003442 MOV @RHTDB,TDR ;SAVE MR2 TESTER REG.
3679 021576 017737 161534 003440 MOV @RHMR2,TC ;IS READY SET
3680 021604 032777 000200 161516 BIT #RDY,@RHCS1 ;YES CONTINUE TEST
3681 021612 001003 BNE 99$ ;READY NOT SET
3682 021614 104102 ERROR 102 ;ANY ERRORS SET
3683 021616 004737 007260 JSR R7,WHYFO ;IS NED SET
3684 021622 032777 010000 161510 99$: BIT #NED,@RHCS2 ;YES CHECK TRE AND SC
3685 021630 001016 BNE 1$ ;IS THE SC AND TRE BITS SET
3686 021632 022737 140000 001162 CMP #SC!TRE,$REGO ;YES NED IS IN ERROR
3687 021640 001460 BEQ 2$ ;IS JUST THE TRE BIT SET
3688 021642 032737 040000 001162 BIT #TRE,$REGO ;TRE BIT MUST BE IN ERROR
3689 021650 001060 BNE 3$ ;IS JUST THE SC BIT SET
3690 021652 032737 100000 001162 BIT #SC,$REGO ;SC BIT SET ERRONIOUSLY
3691 021660 001060 BNE 4$ ;NED NOT SET IN RHCS2
3692 021662 104024 ERROR 24 ;SET UP TO TEST AGAIN
3693 021664 000467 BR 8$ ;IS SC AND TRE SET
3694 021666 022737 140000 001162 1$: CMP #SC!TRE,$REGO ;FIND THE ERROR
3695 021674 001030 BNE 22$ ;TEST FOR SHORTS
3696 021676 012737 000000 004124 MOV #ZERO,$CS1
3697 021704 012737 167400 004126 MOV #MPE!MXF!PGE!NEM!UPE!WCE!DLT,$CS2
3698 021712 012737 174100 004130 MOV #APE!DPEHI!DPELO!WCEHI!WCELO!IE3,$CS3
3699 021720 013737 004132 004132 MOV $ST,$ST
3700 021726 013737 004134 004134 MOV $ER,$ER
3701 021734 012737 177777 004122 MOV #-1,BEFORE ;TELL WHYFO ITS FOR SHORTS
3702 021742 004737 007260 JSR R7,WHYFO ;TEST FOR SHORTS
3703 021746 005037 004122 CLR BEFORE ;WE HAVE CHECKED FOR SHORTS
3704 021752 000137 022044 JMP 8$ ;LEAVE THE TEST
3705 021756 032737 040000 001162 22$: BIT #TRE,$REGO ;THEN IS THE TRE BIT SET
3706 021764 001022 BNE 6$ ;SC BIT DID NOT SEE TRE BIT
3707 021766 032737 100000 001162 BIT #SC,$REGO ;IS THE SC BIT SET
3708 021774 001022 BNE 7$ ;TRE HAS AN OPEN GOING TO BUS
3709 021776 104006 ERROR 6 ;TRE SET LOGIC NOT WORKING
3710 022000 000421 BR 8$ ;SET UP TO TEST AGAIN
3711 022002 104025 2$: ERROR 25 ;NED HAS OPEN IN LINE GOING TO BUS

```

```
3712 022004 004737 007260 JSR R7,WHYFO ;SEE IF ANY OTHER ERROR BIT IS
3713 ;SET OTHER THAN NED
3714 022010 000415 BR 8$ ;SET UP TO TEST AGAIN
3715 022012 104026 3$: ERROR 26 ;SOMTHING WRONG WITH TRE BIT
3716 022014 004737 007260 JSR R7,WHYFO ;SEE IF AN ERROR BIT IS SET
3717 ;OR BOTH NED IN RHCS2 AND SC IN
3718 ;RHCS1 HAS AN OPEN BETWEEN IT AND THE BUS
3719 022020 000411 BR 8$ ;SET UP TO TEST AGAIN
3720 022022 104011 4$: ERROR 11 ;SC BIT WAS SET BY EITHER ATTN OR
3721 022024 004737 007260 JSR R7,WHYFO ;FIND WHAT ERROR BIT IS SET
3722 ;MCPE ERROR OR SC IS SHORTED TO +5 VOLTS
3723 022030 000405 BR 8$ ;SETUP TO TEST AGAIN
3724 022032 104027 6$: ERROR 27 ;TRE WAS SET BY OTHER THAN NED
3725 022034 004737 007260 JSR R7,WHYFO ;FIND ERROR BII THAT SET TRE
3726 022040 000401 BR 8$ ;SETUP TO TEST AGAIN
3727 022042 104013 7$: ERROR 13 ;TRE HAS AN OPEN GOING TO THE BUS
3728 022044 032737 041400 177570 8$: BIT #SW14!SW9!SW8,@#177570 ;ANY LOOPING BEEING DONE
3729 022052 001003 BNE 21$ ;YES,LOAD TRE NO MATTER WHAT
3730 022054 105737 001103 TSTB $ERFLG ;WAS THERE AN ERROR
3731 022060 001010 BNE 9$ ;SKIP TRE CHECK
3732 022062 112777 000100 161274 21$: MOVB #TREB,@RHCS1B ;LOAD TRE
3733 022070 032777 010000 161242 BIT #NED,@RHCS2 ;DID ERROR CLEAR
3734 022076 001401 BEQ 9$ ;YES EXIT TEST
3735 022100 104050 ERROR 50 ;LOADING TRE DID NOT CLEAR ERROR
3736 022102 004737 006626 9$: JSR R7,CLEER ;SEE IF ERRORS ARE CLEARED
3737 022106 004737 050244 JSR R7,ERRTST
```

```
3738
3739
3740 ::*****
3741 :*TEST 26 MXF ,TRE AND SC BIT TEST
3742 ;*THIS TEST WILL CHECK THAT MXF
3743 ;*(MISSED TRANSFER ERROR) WILL
3744 ;*SET TRE AND SC BITS.....
3745 ::*****
```

```
3746 022112 000004 TST26: SCOPE
3747
3748 022114 012777 000027 161216 MOV #PAT!7,@RHCS2 ;SET MXF BIT
3749 022122 012777 177777 161202 MOV #-1,@RHC ;SET UP WORD COUNT
3750 022130 012777 004100 161176 MOV #RBUF,@RHBA ;SETUP BA
3751 022136 012777 000000 161204 MOV #ZERO,@RHTDB ;SET MXF ERROR
3752 022144 012777 000061 161156 MOV #WRITE0,@RHCS1 ;TELL IT TO WRITE
3753 022152 005037 003446 CLR BITCNT ;CLEAR BIT COUNTER
3754 022156 032777 000200 161144 18$: BIT #RDY,@RHCS1 ;IS RDY SET
3755 022164 001015 BNE CHARLE ;BIT IS SET
3756 022166 005237 003446 INC BITCNT ;COUNT UP
3757 022172 001371 BNE 18$ ;NOT FINISHED COUNTING
3758 022174 005037 003446 CLR BITCNT ;GET READY TO DO IT AGAIN
3759 022200 032777 000200 161122 19$: BIT #RDY,@RHCS1 ;IS IT SET YET?
3760 022206 001004 BNE CHARLE ;YES
3761 022210 005237 003446 INC BITCNT ;COUNT UP
3762 022214 001401 BEQ CHARLE ;BIT IS NOT GOING TO SET
3763 022216 000770 BR 19$
3764 022220 CHARLE:
3765 022220 017737 161104 001162 MOV @RHCS1,$REGO ;SET UP NEEDED BITS ONLY
3766 022226 042737 027777 001162 BIC #GO!IE!RDY!A16!A17!PSEL!DVA!MCPE!READ6,$REGO ;CLEAR BITS NOT NEEDED
3767
```



3768	022234	017737	161070	003420		MOV	@RHCS1,CS1	:SAVE RHCS1
3769	022242	017737	161064	003444		MOV	@RHWC,WC	:SAVE WORD COUNT
3770	022250	017737	161060	003414		MOV	@RHBA,BA	:SAVE BUS ADDRESS
3771	022256	005701				TST	R1	:IS IT AN RH11
3772	022260	001406				BEQ	87\$	:NO IT'S A 70
3773	022262	005037	003416			CLR	BAE	:CLEAR BAE
3774	022266	005037	003424			CLR	CS3	:CLEAR CS3
3775	022272	000137	022312			JMP	86\$	:CONTINUE
3776	022276	017737	161056	003416	87\$:	MOV	@RHBAE,BAE	:SAVE BUS ADDRESS EXTENSION
3777	022304	017737	161052	003424		MOV	@RHCS3,CS3	:SAVE RHCS3
3778	022312	017737	161022	003422	86\$:	MOV	@RHCS2,CS2	:SAVE CS2
3779	022320	017737	161016	003432		MOV	@RHST,DS1	:SAVE TESTER STATUS
3780	022326	017737	161012	003436		MOV	@RHER,ER1	:SAVE ERROR REGISTER
3781	022334	017737	161010	003442		MOV	@RHTDB,TDR	:SAVE TESTER DATA REG.
3782	022342	017737	160770	003440		MOV	@RHMR2,TC	:SAVE MR2 TESTER REG.
3783	022350	032777	000200	160752		BIT	#RDY,@RHCS1	:IS READY SET
3784	022356	001003				BNE	99\$	:YES CONTINUE TEST
3785	022360	104102				ERROR	102	:READY NOT SET
3786	022362	004737	007260			JSR	R7,WHYFO	:ANY ERRORS SET
3787	022366	032777	001000	160744	99\$:	BIT	#MXF,@RHCS2	:IS MXF SET
3788	022374	001016				BNE	1\$	:YES CHECK TRE AND SC
3789	022376	022737	140000	001162		CMP	#SC!TRE,\$REGO	:IS THE SC AND TRE BITS SET
3790	022404	001460				BEQ	2\$	:YES MXF IS IN ERROR
3791	022406	032737	040000	001162		BIT	#TRE,\$REGO	:IS JUST THE TRE BIT SET
3792	022414	001060				BNE	3\$	:TRE BIT MUST BE IN ERROR
3793	022416	032737	100000	001162		BIT	#SC,\$REGO	:IS JUST THE SC BIT SET
3794	022424	001060				BNE	4\$	:SC BIT SET ERRONIOUSLY
3795	022426	104030				ERROR	30	:MXF NOT SET IN RHCS2
3796	022430	000467				BR	8\$	:SET UP TO TEST AGAIN
3797	022432	022737	140000	001162	1\$:	CMP	#SC!TRE,\$REGO	:IS SC AND TRE SET
3798	022440	001030				BNE	22\$	:FIND THE ERROR
3799	022442	012737	020000	004124		MOV	#MCPE,\$CS1	:TEST FOR SHORTS
3800	022450	012737	176400	004126		MOV	#MPE!PGE!NEM!NED!UPE!WCE!DLT,\$CS2	
3801	022456	013737	004130	004130		MOV	\$CS3,\$CS3	
3802	022464	013737	004132	004132		MOV	\$ST,\$ST	
3803	022472	012737	030165	004134		MOV	#ILF!RMR!DPE!RMBEX!RFAIL!DTE!OPI,\$ER	
3804	022500	012737	177777	004122		MOV	#-1,BEFORE	:TELL WHYFO ITS FOR SHORTS
3805	022506	004737	007260			JSR	R7,WHYFO	:TEST FOR SHORTS
3806	022512	005037	004122			CLR	BEFORE	:WE HAVE CHECKED FOR SHORTS
3807	022516	000137	022610			JMP	8\$	:LEAVE THE TEST
3808	022522	032737	040000	001162	22\$:	BIT	#TRE,\$REGO	:THEN IS THE TRE BIT SET
3809	022530	001022				BNE	6\$	:SC BIT DID NOT SEE TRE BIT
3810	022532	032737	100000	001162		BIT	#SC,\$REGO	:IS THE SC BIT SET
3811	022540	001022				BNE	7\$	:TRE HAS AN OPEN GOING TO BUS
3812	022542	104006				ERROR	6	:TRE SET LOGIC NOT WORKING
3813	022544	000421				BR	8\$	:SET UP TO TEST AGAIN
3814	022546	104031			2\$:	ERROR	31	:MXF HAS OPEN IN LINE GOING TO BUS
3815	022550	004737	007260			JSR	R7,WHYFO	:SEE IF ANY OTHER ERROR BIT IS
3816								:SET OTHER THAN MXF
3817	022554	000415				BR	8\$	:SET UP TO TEST AGAIN
3818	022556	104032			3\$:	ERROR	32	:SOMTHING WRONG WITH TRE BIT
3819	022560	004737	007260			JSR	R7,WHYFO	:SEE IF AN ERROR BIT IS SET
3820								:OR BOTH MXF IN RHCS2 AND SC IN
3821								:RHCS1 HAS AN OPEN BETWEEN IT AND THE BUS
3822	022564	000411				BR	8\$	:SET UP TO TEST AGAIN
3823	022566	104011			4\$:	ERROR	11	:SC BIT WAS SET BY EITHER ATTN OR

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3824 022570 004737 007260      JSR      R7,WHYFO      :FIND WHAT ERROR BIT IS SET
3825                               :MCPE ERROR OR SC IS SHORTED TO +5 VOLTS
3826 022574 000405                BR      8$             :SETUP TO TEST AGAIN
3827 022576 104033      6$:    ERROR      33      :TRE WAS SET BY OTHER THAN MXF
3828 022600 004737 007260      JSR      R7,WHYFO      :FIND ERROR BIT THAT SET TRE
3829 022604 000401                BR      8$             :SETUP TO TEST AGAIN
3830 022606 104013      7$:    ERROR      13      :TRE HAS AN OPEN GOING TO THE BUS
3831 022610 032737 041400 177570 8$:    BIT      #SW14!SW9!SW8,@#177570 :ANY LOOPING BEEING DONE
3832 022616 001003                BNE     21$            :YES,LOAD TRE NO MATTER WHAT
3833 022620 105737 001103      TSTB    $ERFLG        :WAS THERE AN ERROR
3834 022624 001010                BNE     9$             :SKIP TRE CHECK
3835 022626 112777 000100 160530 21$:    MOVB    #TREB,@RHCS1B :LOAD TRE
3836 022634 032777 001000 160476      BIT    #MXF,@RHCS2    :DID ERROR CLEAR
3837 022642 001401                BEQ     9$             :YES EXIT TEST
3838 022644 104050      ERROR    50          :LOADING TRE DID NOT CLEAR ERROR
3839 022646 004737 006626      9$:    JSR      R7,CLEER  :SEE IF ERRORS ARE CLEARED
3840 022652 004737 050244      JSR      R7,ERRTST

:*****
:*TEST 27      PGE ERROR BIT TEST
:THIS TEST FORCES PGE TO SET IN RHCS2
:AND VERIFYS TRE AND SC IS SET IN RHCS1
:*****
TST27: SCOPE
3846 022656 000004      MOV     #7,@RHCS2      :SET UNIT NUMBER
3847 022660 012777 000007 160452      MOV     #EVENAD,@RHBA  :SETUP BUS ADDRESS
3848 022666 012777 004000 160440      TST    R1              :IS IT AN 11 OR A 70
3849 022674 005701                BMI    JUMP           :ITS AN RH11
3850 022676 100403                MOV     #ZERO,@RHBAE   :SETUP BAE
3851 022700 012777 000000 160452      JUMP:  MOV     #WRITE0,@RHCS1 :TELL IT TO WRITE
3852 022706 012777 000061 160414      MOV     #WRITE0,@RHCS1 :CREATE THE ERROR
3853 022714 012777 000061 160406      CLR    BITCNT         :CLEAR BIT COUNTER
3854 022722 005037 003446                BIT    #RDY,@RHCS1    :IS RDY SET
3855 022726 032777 000200 160374 18$:    BNE    PGETST        :BIT IS SET
3856 022734 001015                INC    BITCNT         :COUNT UP
3857 022736 005237 003446                BNE    18$           :NOT FINISHED COUNTING
3858 022742 001371                CLR    BITCNT         :GET READY TO DO IT AGAIN
3859 022744 005037 003446                BIT    #RDY,@RHCS1    :IS IT SET YET?
3860 022750 032777 000200 160352 19$:    BNE    PGETST        :YES
3861 022756 001004                INC    BITCNT         :COUNT UP
3862 022760 005237 003446                BEQ    PGETST        :BIT IS NOT GOING TO SET
3863 022764 001401                BR     19$
3864 022766 000770
3865 022770      PGETST:
3866 022770 017737 160334 001162      MOV     @RHCS1,$REGO   :SET UP NEEDED BITS ONLY
3867 022776 042737 027777 001162      BIC    #GO!IE!RDY!A16!A17!PSEL!DVA!MCPE!READ6,$REGO :CLEAR BITS NOT NEEDED
3868
3869 023004 017737 160320 003420      MOV     @RHCS1,CS1     :SAVE RHCS1
3870 023012 017737 160314 003444      MOV     @RHWC,WC       :SAVE WORD COUNT
3871 023020 017737 160310 003414      MOV     @RHBA,BA       :SAVE BUS ADDRESS
3872 023026 005701                TST    R1              :IS IT AN RH11
3873 023030 001406                BEQ    87$            :NO IT'S A 70
3874 023032 005037 003416      CLR    BAE            :CLEAR BAE
3875 023036 005037 003424      CLR    CS3           :CLEAR CS3
3876 023042 000137 023062      JMP    86$           :CONTINUE
3877 023046 017737 160306 003416 87$:    MOV     @RHBAE,BAE     :SAVE BUS ADDRESS EXTENSION
3878 023054 017737 160302 003424      MOV     @RHCS3,CS3    :SAVE RHCS3
3879 023062 017737 160252 003422 86$:    MOV     @RHCS2,CS2    :SAVE CS2

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3880	023070	017737	160246	003432		MOV	@RHST,DS1	:SAVE TESTER STATUS
3881	023076	017737	160242	003436		MOV	@RHER,ER1	:SAVE ERROR REGISTER
3882	023104	017737	160240	003442		MOV	@RHTDB,TDR	:SAVE TESTER DATA REG.
3883	023112	017737	160220	003440		MOV	@RHMR2,TC	:SAVE MR2 TESTER REG.
3884	023120	032777	000200	160202		BIT	#RDY,@RHCS1	:IS READY SET
3885	023126	001003				BNE	99\$	:YES CONTINUE TEST
3886	023130	104102				ERROR	102	:READY NOT SET
3887	023132	004737	007260			JSR	R7,WHYFO	:ANY ERRORS SET
3888	023136	032777	002000	160174	99\$:	BIT	#PGE,@RHCS2	:IS PGE SET
3889	023144	001016				BNE	1\$	:YES CHECK TRE AND SC
3890	023146	022737	140000	001162		CMP	#SC!TRE,\$REGO	:IS THE SC AND TRE BITS SET
3891	023154	001460				BEQ	2\$	:YES PGE IS IN ERROR
3892	023156	032737	040000	001162		BIT	#TRE,\$REGO	:IS JUST THE TRE BIT SET
3893	023164	001060				BNE	3\$	:TRE BIT MUST BE IN ERROR
3894	023166	032737	100000	001162		BIT	#SC,\$REGO	:IS JUST THE SC BIT SET
3895	023174	001060				BNE	4\$	:SC BIT SET ERRONIOUSLY
3896	023176	104051				ERROR	51	:PGE NOT SET IN RHCS2
3897	023200	000467				BR	8\$	:SET UP TO TEST AGAIN
3898	023202	022737	140000	001162	1\$:	CMP	#SC!TRE,\$REGO	:IS SC AND TRE SET
3899	023210	001030				BNE	22\$	:FIND THE ERROR
3900	023212	013737	004124	004124		MOV	\$CS1,\$CS1	:TEST FOR SHORTS
3901	023220	012737	175400	004126		MOV	#MPE!MXF!NEM!NED!UPE!WCE!DLT,\$CS2	
3902	023226	013737	004130	004130		MOV	\$CS3,\$CS3	
3903	023234	013737	004132	004132		MOV	\$ST,\$ST	
3904	023242	012737	030175	004134		MOV	#ILF!CPE!RMR!DPE!RMBEX!RFAIL!DTE!OPI,\$ER	
3905	023250	012737	177777	004122		MOV	#-1,BEFORE	:TELL WHYFO ITS FOR SHORTS
3906	023256	004737	007260			JSR	R7,WHYFO	:TEST FOR SHORTS
3907	023262	005037	004122			CLR	BEFORE	:WE HAVE CHECKED FOR SHORTS
3908	023266	000137	023360			JMP	8\$	:LEAVE THE TEST
3909	023272	032737	040000	001162	22\$:	BIT	#TRE,\$REGO	:THEN IS THE TRE BIT SET
3910	023300	001022				BNE	6\$	:SC BIT DID NOT SEE TRE BIT
3911	023302	032737	100000	001162		BIT	#SC,\$REGO	:IS THE SC BIT SET
3912	023310	001022				BNE	7\$	:TRE HAS AN OPEN GOING TO BUS
3913	023312	104006				ERROR	6	:TRE SET LOGIC NOT WORKING
3914	023314	000421				BR	8\$	:SET UP TO TEST AGAIN
3915	023316	104123			2\$:	ERROR	123	:PGE HAS OPEN IN LINE GOING TO BUS
3916	023320	004737	007260			JSR	R7,WHYFO	:SEE IF ANY OTHER ERROR BIT IS
3917								:SET OTHER THAN PGE
3918	023324	000415				BR	8\$	:SET UP TO TEST AGAIN
3919	023326	104171			3\$:	ERROR	171	:SOMTHING WRONG WITH TRE BIT
3920	023330	004737	007260			JSR	R7,WHYFO	:SEE IF AN ERROR BIT IS SET
3921								:OR BOTH PGE IN RHCS2 AND SC IN
3922								:RHCS1 HAS AN OPEN BETWEEN IT AND THE BUS
3923	023334	000411				BR	8\$	:SET UP TO TEST AGAIN
3924	023336	104011			4\$:	ERROR	11	:SC BIT WAS SET BY EITHER ATTN OR
3925	023340	004737	007260			JSR	R7,WHYFO	:FIND WHAT ERROR BIT IS SET
3926								:MCPE ERROR OR SC IS SHORTED TO +5 VOLTS
3927	023344	000405				BR	8\$	:SETUP TO TEST AGAIN
3928	023346	104172			6\$:	ERROR	172	:TRE WAS SET BY OTHER THAN PGE
3929	023350	004737	007260			JSR	R7,WHYFO	:FIND ERROR BIT THAT SET TRE
3930	023354	000401				BR	8\$	:SETUP TO TEST AGAIN
3931	023356	104013			7\$:	ERROR	13	:TRE HAS AN OPEN GOING TO THE BUS
3932	023360	032737	041400	177570	8\$:	BIT	#SW14!SW9!SW8,@#177570	:ANY LOOPING BEEING DONE
3933	023366	001003				BNE	21\$	:YES,LOAD TRE NO MATTER WHAT
3934	023370	105737	001103			TSTB	\$ERFLG	:WAS THERE AN ERROR
3935	023374	001010				BNE	9\$	:SKIP TRE CHECK

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3936 023376 112777 000100 157760 21$:  MOVB  #TREB,@RHCS1B      :LOAD TRE
3937 023404 032777 002000 157726      BIT  #PGE,@RHCS2      :DID ERROR CLEAR
3938 023412 001401      BEQ   9$              :YES EXIT TEST
3939 023414 104050      ERROR 50             :LOADING TRE DID NOT CLEAR ERROR
3940 023416 004737 005626      9$:   JSR   R7,CLEER    :SEE IF ERRORS ARE CLEARED
3941 023422 004737 050244      JSR   R7,ERRTST
3942
3943
3944
3945
3946
3947
3948
3949 023426 000004      :*****
3950 023430 005701      :*TEST 30      MXF,TRE AND SC BIT TEST (RH11 ONLY)
3951 023432 100402      :*THIS TEST SEES IF MXF CAN BE SET BY A MOVE
3952 023434 000137 024160      :*INSTRUCTION AND THAT TRE AND SC ARE SET IN
3953 023440 012777 000007 157672 LEAP:  MOV   #7,@RHCS2      :*RHCS1.MXF CAN BE SET THIS WAY IN AN RH11 BUT CN
3954 023446 052777 001000 157664      :*NOT BE SET THIS WAY IN AN RH70.....
3955 023454 005037 003446      :*****
3956 023460 032777 001000 157652 18$:  SCOPE
3957 023466 001015      TST   R1              :IS IT A 70 OR 1!
3958 023470 005237 003446      BMI   LEAP            :IT'S AN RH11 DO THE TEST
3959 023474 001371      JMP   FROG            :RH70,EXIT TEST
3960 023476 005037 003446      LEAP: MOV   #7,@RHCS2  :SETUP UNIT 7
3961 023502 032777 001000 157630 19$:  BIS   #MXF,@RHCS2    :SET MXF
3962 023510 001004      CLR   BITCNT          :CLEAR BIT COUNTER
3963 023512 005237 003446      18$:  BIT   #MXF,@RHCS2  :IS MXF SET
3964 023516 001401      BNE   MIXIT           :BIT IS SET
3965 023520 000770      INC   BITCNT          :COUNT UP
3966 023522      BNE   18$            :NOT FINISHED COUNTING
3967 023522 017737 157602 001162      CLR   BITCNT          :GET READY TO DO IT AGAIN
3968 023530 042737 027777 001162 19$:  BIT   #MXF,@RHCS2    :IS IT SET YET?
3969      BNE   MIXIT           :YES
3970 023536 017737 157566 003420      INC   BITCNT          :COUNT UP
3971 023544 017737 157562 003444      BEQ   MIXIT           :BIT IS NOT GOING TO SET
3972 023552 017737 157556 003414      MIXIT: MOV  @RHCS1,$REGO   :SET UP NEEDED BITS ONLY
3973 023560 005701      BIC   #GO!IE!RDY!A16!A17!PSEL!DVA!MCPE!READ6,$REGO :CLEAR BITS NOT NEEDED
3974 023562 001406      MOV   @RHCS1,CS1     :SAVE RHCS1
3975 023564 005037 003416      MOV   @RHWC,WC       :SAVE WORD COUNT
3976 023570 005037 003424      MOV   @RHBA,BA       :SAVE BUS ADDRESS
3977 023574 000137 023614      TST   R1              :IS IT AN RH11
3978 023600 017737 157554 003416 87$:  BEQ   87$            :NO IT'S A 70
3979 023606 017737 157550 003424      CLR   BAE            :CLEAR BAE
3980 023614 017737 157520 003422 86$:  CLR   CS3            :CLEAR CS3
3981 023622 017737 157514 003432      JMP   86$            :CONTINUE
3982 023630 017737 157510 003436      MOV   @RHBAE,BAE     :SAVE BUS ADDRESS EXTENSION
3983 023636 017737 157506 003442      MOV   @RHCS3,CS3     :SAVE RHCS3
3984 023644 017737 157466 003440      MOV   @RHCS2,CS2     :SAVE CS2
3985 023652 032777 000200 157450      MOV   @RHST,DS1     :SAVE TESTER STATUS
3986 023660 001003      MOV   @RHER,ER1     :SAVE ERROR REGISTER
3987 023662 104102      MOV   @RHTDB,TDR    :SAVE TESTER DATA REG.
3988 023664 004737 007260      MOV   @RHMR2,TC     :SAVE MR2 TESTER REG.
3989 023670 032777 001000 157442 99$:  BIT   #RDY,@RHCS1    :IS READY SET
3990 023676 001016      BNE   99$            :YES CONTINUE TEST
3991 023700 022737 140000 001162      ERROR 102           :READY NOT SET
      JSR   R7,WHYFO    :ANY ERRORS SET
      BIT   #MXF,@RHCS2 :IS MXF SET
      BNE   1$          :YES CHECK TRE AND SC
      CMP   #SC!TRE,$REGO :IS THE SC AND TRE BITS SET

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3992 023706 001460 BEQ 2$ :YES MXF IS IN ERROR
3993 023710 032737 040000 001162 BIT #TRE,$REGO :IS JUST THE TRE BIT SET
3994 023716 001060 BNE 3$ :TRE BIT MUST BE IN ERROR
3995 023720 032737 100000 001162 BIT #SC,$REGO :IS JUST THE SC BIT SET
3996 023726 001060 BNE 4$ :SC BIT SET ERRONIOUSLY
3997 023730 104030 ERROR 30 :MXF NOT SET IN RHCS2
3998 023732 000467 BR 8$ :SET UP TO TEST AGAIN
3999 023734 022737 140000 001162 1$: CMP #SC!TRE,$REGO :IS SC AND TRE SET
4000 023742 001030 BNE 22$ :FIND THE ERROR
4001 023744 013737 004124 004124 MOV $CS1,$CS1 :TEST FOR SHORTS
4002 023752 012737 176400 004126 MOV #MPE!PGE!NEM!NED!UPE!WCE!DLT,$CS2
4003 023760 013737 004130 004130 MOV $CS3,$CS3
4004 023766 013737 004132 004132 MOV $ST,$ST
4005 023774 013737 004134 004134 MOV $ER,$ER
4006 024002 012737 177777 004122 MOV #-1,BEFORE :TELL WHYFO ITS FOR SHORTS
4007 024010 004737 007260 JSR R7,WHYFO :TEST FOR SHORTS
4008 024014 005037 004122 CLR BEFORE :WE HAVE CHECKED FOR SHORTS
4009 024020 000137 024112 JMP 8$ :LEAVE THE TEST
4010 024024 032737 040000 001162 22$: BIT #TRE,$REGO :THEN IS THE TRE BIT SET
4011 024032 001022 BNE 6$ :SC BIT DID NOT SEE TRE BIT
4012 024034 032737 100000 001162 BIT #SC,$REGO :IS THE SC BIT SET
4013 024042 001022 BNE 7$ :TRE HAS AN OPEN GOING TO BUS
4014 024044 104006 ERROR 6 :TRE SET LOGIC NOT WORKING
4015 024046 000421 BR 8$ :SET UP TO TEST AGAIN
4016 024050 104031 2$: ERROR 31 :MXF HAS OPEN IN LINE GOING TO BUS
4017 024052 004737 007260 JSR R7,WHYFO :SEE IF ANY OTHER ERROR BIT IS
4018 :SET OTHER THAN MXF
4019 024056 000415 BR 8$ :SET UP TO TEST AGAIN
4020 024060 104032 3$: ERROR 32 :SOMTHING WRONG WITH TRE BIT
4021 024062 004737 007260 JSR R7,WHYFO :SEE IF AN ERROR BIT IS SET
4022 :OR BOTH MXF IN RHCS2 AND SC IN
4023 :RHCS1 HAS AN OPEN BETWEEN IT AND THE BUS
4024 024066 000411 BR 8$ :SET UP TO TEST AGAIN
4025 024070 104011 4$: ERROR 11 :SC BIT WAS SET BY EITHER ATTN OR
4026 024072 004737 007260 JSR R7,WHYFO :FIND WHAT ERROR BIT IS SET
4027 :MCPE ERROR OR SC IS SHORTED TO +5 VOLTS
4028 024076 000405 BR 8$ :SETUP TO TEST AGAIN
4029 024100 104033 6$: ERROR 33 :TRE WAS SET BY OTHER THAN MXF
4030 024102 004737 007260 JSR R7,WHYFO :FIND ERROR BIT THAT SET TRE
4031 024106 000401 BR 8$ :SETUP TO TEST AGAIN
4032 024110 104013 7$: ERROR 13 :TRE HAS AN OPEN GOING TO THE BUS
4033 024112 032737 041400 177570 8$: BIT #SW14!SW9!SW8,@#177570 :ANY LOOPING BEEING DONE
4034 024120 001003 BNE 21$ :YES,LOAD TRE NO MATTER WHAT
4035 024122 105737 001103 TSTB $ERFLG :WAS THERE AN ERROR
4036 024126 001010 BNE 9$ :SKIP TRE CHECK
4037 024130 112777 000100 157226 21$: MOVB #TREB,@RHCS1B :LOAD TRE
4038 024136 032777 001000 157174 BIT #MXF,@RHCS2 :DID ERROR CLEAR
4039 024144 001401 BEQ 9$ :YES EXIT TEST
4040 024146 104050 ERROR 50 :LOADING TRE DID NOT CLEAR ERROR
4041 024150 004737 006626 9$: JSR R7,CLEER :SEE IF ERRORS ARE CLEARED
4042 024154 004737 050244 JSR R7,ERRTST
4043 024160
4044
4045
4046
4047
FROG:
:*****
:*TEST 31 MCPE AND SC ERROR TET
:*THIS TEST CHECKS THAT MCPE CAN BE SET IN RHCS1
:*AND THAT MCPE SETS SC IN RHCS1.....
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4048
4049 024160 000004
4050 024162 012777 000007 157150
4051 024170 012777 000010 157156
4052 024176 013777 001162 157144
4053 024204 013777 001162 157136
4054 024212 005037 003446
4055 024216 032777 000200 157104 18$:
4056 024224 001015
4057 024226 005237 003446
4058 024232 001371
4059 024234 005037 003446
4060 024240 032777 000200 157062 19$:
4061 024246 001004
4062 024250 005237 003446
4063 024254 001401
4064 024256 000770
4065 024260
4066 024260 017737 157044 003420
4067 024266 017737 157040 003444
4068 024274 017737 157034 003414
4069 024302 005701
4070 024304 001406
4071 024306 005037 003416
4072 024312 005037 003424
4073 024316 000137 024336
4074 024322 017737 157032 003416 87$:
4075 024330 017737 157026 003424
4076 024336 017737 156776 003422 86$:
4077 024344 017737 156772 003432
4078 024352 017737 156766 003436
4079 024360 017737 156764 003442
4080 024366 017737 156744 003440
4081 024374 032777 000200 156726
4082 024402 001003
4083 024404 104102
4084 024406 004737 007260
4085 024412 032777 020000 156710 MPETST:
4086 024420 001425
4087 024422 032777 100000 156700
4088 024430 001416
4089 024432 012737 040000 004124
4090 024440 012737 177400 004126
4091 024446 012737 177777 004122
4092 024454 004737 007260
4093 024460 005037 004122
4094 024464 000406
4095 024466 104130 22$:
4096
4097
4098
4099 024470 000137 024502
4100 024474 104131 1$:
4101 024476 004737 007260
4102 024502 004737 006626 ERR30:
4103 024506 004737 050244

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:*****
TST31: SCOPE
MOV #7,@RHCS2 ;SETUP UNIT NO.
MOV #ICPA,@RHMR1 ;INVERT CONTROL PARITY
MOV $REGO,@RHTDB ;TRANSFER INFO TO TESTER
MOV $REGO,@RHTDB ;DO IT FOR SECOND TIME
CLR BITCNT ;CLEAR BIT COUNTER
BIT #RDY,@RHCS1 ;IS RDY SET
BNE MCPET ;BIT IS SET
INC BITCNT ;COUNT UP
BNE 18$ ;NOT FINISHED COUNTING
CLR BITCNT ;GET READY TO DO IT AGAIN
BIT #RDY,@RHCS1 ;IS IT SET YET?
BNE MCPET ;YES
INC BITCNT ;COUNT UP
BEQ MCPET ;BIT IS NOT GOING TO SET
BR 19$

MCPET:
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
MOV @RHBAE,BAE ;SAVE BUS ADDRESS EXTENSION
MOV @RHCS3,CS3 ;SAVE RHCS3
MOV @RHCS2,CS2 ;SAVE CS2
MOV @RHST,DS1 ;SAVE TESTER STATUS
MOV @RHER,ER1 ;SAVE ERROR REGISTER
MOV @RHTDB,TDR ;SAVE TESTER DATA REG.
MOV @RHMR2,TC ;SAVE MR2 TESTER REG.
BIT #RDY,@RHCS1 ;IS READY SET
BNE MPETST ;YES,TEST MCPE
ERROR 102 ;READY IS NOT SET
JSR R7,WHYFO ;ANY ERRORS SET
BIT #MCPE,@RHCS1 ;IS MCPE SET
BEQ 1$
BIT #SC,@RHCS1 ;IS SC SET
BEQ 22$ ;SC NOT SET
MOV #TRE,$CS1 ;GET READY TO TEST FOR SHORTS
MOV #MPE!MXF!PGE!NEM!NED!UPE!WCE!DLT,$CS2
MOV #-1,BEFORE
JSR R7,WHYFO ;SEE IF ANY SHORTS
CLR BEFORE
BR ERR30 ;GET OUT OF TEST
ERROR 130 ;MCPE ERROR OK BUT SC DID
;NOT SET SC HAS OPEN TO
;BUS OR MCPE GOING TO OR
;GATE FOR SC WAS NOT SEEN

JMP ERR30
ERROR 131 ;MCPE DID NOT SET
JSR R7,WHYFO ;WAS THERE ANOTHER ERROR
JSR R7,CLEER ;CLEAR ERRORS
JSR R7,ERRTST ;WAS THERE AN ERROR

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4104  
4105  
4106  
4107  
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*****  
;*TEST 32 DOUBLE TRANSFER TEST, 1 WORD FROM AN ADDRESS BASE 4  
;*THIS TEST CHECKS THAT A ONE WORD TRANSFER  
;*FROM AN ADDRESS DIVISIBLE BY 4 WILL NOT SET  
;*DBL IN RHCS3.....RH70 ONLY.....  
*****  
TST32: SCOPE  
TST R1 ;IS IN AN RH11  
BMI TST33 ;:GET OUT OF TEST  
MOV #-1,@RHWC ;SET UP WC FOR ONE WORD  
MOV #EVENAD,@RHBA ;SETUP BUS ADDRESS  
MOV #ZERO,@RHBAE ;SETUP BUS ADDRESS EXTENSION  
MOV #7,@RHCS2 ;DEVICE 7  
MOV #WRITE0,@RHCS1 ;TELL IT TO WRITE0  
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 :  
3$: MOV @RHCS1,CS1 ;SAVE RHCS1  
MOV @RHWC,WC ;SAVE WORD COUNT  
MOV @RHBA,BA ;SAVE BUS ADDRESS  
TST R1 ;IS IT AN RH11  
BEQ 87$ ;NO IT'S A 70  
CLR BAE ;CLEAR BAE  
CLR CS3 ;CLEAR CS3  
JMP 86$ ;CONTINUE  
87$: MOV @RHBAE,BAE ;SAVE BUS ADDRESS EXTENSION  
MOV @RHCS3,CS3 ;SAVE RHCS3  
86$: MOV @RHCS2,CS2 ;SAVE CS2  
MOV @RHST,DS1 ;SAVE TESTER STATUS  
MOV @RHER,ER1 ;SAVE ERROR REGISTER  
MOV @RHTDB,TDR ;SAVE TESTER DATA REG.  
MOV @RHMR2,TC ;SAVE MR2 TESTER REG.  
BIT #RDY,@RHCS1 ;IS READY SET  
BNE 1$ ;RDY SET CONT. TEST  
ERROR 102 ;READY DID NOT SET  
JSR R7,WHYFO ;ANY ERRORS SET  
1$: BIT #DBL,@RHCS3 ;IS DOUBLE SET  
BEQ 2$ ;DBL SET  
ERROR 125 ;DBL DID SET ON A 1 WORD TRANSFER  
JSR R7,WHYFO ;TELL WHY NOT  
2$: JSR R7,CLEER ;CLEAR ERRORS  
JSR R7,ERRTST  
*****  
;*TEST 33 DOUBLES TEST FOR TWO WORD BASE 4 ADDRESS  
;*THIS TEST CHECKS THAT DOUBLE WILL SET FOR A  
;*TWO WORD TRANSFER STARTING FROM AN ADDRESS
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4160                                     ;*DIVISABLE BY 4.....RH70 ONLY.....
4161                                     ;*****
4162 025004 000004 TST33: SCOPE
4163 025006 005701 TST R1 ;IS IT AN 11 OR A 70
4164 025010 100524 BMI TST34 ;;GET OUT OF TEST
4165 025012 012777 177776 156312 MOV #-2,@RHWC ;SETUP WORD COUNT FOR DOUBLE TRANSFER
4166 025020 012777 004000 156306 MOV #EVENAD,@RHBA ;CORRECT BA
4167 025026 012777 000061 156274 MOV #WRITE0,@RHCS1 ;TELL IT TO WRITE
4168 025034 005037 003446 CLR BITCNT ;CLEAR BIT COUNTER
4169 025040 032777 000200 156262 18$: BIT #RDY,@RHCS1 ;IS RDY SET
4170 025046 001015 BNE DBLWDS ;BIT IS SET
4171 025050 005237 003446 INC BITCNT ;COUNT UP
4172 025054 001371 BNE 18$ ;NOT FINISHED COUNTING
4173 025056 005037 003446 CLR BITCNT ;GET READY TO DO IT AGAIN
4174 025062 032777 000200 156240 19$: BIT #RDY,@RHCS1 ;IS IT SET YET?
4175 025070 001004 BNE DBLWDS ;YES
4176 025072 005237 003446 INC BITCNT ;COUNT UP
4177 025076 001401 BEQ DBLWDS ;BIT IS NOT GOING TO SET
4178 025100 000770 BR 19$
4179 025102 DBLWDS:
4180 025102 017737 156222 003420 MOV @RHCS1,CS1 ;SAVE RHCS1
4181 025110 017737 156216 003444 MOV @RHWC,WC ;SAVE WORD COUNT
4182 025116 017737 156212 003414 MOV @RHBA,BA ;SAVE BUS ADDRESS
4183 025124 005701 TST R1 ;IS IT AN RH11
4184 025126 001406 BEQ 87$ ;NO IT'S A 70
4185 025130 005037 003416 CLR BAE ;CLEAR BAE
4186 025134 005037 003424 CLR CS3 ;CLEAR CS3
4187 025140 000137 025160 JMP 86$ ;CONTINUE
4188 025144 017737 156210 003416 87$: MOV @RHBAE,BAE ;SAVE BUS ADDRESS EXTENSION
4189 025152 017737 156204 003424 MOV @RHCS3,CS3 ;SAVE RHCS3
4190 025160 017737 156154 003422 86$: MOV @RHCS2,CS2 ;SAVE CS2
4191 025166 017737 156150 003432 MOV @RHST,DS1 ;SAVE TESTER STATUS
4192 025174 017737 156144 003436 MOV @RHER,ER1 ;SAVE ERROR REGISTER
4193 025202 017737 156142 003442 MOV @RHTDB,TDR ;SAVE TESTER DATA REG.
4194 025210 017737 156122 003440 MOV @RHMR2,TC ;SAVE MR2 TESTER REG.
4195 025216 032777 000200 156104 BIT #RDY,@RHCS1 ;IS READY SET
4196 025224 001003 BNE FOOEY ;RDY IS SET
4197 025226 104102 ERROR 102 ;RDY DID NOT SET
4198 025230 004737 007260 JSR R7,WHYFO ;ANY ERRORS SET
4199 025234 032777 002000 156120 FOOEY: BIT #DBL,@RHCS3 ;IS DOUBLE SET
4200 025242 001003 BNE ER1R ;DBL IS SET
4201 025244 104127 ERROR 127 ;DBL DID NOT SET IN RHCS3
4202 025246 004737 007260 JSR R7,WHYFO ;ANY OTHER ERROR SET
4203 025252 004737 006626 ER1R: JSR R7,CLEER ;CLEAR ERRORS
4204 025256 004737 050244 JSR R7,ERRTST
4205                                     ;*****
4206 ;*TEST 34 DOUBLE TEST ,3 WORD TRANSFER FROM A BASE 4 ADDRESS
4207 ;*THIS TEST CHECKS THAT DBL WILL NOT SET
4208 ;*IN RHCS3 AFTER A 3 WORD TRANSFER STARTING
4209 ;*FROM AN ADDRESS DIVISABLE BY 4
4210 ;*.....RH70 ONLY.....
4211                                     ;*****
4212 025262 000004 TST34: SCOPE
4213 025264 005701 TST R1 ;IS IT AN 11 OR A 70
4214 025266 100524 BMI TST35 ;;GET OUT OF TEST
4215 025270 012777 177775 156034 MOV #-3,@RHWC ;SET UP FOR A 3 WORD TRANSFER
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4216 025276 012777 004000 156030 MOV #EVENAD,@RHBA ;CORRECT BA
4217 025304 012777 000061 156016 MOV #WRITE0,@RHCS1 ;TELL IT TO WRITE
4218 025312 005037 003446 CLR BITCNT ;CLEAR BIT COUNTER
4219 025316 032777 000200 156004 18$: BIT #RDY,@RHCS1 ;IS RDY SET
4220 025324 001015 BNE THREE ;BIT IS SET
4221 025326 005237 003446 INC BITCNT ;COUNT UP
4222 025332 001371 BNE 18$ ;NOT FINISHED COUNTING
4223 025334 005037 003446 CLR BITCNT ;GET READY TO DO IT AGAIN
4224 025340 032777 000200 155762 19$: BIT #RDY,@RHCS1 ;IS IT SET YET?
4225 025346 001004 BNE THREE ;YES
4226 025350 005237 003446 INC BITCNT ;COUNT UP
4227 025354 001401 BEQ THREE ;BIT IS NOT GOING TO SET
4228 025356 000770 BR 19$
4229 025360 THREE:
4230 025360 017737 155744 003420 MOV @RHCS1,CS1 ;SAVE RHCS1
4231 025366 017737 155740 003444 MOV @RHWC,WC ;SAVE WORD COUNT
4232 025374 017737 155734 003414 MOV @RHBA,BA ;SAVE BUS ADDRESS
4233 025402 005701 TST R1 ;IS IT AN RH11
4234 025404 001406 BEQ 87$ ;NO IT'S A 70
4235 025406 005037 003416 CLR BAE ;CLEAR BAE
4236 025412 005037 003424 CLR CS3 ;CLEAR CS3
4237 025416 000137 025436 JMP 86$ ;CONTINUE
4238 025422 017737 155732 003416 87$: MOV @RHBAE,BAE ;SAVE BUS ADDRESS EXTENSION
4239 025430 017737 155726 003424 MOV @RHCS3,CS3 ;SAVE RHCS3
4240 025436 017737 155676 003422 86$: MOV @RHCS2,CS2 ;SAVE CS2
4241 025444 017737 155672 003432 MOV @RHST,DS1 ;SAVE TESTER STATUS
4242 025452 017737 155666 003436 MOV @RHER,ER1 ;SAVE ERROR REGISTER
4243 025460 017737 155664 003442 MOV @RHTDB,TDR ;SAVE TESTER DATA REG.
4244 025466 017737 155644 003440 MOV @RHMR2,TC ;SAVE MR2 TESTER REG.
4245 025474 032777 000200 155626 BIT #RDY,@RHCS1 ;IS READY SET
4246 025502 001003 BNE ERRIP ;RDY IS SET
4247 025504 104102 ERROR 102 ;RDY DID NOT SET
4248 025506 004737 007260 JSR R7,WHYFO ;ANY ERRORS SET
4249 025512 032777 002000 155642 ERRIP: BIT #DBL,@RHCS3 ;IS DOUBLE SET
4250 025520 001403 BEQ ERPIP ;DBL IS SET
4251 025522 104126 ERROR 126 ;DOUBLE SET ON A 3 WORD TRANSFER
4252 025524 004737 007260 JSR R7,WHYFO ;SEE IF ANY ERROR BITS ARE SET
4253 025530 004737 006626 ERPIP: JSR R7,CLEER ;CLEAR ERRORS
4254 025534 004737 050244 JSR R7,ERRTST
4255 *****
4256 ;*TEST 35 DOUBLE TEST ,4 WORDS FROM A BASE 4 ADDRESS
4257 ;*THIS TEST CHECKS THAT DBL WILL SET IN RHCS3
4258 ;*AFTER A 4 WORD TRANSFER STARTING WITH AN
4259 ;*ADDRESS DIVISIBLE BY 4*****
4260 ;*.....RH70 ONLY.....
4261 *****
4262 025540 000004 TST35: SCOPE
4263 025542 005701 TST R1 ;IS IT AN 11 OR A 70
4264 025544 100524 BMI TST36 ;;GET OUT OF TEST
4265 025546 012777 177774 155556 MOV #-4,@RHWC ;SET UP FOR 4 WORD TRANSFER
4266 025554 012777 004000 155552 MOV #EVENAD,@RHBA ;CORRECT BA
4267 025562 012777 000061 155540 MOV #WRITE0,@RHCS1 ;TELL IT TO WRITE
4268 025570 005037 003446 CLR BITCNT ;CLEAR BIT COUNTER
4269 025574 032777 000200 155526 18$: BIT #RDY,@RHCS1 ;IS RDY SET
4270 025602 001015 BNE DBLED ;BIT IS SET
4271 025604 005237 003446 INC BITCNT ;COUNT UP
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4272 025610 001371          BNE      18$          ;NOT FINISHED COUNTING
4273 025612 005037 003446    CLR      BITCNT      ;GET READY TO DO IT AGAIN
4274 025616 032777 000200 155504 19$:    BIT      #RDY,@RHCS1 ;IS IT SET YET?
4275 025624 001004          BNE      DBLED       ;YES
4276 025626 005237 003446    INC      BITCNT      ;COUNT UP
4277 025632 001401          BEQ      DBLED       ;BIT IS NOT GOING TO SET
4278 025634 000770          BR       19$
4279 025636          DBLED:
4280 025636 017737 155466 003420    MOV      @RHCS1,CS1   ;SAVE RHCS1
4281 025644 017737 155462 003444    MOV      @RHWC,WC     ;SAVE WORD COUNT
4282 025652 017737 155456 003414    MOV      @RHBA,BA     ;SAVE BUS ADDRESS
4283 025660 005701          TST      R1           ;IS IT AN RH11
4284 025662 001406          BEQ      87$         ;NO IT'S A 70
4285 025664 005037 003416    CLR      BAE         ;CLEAR BAE
4286 025670 005037 003424    CLR      CS3         ;CLEAR CS3
4287 025674 000137 025714    JMP      86$         ;CONTINUE
4288 025700 017737 155454 003416 87$:    MOV      @RHBAE,BAE   ;SAVE BUS ADDRESS EXTENSION
4289 025706 017737 155450 003424    MOV      @RHCS3,CS3   ;SAVE RHCS3
4290 025714 017737 155420 003422 86$:    MOV      @RHCS2,CS2   ;SAVE CS2
4291 025722 017737 155414 003432    MOV      @RHST,DS1    ;SAVE TESTER STATUS
4292 025730 017737 155410 003436    MOV      @RHER,ER1    ;SAVE ERROR REGISTER
4293 025736 017737 155406 003442    MOV      @RHTDB,TDR   ;SAVE TESTER DATA REG.
4294 025744 017737 155366 003440    MOV      @RHMR2,TC    ;SAVE MR2 TESTER REG.
4295 025752 032777 000200 155350    BIT      #RDY,@RHCS1 ;IS READY SET
4296 025760 001003          BNE      DAYAMS      ;RDY IS SET
4297 025762 104102          ERROR    102         ;RDY DID NOT SET
4298 025764 004737 007260    JSR      R7,WHYFO     ;WHAT ERRORS ARE SET
4299 025770 032777 002000 155364 DAYAMS: BIT      #DBL,@RHCS3 ;IS DOUBLE SET
4300 025776 001003          BNE      ERR29       ;TEST IS OK
4301 026000 104124          ERROR    124         ;DOUBLE DID NOT SET AFTER A 4 WORD
4302 026002 004737 007260    JSR      R7,WHYFO     ;SEE IF ANY ERROR ARE SET
4303 026006 004737 006626    JSR      R7,CLEER     ;CLEAR ERRORS
4304 026012 004737 050244    JSR      R7,ERRTST
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::*****
:*TEST 36      DOUBLE TEST 1WORD TRANSFER READ
; *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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4315 026016 000004          TST36: SCOPE
4316 026020 005701          TST      R1           ;IS IN AN RH11
4317 026022 100532          BMI      TST37       ;;GET OUT OF TEST
4318 026024 012777 177777 155300    MOV      #-1,@RHWC    ;SET UP WC FOR ONE WORD
4319 026032 012777 004000 155274    MOV      #EVENAD,@RHBA ;SETUP BUS ADDRESS
4320 026040 012777 000000 155312    MOV      #ZERO,@RHBAE ;SETUP BUS ADDRESS EXTENSION
4321 026046 012777 000007 155264    MOV      #7,@RHCS2    ;DEVICE 7
4322 026054 012777 000071 155246    MOV      #READO,@RHCS1 ;TELL IT TO READO
4323 026062 005037 003446    CLR      BITCNT      ;CLEAR BIT COUNTER
4324 026066 032777 000200 155234 18$:    BIT      #RDY,@RHCS1 ;IS RDY SET
4325 026074 001015          BNE      3$          ;BIT IS SET
4326 026076 005237 003446    INC      BITCNT      ;COUNT UP
4327 026102 001371          BNE      18$         ;NOT FINISHED COUNTING
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4328 026104 005037 003446          CLR      BITCNT          ;GET READY TO DO IT AGAIN
4329 026110 032777 000200 155212 19$:  BIT      #RDY,@RHCS1    ;IS IT SET YET?
4330 026116 001004          BNE      3$              ;YES
4331 026120 005237 003446          INC      BITCNT          ;COUNT UP
4332 026124 001401          BEQ      3$              ;BIT IS NOT GOING TO SET
4333 026126 000770          BR       19$
4334 026130          3$:
4335 026130 017737 155174 003420  MOV      @RHCS1,CS1      ;SAVE RHCS1
4336 026136 017737 155170 003444  MOV      @RHWC,WC        ;SAVE WORD COUNT
4337 026144 017737 155164 003414  MOV      @RHBA,BA        ;SAVE BUS ADDRESS
4338 026152 005701          TST      R1              ;IS IT AN RH11
4339 026154 001406          BEQ      87$            ;NO IT'S A 70
4340 026156 005037 003416          CLR      BAE             ;CLEAR BAE
4341 026162 005037 003424          CLR      CS3            ;CLEAR CS3
4342 026166 000137 026206          JMP      86$            ;CONTINUE
4343 026172 017737 155162 003416 87$:  MOV      @RHBAE,BAE      ;SAVE BUS ADDRESS EXTENSION
4344 026200 017737 155156 003424  MOV      @RHCS3,CS3     ;SAVE RHCS3
4345 026206 017737 155126 003422 86$:  MOV      @RHCS2,CS2     ;SAVE CS2
4346 026214 017737 155122 003432  MOV      @RHST,DS1      ;SAVE TESTER STATUS
4347 026222 017737 155116 003436  MOV      @RHER,ER1      ;SAVE ERROR REGISTER
4348 026230 017737 155114 003442  MOV      @RHTDB,TDR     ;SAVE TESTER DATA REG.
4349 026236 017737 155074 003440  MOV      @RHMR2,TC      ;SAVE MR2 TESTER REG.
4350 026244 032777 000200 155056  BIT      #RDY,@RHCS1    ;IS READY SET
4351 026252 001003          BNE      1$              ;RDY SET CONT. TEST
4352 026254 104102          ERROR   102             ;READY DID NOT SET
4353 026256 004737 007260          JSR      R7,WHYFO       ;ANY ERRORS SET
4354 026262 032777 002000 155072 1$:  BIT      #DBL,@RHCS3    ;IS DOUBLE SET
4355 026270 001403          BEQ      2$              ;DBL SET
4356 026272 104154          ERROR   154             ;DBL DID SET ON A 1 WORD TRANSFER
4357 026274 004737 007260          JSR      R7,WHYFO       ;TELL WHY NOT
4358 026300 004737 006626 2$:  JSR      R7,CLEER       ;CLEAR ERRORS
4359 026304 004737 050244          JSR      R7,ERRTST
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4368 026310 000004          TST37: SCOPE
4369 026312 005701          TST      R1              ;IS IN AN RH11
4370 026314 100532          BMI     TST40            ;:GET OUT OF TEST
4371 026316 012777 177776 155006  MOV      #-2,@RHWC      ;SET UP WC FOR TWO WORD
4372 026324 012777 004000 155002  MOV      #EVENAD,@RHBA  ;SETUP BUS ADDRESS
4373 026332 012777 000000 155020  MOV      #ZERO,@RHBAE   ;SETUP BUS ADDRESS EXTENSION
4374 026340 012777 000017 154772  MOV      #7!BAI,@RHCS2  ;DEVICE 7
4375 026346 012777 000061 154754  MOV      #WRITE0,@RHCS1 ;TELL IT TO WRITE0
4376 026354 005037 003446          CLR      BITCNT          ;CLEAR BIT COUNTER
4377 026360 032777 000200 154742 18$:  BIT      #RDY,@RHCS1    ;IS RDY SET
4378 026366 001015          BNE      3$              ;BIT IS SET
4379 026370 005237 003446          INC      BITCNT          ;COUNT UP
4380 026374 001371          BNE      18$            ;NOT FINISHED COUNTING
4381 026376 005037 003446          CLR      BITCNT          ;GET READY TO DO IT AGAIN
4382 026402 032777 000200 154720 19$:  BIT      #RDY,@RHCS1    ;IS IT SET YET?
4383 026410 001004          BNE      3$              ;YES
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4384 026412 005237 003446      INC      BITCNT      :COUNT UP
4385 026416 001401              BEQ      3$          :BIT IS NOT GOING TO SET
4386 026420 000770              BR       19$
4387 026422              3$:
4388 026422 017737 154702 003420      MOV      @RHCS1,CS1   :SAVE RHCS1
4389 026430 017737 154676 003444      MOV      @RHWC,WC     :SAVE WORD COUNT
4390 026436 017737 154672 003414      MOV      @RHBA,BA     :SAVE BUS ADDRESS
4391 026444 005701              TST      R1           :IS IT AN RH11
4392 026446 001406              BEQ      87$         :NO IT'S A 70
4393 026450 005037 003416      CLR      BAE         :CLEAR BAE
4394 026454 005037 003424      CLR      CS3        :CLEAR CS3
4395 026460 000137 026500      JMP      86$         :CONTINUE
4396 026464 017737 154670 003416 87$:      MOV      @RHBAE,BAE   :SAVE BUS ADDRESS EXTENSION
4397 026472 017737 154664 003424      MOV      @RHCS3,CS3   :SAVE RHCS3
4398 026500 017737 154634 003422 86$:      MOV      @RHCS2,CS2   :SAVE CS2
4399 026506 017737 154630 003432      MOV      @RHST,DS1    :SAVE TESTER STATUS
4400 026514 017737 154624 003436      MOV      @RHER,ER1    :SAVE ERROR REGISTER
4401 026522 017737 154622 003442      MOV      @RHTDB,TDR   :SAVE TESTER DATA REG.
4402 026530 017737 154602 003440      MOV      @RHMR2,TC    :SAVE MR2 TESTER REG.
4403 026536 032777 000200 154564      BIT      #RDY,@RHCS1  :IS READY SET
4404 026544 001003              BNE     1$          :RDY SET CONT. TEST
4405 026546 104102              ERROR   102        :READY DID NOT SET
4406 026550 004737 007260              JSR     R7,WHYFO    :ANY ERRORS SET
4407 026554 032777 002000 154600 1$:      BIT      #DBL,@RHCS3  :IS DOUBLE SET
4408 026562 001403              BEQ     2$          :DBL SET
4409 026564 104153              ERROR   153        :DBL DID SET ON A 2 WORD TRANSFER
4410 026566 004737 007260              JSR     R7,WHYFO    :TELL WHY NOT
4411 026572 004737 006626 2$:      JSR     R7,CLEER    :CLEAR ERRORS
4412 026576 004737 050244              JSR     R7,ERRTST

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*TEST 40      DBL TEST 2 WORD TRANSFER WITH BAI AND WRITE 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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4421 026602 000004      TST40: SCOPE
4422 026604 005701      TST      R1           :IS IN AN RH11
4423 026606 100532              BMI     TST41        :GET OUT OF TEST
4424 026610 012777 177776 154514      MOV      #-2,@RHWC    :SET UP WC FOR TWO WORD
4425 026616 012777 004000 154510      MOV      #EVENAD,@RHBA :SETUP BUS ADDRESS
4426 026624 012777 000000 154526      MOV      #ZERO,@RHBAE :SETUP BUS ADDRESS EXTENSION
4427 026632 012777 000017 154500      MOV      #7!BAI,@RHCS2 :DEVICE 7
4428 026640 012777 000067 154462      MOV      #WRITE6,@RHCS1 :TELL IT TO WRITE6
4429 026646 005037 003446      CLR      BITCNT      :CLEAR BIT COUNTER
4430 026652 032777 000200 154450 18$:      BIT      #RDY,@RHCS1  :IS RDY SET
4431 026660 001015              BNE     3$          :BIT IS SET
4432 026662 005237 003446      INC      BITCNT      :COUNT UP
4433 026666 001371              BNE     18$        :NOT FINISHED COUNTING
4434 026670 005037 003446      CLR      BITCNT      :GET READY TO DO IT AGAIN
4435 026674 032777 000200 154426 19$:      BIT      #RDY,@RHCS1  :IS IT SET YET?
4436 026702 001004              BNE     3$          :YES
4437 026704 005237 003446      INC      BITCNT      :COUNT UP
4438 026710 001401              BEQ     3$          :BIT IS NOT GOING TO SET
4439 026712 000770              BR       19$

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4440 026714
4441 026714 017737 154410 003420
4442 026722 017737 154404 003444
4443 026730 017737 154400 003414
4444 026736 005701
4445 026740 001406
4446 026742 005037 003416
4447 026746 005037 003424
4448 026752 000137 026772
4449 026756 017737 154376 003416
4450 026764 017737 154372 003424
4451 026772 017737 154342 003422
4452 027000 017737 154336 003432
4453 027006 017737 154332 003436
4454 027014 017737 154330 003442
4455 027022 017737 154310 003440
4456 027030 032777 000200 154272
4457 027036 001003
4458 027040 104102
4459 027042 004737 007260
4460 027046 032777 002000 154306
4461 027054 001403
4462 027056 104155
4463 027060 004737 007260
4464 027064 004737 006626
4465 027070 004737 050244
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4474 027074 000004
4475 027076 005701
4476 027100 100532
4477 027102 012777 177776 154222
4478 027110 012777 004002 154216
4479 027116 012777 000000 154234
4480 027124 012777 000007 154206
4481 027132 012777 000061 154170
4482 027140 005037 003446
4483 027144 032777 000200 154156
4484 027152 001015
4485 027154 005237 003446
4486 027160 001371
4487 027162 005037 003446
4488 027166 032777 000200 154134
4489 027174 001004
4490 027176 005237 003446
4491 027202 001401
4492 027204 000770
4493 027206
4494 027206 017737 154116 003420
4495 027214 017737 154112 003444
```

```
3$: MOV @RHCS1,CS1 ;SAVE RHCS1
MOV @RHWC,WC ;SAVE WORD COUNT
MOV @RHBA,BA ;SAVE BUS ADDRESS
TST R1 ;IS IT AN RH11
BEQ 87$ ;NO IT'S A 70
CLR BAE ;CLEAR BAE
CLR CS3 ;CLEAR CS3
JMP 86$ ;CONTINUE
87$: MOV @RHBAE,BAE ;SAVE BUS ADDRESS EXTENSION
MOV @RHCS3,CS3 ;SAVE RHCS3
86$: MOV @RHCS2,CS2 ;SAVE CS2
MOV @RHST,DS1 ;SAVE TESTER STATUS
MOV @RHER,ER1 ;SAVE ERROR REGISTER
MOV @RHTDB,TDR ;SAVE TESTER DATA REG.
MOV @RHMR2,TC ;SAVE MR2 TESTER REG.
BIT #RDY,@RHCS1 ;IS READY SET
BNE 1$ ;RDY SET CONT. TEST
ERROR 102 ;READY DID NOT SET
JSR R7,WHYFO ;ANY ERRORS SET
1$: BIT #DBL,@RHCS3 ;IS DOUBLE SET
BEQ 2$ ;DBL SET
ERROR 155 ;DBL DID SET ON A 2 WORD TRANSFER
JSR R7,WHYFO ;TELL WHY NOT
2$: JSR R7,CLEER ;CLEAR ERRORS
JSR R7,ERRTST

*****
*TEST 41 DBL TEST 2 WORD TRANSFER ODD ADD.
*THESE TEST CHECK DBL IN RHCS3 WITHREAD 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.....
*****
TST41: SCOPE
TST R1 ;IS IN AN RH11
BMI TST42 ;;GET OUT OF TEST
MOV #-2,@RHWC ;SET UP WC FOR TWO WORD
MOV #ODDAD,@RHBA ;SETUP BUS ADDRESS
MOV #ZERO,@RHBAE ;SETUP BUS ADDRESS EXTENSION
MOV #7,@RHCS2 ;DEVICE 7
MOV #WRITE0,@RHCS1 ;TELL IT TO WRITE0
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
```



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4552 027526 005037 003416          CLR      BAE          ;CLEAR BAE
4553 027532 005037 003424          CLR      CS3         ;CLEAR CS3
4554 027536 000137 027556          JMP      86$         ;CONTINUE
4555 027542 017737 153612 003416 87$:  MOV      @RHBAE,BAE   ;SAVE BUS ADDRESS EXTENSION
4556 027550 017737 153606 003424  MOV      @RHCS3,CS3   ;SAVE RHCS3
4557 027556 017737 153556 003422 86$:  MOV      @RHCS2,CS2   ;SAVE CS2
4558 027564 017737 153552 003432  MOV      @RHST,DS1    ;SAVE TESTER STATUS
4559 027572 017737 153546 003436  MOV      @RHER,ER1    ;SAVE ERROR REGISTER
4560 027600 017737 153544 003442  MOV      @RHTDB,TDR   ;SAVE TESTER DATA REG.
4561 027606 017737 153524 003440  MOV      @RHMR2,TC    ;SAVE MR2 TESTER REG.
4562 027614 032777 000200 153506  BIT      #RDY,@RHCS1 ;IS READY SET
4563 027622 001003          BNE      1$         ;RDY SET CONT. TEST
4564 027624 104102          ERROR    102       ;READY DID NOT SET
4565 027626 004737 007260          JSR      R7,WHYFO    ;ANY ERRORS SET
4566 027632 032777 002000 153522 1$:  BIT      #DBL,@RHCS3 ;IS DOUBLE SET
4567 027640 001403          BEQ      2$         ;DBL SET
4568 027642 104157          ERROR    157       ;DBL DID SET ON A 2 WORD TRANSFER
4569 027644 004737 007260          JSR      R7,WHYFO    ;TELL WHY NOT
4570 027650 004737 006626 2$:  JSR      R7,CLEER    ;CLEAR ERRORS
4571 027654 004737 050244          JSR      R7,ERRTST
4572
4573          ;*****
4574          ;*TEST 43          DBL TEST 2 WORD ODD ADD. WRITE REV
4575          ;*THESE TEST CHECK DBL IN RHCS3 WITHREAD FWD AND REV
4576          ;*WRITE FWD AND REV AND WITH BAI SET IN RHCS2
4577          ;*OPERATION BEING PREFORMED WILL BE PRINTED OUT
4578          ;*IN ERROR MESSAGE.
4579          ;*.....RH70 ONLY.....
4580          ;*****
4580 027660 000004          TST43: SCOPE
4581 027662 005701          TST      R1          ;IS IN AN RH11
4582 027664 100532          BMI     TST44        ;:GET OUT OF TEST
4583 027666 012777 177776 153436  MOV      #-2,@RHWC    ;SET UP WC FOR TWO WORD
4584 027674 012777 004002 153432  MOV      #ODDAD,@RHBA ;SETUP BUS ADDRESS
4585 027702 012777 000000 153450  MOV      #ZERO,@RHBAE ;SETUP BUS ADDRESS EXTENSION
4586 027710 012777 000007 153422  MOV      #7,@RHCS2    ;DEVICE 7
4587 027716 012777 000067 153404  MOV      #WRITE6,@RHCS1 ;TELL IT TO WRITE6
4588 027724 005037 003446          CLR     BITCNT       ;CLEAR BIT COUNTER
4589 027730 032777 000200 153372 18$:  BIT      #RDY,@RHCS1 ;IS RDY SET
4590 027736 001015          BNE     3$          ;BIT IS SET
4591 027740 005237 003446          INC     BITCNT       ;COUNT UP
4592 027744 001371          BNE     18$         ;NOT FINISHED COUNTING
4593 027746 005037 003446          CLR     BITCNT       ;GET READY TO DO IT AGAIN
4594 027752 032777 000200 153350 19$:  BIT      #RDY,@RHCS1 ;IS IT SET YET?
4595 027760 001004          BNE     3$          ;YES
4596 027762 005237 003446          INC     BITCNT       ;COUNT UP
4597 027766 001401          BEQ     3$          ;BIT IS NOT GOING TO SET
4598 027770 000770          BR      19$
4599 027772
4600 027772 017737 153332 003420 3$:  MOV      @RHCS1,CS1   ;SAVE RHCS1
4601 030000 017737 153326 003444  MOV      @RHWC,WC     ;SAVE WORD COUNT
4602 030006 017737 153322 003414  MOV      @RHBA,BA     ;SAVE BUS ADDRESS
4603 030014 005701          TST      R1          ;IS IT AN RH11
4604 030016 001406          BEQ     87$         ;NO IT'S A 70
4605 030020 005037 003416          CLR     BAE          ;CLEAR BAE
4606 030024 005037 003424          CLR     CS3         ;CLEAR CS3
4607 030030 000137 030050          JMP      86$         ;CONTINUE

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4608 030034 017737 153320 003416 87$: MOV @RHBAE,BAE ;SAVE BUS ADDRESS EXTENSION
4609 030042 017737 153314 003424 MOV @RHCS3,CS3 ;SAVE RHCS3
4610 030050 017737 153264 003422 86$: MOV @RHCS2,CS2 ;SAVE CS2
4611 030056 017737 153260 003432 MOV @RHST,DS1 ;SAVE TESTER STATUS
4612 030064 017737 153254 003436 MOV @RHER,ER1 ;SAVE ERROR REGISTER
4613 030072 017737 153252 003442 MOV @RHTDB,TDR ;SAVE TESTER DATA REG.
4614 030100 017737 153232 003440 MOV @RHMR2,TC ;SAVE MR2 TESTER REG.
4615 030106 032777 000200 153214 BIT #RDY,@RHCS1 ;IS READY SET
4616 030114 001003 BNE 1$ ;RDY SET CONT. TEST
4617 030116 104102 ERROR 102 ;READY DID NOT SET
4618 030120 004737 007260 JSR R7,WHYFO ;ANY ERRORS SET
4619 030124 032777 002000 153230 1$: BIT #DBL,@RHCS3 ;IS DOUBLE SET
4620 030132 001003 BNE 2$ ;DBL SET
4621 030134 104160 ERROR 160 ;DBL DIDN'T SET ON A 2 WORD TRANSFER
4622 030136 004737 007260 JSR R7,WHYFO ;TELL WHY NOT
4623 030142 004737 006626 2$: JSR R7,CLEER ;CLEAR ERRORS
4624 030146 004737 050244 JSR R7,ERRTST
4625 *****
4626 :*TEST 44 DBL TEST 3 WORD ODD ADD. WRITE REV
4627 ;*THESE TEST CHECK DBL IN RHCS3 WITHREAD FWD AND REV
4628 ;*WRITE FWD AND REV AND WITH BAI SET IN RHCS2
4629 ;*OPERATION BEING PREFORMED WILL BE PRINTED OUT
4630 ;*IN ERROR MESSAGE.
4631 ;*.....RH70 ONLY.....
4632 *****
4633 TST44: SCOPE
4634 TST R1 ;IS IN AN RH11
4635 BMI TST45 ;;GET OUT OF TEST
4636 MOV #-3,@RHWC ;SET UP WC FOR THREE WORD
4637 MOV #ODDAD,@RHBA ;SETUP BUS ADDRESS
4638 MOV #ZERO,@RHBAE ;SETUP BUS ADDRESS EXTENSION
4639 MOV #7,@RHCS2 ;DEVICE 7
4640 MOV #WRITE6,@RHCS1 ;TELL IT TO WRITE6
4641 CLR BITCNT ;CLEAR BIT COUNTER
4642 030222 032777 000200 153100 18$: BIT #RDY,@RHCS1 ;IS RDY SET
4643 030230 001015 BNE 3$ ;BIT IS SET
4644 030232 005237 003446 INC BITCNT ;COUNT UP
4645 030236 001371 BNE 18$ ;NOT FINISHED COUNTING
4646 030240 005037 003446 CLR BITCNT ;GET READY TO DO IT AGAIN
4647 030244 032777 000200 153056 19$: BIT #RDY,@RHCS1 ;IS IT SET YET?
4648 030252 001004 BNE 3$ ;YES
4649 030254 005237 003446 INC BITCNT ;COUNT UP
4650 030260 001401 BEQ 3$ ;BIT IS NOT GOING TO SET
4651 030262 000770 BR 19$
4652 030264 3$:
4653 030264 017737 153040 003420 MOV @RHCS1,CS1 ;SAVE RHCS1
4654 030272 017737 153034 003444 MOV @RHWC,WC ;SAVE WORD COUNT
4655 030300 017737 153030 003414 MOV @RHBA,BA ;SAVE BUS ADDRESS
4656 030306 005701 TST R1 ;IS IT AN RH11
4657 030310 001406 BEQ 87$ ;NO IT'S A 70
4658 030312 005037 003416 CLR BAE ;CLEAR BAE
4659 030316 005037 003424 CLR CS3 ;CLEAR CS3
4660 030322 000137 030342 JMP 86$ ;CONTINUE
4661 030326 017737 153026 003416 87$: MOV @RHBAE,BAE ;SAVE BUS ADDRESS EXTENSION
4662 030334 017737 153022 003424 MOV @RHCS3,CS3 ;SAVE RHCS3
4663 030342 017737 152772 003422 86$: MOV @RHCS2,CS2 ;SAVE CS2

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4664 030350 017737 152766 003432      MOV      @RHST,DS1      :SAVE TESTER STATUS
4665 030356 017737 152762 003436      MOV      @RHER,ER1     :SAVE ERROR REGISTER
4666 030364 017737 152760 003442      MOV      @RHTDB,TDR    :SAVE TESTER DATA REG.
4667 030372 017737 152740 003440      MOV      @RHMR2,TC     :SAVE MR2 TESTER REG.
4668 030400 032777 000200 152722      BIT      #RDY,@RHCS1   :IS READY SET
4669 030406 001003                BNE      1$           :RDY SET CONT. TEST
4670 030410 104102                ERROR    102         :READY DID NOT SET
4671 030412 004737 007260                JSR      R7,WHYFO     :ANY ERRORS SET
4672 030416 032777 002000 152736 1$:      BIT      #DBL,@RHCS3   :IS DOUBLE SET
4673 030424 001403                BEQ      2$           :DBL SET
4674 030426 104161                ERROR    161         :DBL DID SET ON A 3 WORD TRANSFER
4675 030430 004737 007260                JSR      R7,WHYFO     :TELL WHY NOT
4676 030434 004737 006626 2$:      JSR      R7,CLEER     :CLEAR ERRORS
4677 030440 004737 050244                JSR      R7,ERRST
4678
4679
4680
4681
4682
4683
4684
4685
4686 030444 000004      :*****
4687 030446 005701      :*TEST 45      DBL TEST 2 WORD READ FWD
4688 030450 100532      :*THESE TEST CHECK DBL IN RHCS3 WITHREAD FWD AND REV
4689 030452 012777 177776 152652      :*WRITE FWD AND REV AND WITH BAI SET IN RHCS2
4690 030460 012777 004000 152646      :*OPERATION BEING PREFORMED WILL BE PRINTED OUT
4691 030466 012777 000000 152664      :*IN ERROR MESSAGE.
4692 030474 012777 000007 152636      :*.....RH70 ONLY.....
4693 030502 012777 000071 152620      :*****
4694 030510 005037 003446      TST45: SCOPE
4695 030514 032777 000200 152606 18$:  TST      R1           :IS IN AN RH11
4696 030522 001015                BMI      TST46       ;;GET OUT OF TEST
4697 030524 005237 003446                MOV      #-2,@RHWC   :SET UP WC FOR TWO WORD
4698 030530 001371                MOV      #EVENAD,@RHBA :SETUP BUS ADDRESS
4699 030532 005037 003446                MOV      #ZERO,@RHBAE :SETUP BUS ADDRESS EXTENSION
4700 030536 032777 000200 152564 19$:  MOV      #7,@RHCS2    :DEVICE 7
4701 030544 001004                MOV      #READO,@RHCS1 :TELL IT TO READO
4702 030546 005237 003446                CLR      BITCNT       :CLEAR BIT COUNTER
4703 030552 001401                BIT      #RDY,@RHCS1   :IS RDY SET
4704 030554 000770                BNE      3$           :BIT IS SET
4705 030556                INC      BITCNT       :COUNT UP
4706 030556 017737 152546 003420 3$:      BNE      18$         :NOT FINISHED COUNTING
4707 030564 017737 152542 003444                CLR      BITCNT       :GET READY TO DO IT AGAIN
4708 030572 017737 152536 003414                BIT      #RDY,@RHCS1   :IS IT SET YET?
4709 030600 005701                BNE      3$           :YES
4710 030602 001406                INC      BITCNT       :COUNT UP
4711 030604 005037 003416                BEQ      87$         :BIT IS NOT GOING TO SET
4712 030610 005037 003424                MOV      @RHCS1,CS1   :SAVE RHCS1
4713 030614 000137 030634                MOV      @RHWC,WC     :SAVE WORD COUNT
4714 030620 017737 152534 003416 87$:  MOV      @RHBA,BA     :SAVE BUS ADDRESS
4715 030626 017737 152530 003424                TST      R1           :IS IT AN RH11
4716 030634 017737 152500 003422 86$:  BEQ      87$         :NO IT'S A 70
4717 030642 017737 152474 003432                CLR      BAE         :CLEAR BAE
4718 030650 017737 152470 003436                CLR      CS3         :CLEAR CS3
4719 030656 017737 152466 003442                JMP      86$         :CONTINUE
                        MOV      @RHBAE,BAE   :SAVE BUS ADDRESS EXTENSION
                        MOV      @RHCS3,CS3   :SAVE RHCS3
                        MOV      @RHCS2,CS2   :SAVE CS2
                        MOV      @RHST,DS1   :SAVE TESTER STATUS
                        MOV      @RHER,ER1   :SAVE ERROR REGISTER
                        MOV      @RHTDB,TDR  :SAVE TESTER DATA REG.

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4776 031174 104102          ERROR 102          ;READY DID NOT SET
4777 031176 004737 007260   JSR R7,WHYFO      ;ANY ERRORS SET
4778 031202 032777 002000 152152 1$: BIT #DBL,@RHCS3   ;IS DOUBLE SET
4779 031210 001403          BEQ 2$           ;DBL SET
4780 031212 104163          ERROR 163        ;DBL DID SET ON A 2 WORD TRANSFER
4781 031214 004737 007260   JSR R7,WHYFO      ;TELL WHY NOT
4782 031220 004737 006626   2$: JSR R7,CLEER   ;CLEAR ERRORS
4783 031224 004737 050244   JSR R7,ERRTST
4784
4785 ;:*****
4786 ;*TEST 47          DBL TEST 2 WORD EVEN ADD. READ REV
4787 ;*THESE TEST CHECK DBL IN RHCS3 WITHREAD FWD AND REV
4788 ;*WRITE FWD AND REV AND WITH BAI SET IN RHCS2
4789 ;*OPERATION BEING PREFORMED WILL BE PRINTED OUT
4790 ;*IN ERROR MESSAGE.
4791 ;*.....RH70 ONLY.....
4792 ;:*****
4792 031230 000004          TST47: SCOPE
4793 031232 005701          TST R1           ;IS IN AN RH11
4794 031234 100532          BMI TST50        ;;GET OUT OF TEST
4795 031236 012777 177776 152066   MOV #-2,@RHWC    ;SET UP WC FOR TWO WORD
4796 031244 012777 004000 152062   MOV #EVENAD,@RHBA ;SETUP BUS ADDRESS
4797 031252 012777 000000 152100   MOV #ZERO,@RHBAE ;SETUP BUS ADDRESS EXTENSION
4798 031260 012777 000007 152052   MOV #7,@RHCS2    ;DEVICE 7
4799 031266 012777 000077 152034   MOV #READ6,@RHCS1 ;TELL IT TO READ6
4800 031274 005037 003446          CLR BITCNT       ;CLEAR BIT COUNTER
4801 031300 032777 000200 152022 18$: BIT #RDY,@RHCS1  ;IS RDY SET
4802 031306 001015          BNE 3$           ;BIT IS SET
4803 031310 005237 003446          INC BITCNT       ;COUNT UP
4804 031314 001371          BNE 18$         ;NOT FINISHED COUNTING
4805 031316 005037 003446          CLR BITCNT       ;GET READY TO DO IT AGAIN
4806 031322 032777 000200 152000 19$: BIT #RDY,@RHCS1  ;IS IT SET YET?
4807 031330 001004          BNE 3$           ;YES
4808 031332 005237 003446          INC BITCNT       ;COUNT UP
4809 031336 001401          BEQ 3$           ;BIT IS NOT GOING TO SET
4810 031340 000770          BR 19$
4811 031342          3$:
4812 031342 017737 151762 003420   MOV @RHCS1,CS1   ;SAVE RHCS1
4813 031350 017737 151756 003444   MOV @RHWC,WC     ;SAVE WORD COUNT
4814 031356 017737 151752 003414   MOV @RHBA,BA     ;SAVE BUS ADDRESS
4815 031364 005701          TST R1           ;IS IT AN RH11
4816 031366 001406          BEQ 87$         ;NO IT'S A 70
4817 031370 005037 003416          CLR BAE         ;CLEAR BAE
4818 031374 005037 003424          CLR CS3        ;CLEAR CS3
4819 031400 000137 031420          JMP 86$        ;CONTINUE
4820 031404 017737 151750 003416 87$: MOV @RHBAE,BAE   ;SAVE BUS ADDRESS EXTENSION
4821 031412 017737 151744 003424   MOV @RHCS3,CS3  ;SAVE RHCS3
4822 031420 017737 151714 003422 86$: MOV @RHCS2,CS2  ;SAVE CS2
4823 031426 017737 151710 003432   MOV @RHST,DS1   ;SAVE TESTER STATUS
4824 031434 017737 151704 003436   MOV @RHER,ER1   ;SAVE ERROR REGISTER
4825 031442 017737 151702 003442   MOV @RHTDB,TDR  ;SAVE TESTER DATA REG.
4826 031450 017737 151662 003440   MOV @RHMR2,TC   ;SAVE MR2 TESTER REG.
4827 031456 032777 000200 151644   BIT #RDY,@RHCS1 ;IS READY SET
4828 031464 001003          BNE 1$         ;RDY SET CONT. TEST
4829 031466 104102          ERROR 102       ;READY DID NOT SET
4830 031470 004737 007260   JSR R7,WHYFO     ;ANY ERRORS SET
4831 031474 032777 002000 151660 1$: BIT #DBL,@RHCS3 ;IS DOUBLE SET

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4832 031502 001403 BEQ 2$ :DBL SET
4833 031504 104164 ERROR 164 :DBL DID SET ON A 2 WORD TRANSFER
4834 031506 004737 007260 JSR R7,WHYFO :TELL WHY NOT
4835 031512 004737 006626 2$: JSR R7,CLEER :CLEAR ERRORS
4836 031516 004737 050244 JSR R7,ERRTST
4837
4838 :*****
4839 :*TEST 50 DBL TEST 2 WORD ODD ADD. READ REV
4840 :*THESE TEST CHECK DBL IN RHCS3 WITHREAD FWD AND REV
4841 :*WRITE FWD AND REV AND WITH BAI SET IN RHCS2
4842 :*OPERATION BEING PREFORMED WILL BE PRINTED OUT
4843 :*IN ERROR MESSAGE.
4844 :*.....RH70 ONLY.....
4845 031522 000004 TST50: SCOPE
4846 031524 005701 TST R1 :IS IN AN RH11
4847 031526 100532 BMI TST51 ;;GET OUT OF TEST
4848 031530 012777 177776 151574 MOV #-2,@RHCW :SET UP WC FOR TWO WORD
4849 031536 012777 004002 151570 MOV #ODDAD,@RHBA :SETUP BUS ADDRESS
4850 031544 012777 000000 151606 MOV #ZERO,@RHBAE :SETUP BUS ADDRESS EXTENSION
4851 031552 012777 000007 151560 MOV #7,@RHCS2 :DEVICE 7
4852 031560 012777 000077 151542 MOV #READ6,@RHCS1 :TELL IT TO READ6
4853 031566 005037 003446 CLR BITCNT :CLEAR BIT COUNTER
4854 031572 032777 000200 151530 18$: BIT #RDY,@RHCS1 :IS RDY SET
4855 031600 001015 BNE 3$ :BIT IS SET
4856 031602 005237 003446 INC BITCNT :COUNT UP
4857 031606 001371 BNE 18$ :NOT FINISHED COUNTING
4858 031610 005037 003446 CLR BITCNT :GET READY TO DO IT AGAIN
4859 031614 032777 000200 151506 19$: BIT #RDY,@RHCS1 :IS IT SET YET?
4860 031622 001004 BNE 3$ :YES
4861 031624 005237 003446 INC BITCNT :COUNT UP
4862 031630 001401 BEQ 3$ :BIT IS NOT GOING TO SET
4863 031632 000770 BR 19$
4864 031634 3$:
4865 031634 017737 151470 003420 MOV @RHCS1,CS1 :SAVE RHCS1
4866 031642 017737 151464 003444 MOV @RHWC,WC :SAVE WORD COUNT
4867 031650 017737 151460 003414 MOV @RHBA,BA :SAVE BUS ADDRESS
4868 031656 005701 TST R1 :IS IT AN RH11
4869 031660 001406 BEQ 87$ :NO IT'S A 70
4870 031662 005037 003416 CLR BAE :CLEAR BAE
4871 031666 005037 003424 CLR CS3 :CLEAR CS3
4872 031672 000137 031712 JMP 86$ :CONTINUE
4873 031676 017737 151456 003416 87$: MOV @RHBAE,BAE :SAVE BUS ADDRESS EXTENSION
4874 031704 017737 151452 003424 MOV @RHCS3,CS3 :SAVE RHCS3
4875 031712 017737 151422 003422 86$: MOV @RHCS2,CS2 :SAVE CS2
4876 031720 017737 151416 003432 MOV @RHST,DS1 :SAVE TESTER STATUS
4877 031726 017737 151412 003436 MOV @RHER,ER1 :SAVE ERROR REGISTER
4878 031734 017737 151410 003442 MOV @RHTDB,TDR :SAVE TESTER DATA REG.
4879 031742 017737 151370 003440 MOV @RHMR2,TC :SAVE MR2 TESTER REG.
4880 031750 032777 000200 151352 BIT #RDY,@RHCS1 :IS READY SET
4881 031756 001003 BNE 1$ :RDY SET CONT. TEST
4882 031760 104102 ERROR 102 :READY DID NOT SET
4883 031762 004737 007260 JSR R7,WHYFO :ANY ERRORS SET
4884 031766 032777 002000 151366 1$: BIT #DBL,@RHCS3 :IS DOUBLE SET
4885 031774 001003 BNE 2$ :DBL SET
4886 031776 104165 ERROR 165 :DBL DIDN'T SET ON A 2 WORD TRANSFER
4887 032000 004737 007260 JSR R7,WHYFO :TELL WHY NOT
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4888 032004 004737 006626  
4889 032010 004737 050244  
4890  
4891  
4892  
4893  
4894  
4895  
4896  
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4898 032014 000004  
4899 032016 005701  
4900 032020 100532  
4901 032022 012777 177775 151302  
4902 032030 012777 004000 151276  
4903 032036 012777 000000 151314  
4904 032044 012777 000007 151266  
4905 032052 012777 000071 151250  
4906 032060 005037 003446  
4907 032064 032777 000200 151236 18\$:  
4908 032072 001015  
4909 032074 005237 003446  
4910 032100 001371  
4911 032102 005037 003446  
4912 032106 032777 000200 151214 19\$:  
4913 032114 001004  
4914 032116 005237 003446  
4915 032122 001401  
4916 032124 000770  
4917 032126  
4918 032126 017737 151176 003420  
4919 032134 017737 151172 003444  
4920 032142 017737 151166 003414  
4921 032150 005701  
4922 032152 001406  
4923 032154 005037 003416  
4924 032160 005037 003424  
4925 032164 000137 032204  
4926 032170 017737 151164 003416 87\$:  
4927 032176 017737 151160 003424  
4928 032204 017737 151130 003422 86\$:  
4929 032212 017737 151124 003432  
4930 032220 017737 151120 003436  
4931 032226 017737 151116 003442  
4932 032234 017737 151076 003440  
4933 032242 032777 000200 151060  
4934 032250 001003  
4935 032252 104102  
4936 032254 004737 007260  
4937 032260 032777 002000 151074 1\$:  
4938 032266 001403  
4939 032270 104166  
4940 032272 004737 007260  
4941 032276 004737 006626  
4942 032302 004737 050244  
4943

```
2$: JSR R7,CLEER ;CLEAR ERRORS
     JSR R7,ERRTST
;*****
;*TEST 51 DBL TEST 3 WORD EVEN ADD. READ FWD
;*THESE TEST CHECK DBL IN RHCS3 WITHREAD FWD AND REV
;*WRITE FWD AND REV AND WITH BAI SET IN RHCS2
;*OPERATION BEING PREFORMED WILL BE PRINTED OUT
;*IN ERROR MESSAGE.
;*.....RH70 ONLY.....
;*****
TST51: SCOPE
        TST R1 ;IS IN AN RH11
        BMI TST52 ;;GET OUT OF TEST
        MOV #-3,@RHWC ;SET UP WC FOR THREE WORD
        MOV #EVENAD,@RHBA ;SETUP BUS ADDRESS
        MOV #ZERO,@RHBAE ;SETUP BUS ADDRESS EXTENSION
        MOV #7,@RHCS2 ;DEVICE 7
        MOV #READO,@RHCS1 ;TELL IT TO READO
        CLR BITCNT ;CLEAR BIT COUNTER
        BIT #RDY,@RHCS1 ;IS RDY SET
        BNE 3$ ;BIT IS SET
        INC BITCNT ;COUNT UP
        BNE 18$ ;NOT FINISHED COUNTING
        CLR BITCNT ;GET READY TO DO IT AGAIN
        BIT #RDY,@RHCS1 ;IS IT SET YET?
        BNE 3$ ;YES
        INC BITCNT ;COUNT UP
        BEQ 3$ ;BIT IS NOT GOING TO SET
        BR 19$
3$: MOV @RHCS1,CS1 ;SAVE RHCS1
     MOV @RHWC,WC ;SAVE WORD COUNT
     MOV @RHBA,BA ;SAVE BUS ADDRESS
     TST R1 ;IS IT AN RH11
     BEQ 87$ ;NO IT'S A 70
     CLR BAE ;CLEAR BAE
     CLR CS3 ;CLEAR CS3
     JMP 86$ ;CONTINUE
87$: MOV @RHBAE,BAE ;SAVE BUS ADDRESS EXTENSION
     MOV @RHCS3,CS3 ;SAVE RHCS3
86$: MOV @RHCS2,CS2 ;SAVE CS2
     MOV @RHST,DS1 ;SAVE TESTER STATUS
     MOV @RHER,ER1 ;SAVE ERROR REGISTER
     MOV @RHTDB,TDR ;SAVE TESTER DATA REG.
     MOV @RHMR2,TC ;SAVE MR2 TESTER REG.
     BIT #RDY,@RHCS1 ;IS READY SET
     BNE 1$ ;RDY SET CONT. TEST
     ERROR 102 ;READY DID NOT SET
     JSR R7,WHYFO ;ANY ERRORS SET
     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
;*****
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4951 032306 000004  
4952 032310 005701  
4953 032312 100532  
4954 032314 012777 177775 151010  
4955 032322 012777 004000 151004  
4956 032330 012777 000000 151022  
4957 032336 012777 000007 150774  
4958 032344 012777 000077 150756  
4959 032352 005037 003446  
4960 032356 032777 000200 150744 18\$:  
4961 032364 001015  
4962 032366 005237 003446  
4963 032372 001371  
4964 032374 005037 003446  
4965 032400 032777 000200 150722 19\$:  
4966 032406 001004  
4967 032410 005237 003446  
4968 032414 001401  
4969 032416 000770  
4970 032420  
4971 032420 017737 150704 003420 3\$:  
4972 032426 017737 150700 003444  
4973 032434 017737 150674 003414  
4974 032442 005701  
4975 032444 001406  
4976 032446 005037 003416  
4977 032452 005037 003424  
4978 032456 000137 032476  
4979 032462 017737 150672 003416 87\$:  
4980 032470 017737 150666 003424  
4981 032476 017737 150636 003422 86\$:  
4982 032504 017737 150632 003432  
4983 032512 017737 150626 003436  
4984 032520 017737 150624 003442  
4985 032526 017737 150604 003440  
4986 032534 032777 000200 150566  
4987 032542 001003  
4988 032544 104102  
4989 032546 004737 007260  
4990 032552 032777 002000 150602 1\$:  
4991 032560 001003  
4992 032562 104167  
4993 032564 004737 007260  
4994 032570 004737 006626 2\$:  
4995 032574 004737 050244  
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```
;*TEST 52 DBL TEST 3 WORD EVEN ADD. READ REV
:*THESE TEST CHECK DBL IN RHCS3 WITHREAD FWD AND REV
:*WRITE FWD AND REV AND WITH BAI SET IN RHCS2
:*OPERATION BEING PREFORMED WILL BE PRINTED OUT
:*IN ERROR MESSAGE.
*.....RH70 ONLY.....
:*****
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
MOV #ZERO,@RHBAE ;SETUP BUS ADDRESS EXTENSION
MOV #7,@RHCS2 ;DEVICE 7
MOV #READ6,@RHCS1 ;TELL IT TO READ6
CLR BITCNT ;CLEAR BIT COUNTER
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
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
MOV @RHBAE,BAE ;SAVE BUS ADDRESS EXTENSION
MOV @RHCS3,CS3 ;SAVE RHCS3
MOV @RHCS2,CS2 ;SAVE CS2
MOV @RHST,DS1 ;SAVE TESTER STATUS
MOV @RHER,ER1 ;SAVE ERROR REGISTER
MOV @RHTDB,TDR ;SAVE TESTER DATA REG.
MOV @RHMR2,TC ;SAVE MR2 TESTER REG.
BIT #RDY,@RHCS1 ;IS READY SET
BNE 1$ ;RDY SET CONT. TEST
ERROR 102 ;READY DID NOT SET
JSR R7,WHYFO ;ANY ERRORS SET
BIT #DBL,@RHCS3 ;IS DOUBLE SET
BNE 2$ ;DBL SET
ERROR 167 ;DBL DIDN'T SET ON A 3 WORD TRANSFER
JSR R7,WHYFO ;TELL WHY NOT
JSR R7,CLEER ;CLEAR ERRORS
JSR R7,ERRTST

:*****
;*TEST 53 WCE EW ERROR TEST
:*THIS TEST CHECKS THAT WCELO WILL SET IN
:*RHCS3 AND THAT WCE SETS IN RHCS1
```

```
5000                                     ;*IT ALSO CHECKS THAT WCEHI DOES NOT SET
5001                                     ;*WITH WCELO IN RHCS3.....
5002                                     ;*.....RH70 ONLY.....
5003                                     ;*****
5004 032600 000004 TST53: SCOPE
5005 032602 012737 000001 001212      MOV #1,$TIMES      ;;DO 1 ITERATION
5006 032610 005701      TST R1              ;IS IT AN RH11
5007 032612 001402      BEQ 1$             ;IT'S AN RH70
5008 032614 000137 033372      JMP FANG           ;IT'S AN RH11, EXIT TEST
5009 032620 012777 000007 150512 1$: MOV #7,@RHCS2      ;SET DEVICE 7
5010 032626 012777 000000 150524      MOV #ZERO,@RHBAE  ;SETUP BUS ADDRESS EXT.
5011 032634 012777 004000 150472      MOV #EVENAD,@RHBA ;SETUP BUS ADDRESS
5012                                     ;*****
5013 032642 013737 004000 004002 CHGE1: MOV EVENAD,ODDAD ;MAKE BOTH ADD EQUAL
5014                                     ;*****
5015 032650 012777 177776 150454      MOV #-2,@RHWC     ;FOR TWO WORD TRANSFER
5016 032656 012777 000061 150444      MOV #WRITE0,@RHCS1 ;TELL IT TO WRITE
5017 032664 005037 003446      CLR BITCNT        ;CLEAR BIT COUNTER
5018 032670 032777 000200 150432 18$: BIT #RDY,@RHCS1  ;IS RDY SET
5019 032676 001015      BNE MITE          ;BIT IS SET
5020 032700 005237 003446      INC BITCNT        ;COUNT UP
5021 032704 001371      BNE 18$           ;NOT FINISHED COUNTING
5022 032706 005037 003446      CLR BITCNT        ;GET READY TO DO IT AGAIN
5023 032712 032777 000200 150410 19$: BIT #RDY,@RHCS1  ;IS IT SET YET?
5024 032720 001004      BNE MITE          ;YES
5025 032722 005237 003446      INC BITCNT        ;COUNT UP
5026 032726 001401      BEQ MITE          ;BIT IS NOT GOING TO SET
5027 032730 000770      BR 19$
5028 032732
5029 032732 017737 150372 003420 MITE: MOV @RHCS1,CS1    ;SAVE RHCS1
5030 032740 017737 150366 003444      MOV @RHWC,WC      ;SAVE WORD COUNT
5031 032746 017737 150362 003414      MOV @RHBA,BA      ;SAVE BUS ADDRESS
5032 032754 005701      TST R1            ;IS IT AN RH11
5033 032756 001406      BEQ 87$           ;NO IT'S A 70
5034 032760 005037 003416      CLR BAE           ;CLEAR BAE
5035 032764 005037 003424      CLR CS3           ;CLEAR CS3
5036 032770 000137 033010      JMP 86$           ;CONTINUE
5037 032774 017737 150360 003416 87$: MOV @RHBAE,BAE     ;SAVE BUS ADDRESS EXTENSION
5038 033002 017737 150354 003424      MOV @RHCS3,CS3    ;SAVE RHCS3
5039 033010 017737 150324 003422 86$: MOV @RHCS2,CS2    ;SAVE CS2
5040 033016 017737 150320 003432      MOV @RHST,DS1     ;SAVE TESTER STATUS
5041 033024 017737 150314 003436      MOV @RHER,ER1     ;SAVE ERROR REGISTER
5042 033032 017737 150312 003442      MOV @RHTDB,TDR    ;SAVE TESTER DATA REG.
5043 033040 017737 150272 003440      MOV @RHMR2,TC     ;SAVE MR2 TESTER REG.
5044 033046 032777 000200 150254      BIT #RDY,@RHCS1  ;IS READY SET
5045 033054 001003      BNE VOUS          ;RDY IS SET
5046 033056 104102      ERROR 102        ;RDY DID NOT SET
5047 033060 004737 007260      JSR R7,WHYFO      ;ANY ERRORS SET
5048 033064 005137 004000      VOUS: COM EVENAD  ;INVERT BITS FOR WCELO
5049 033070 012777 004000 150236      MOV #EVENAD,@RHBA ;FIX BUS ADDRESS
5050 033076 012777 177776 150226      MOV #-2,@RHWC     ;FIX WORD COUNT
5051 033104 012777 000051 150216      MOV #WRCHO,@RHCS1 ;TELL IT TO WRITE CHECK
5052 033112 005037 003446      CLR BITCNT        ;CLEAR BIT COUNTER
5053 033116 032777 000200 150204 18$: BIT #RDY,@RHCS1  ;IS RDY SET
5054 033124 001015      BNE FAST          ;BIT IS SET
5055 033126 005237 003446      INC BITCNT        ;COUNT UP
```

```
5056 033132 001371          BNE      18$          :NOT FINISHED COUNTING
5057 033134 005037 003446    CLR      BITCNT      :GET READY TO DO IT AGAIN
5058 033140 032777 000200 150162 19$:  BIT      #RDY,@RHCS1 :IS IT SET YET?
5059 033146 001004          BNE      FAST        :YES
5060 033150 005237 003446    INC      BITCNT      :COUNT UP
5061 033154 001401          BEQ      FAST        :BIT IS NOT GOING TO SET
5062 033156 000770          BR       19$
5063 033160          FAST:
5064 033160 017737 150144 003420    MOV      @RHCS1,CS1   :SAVE RHCS1
5065 033166 017737 150140 003444    MOV      @RHWC,WC     :SAVE WORD COUNT
5066 033174 017737 150134 003414    MOV      @RHBA,BA     :SAVE BUS ADDRESS
5067 033202 005701          TST      R1           :IS IT AN RH11
5068 033204 001406          BEQ      87$         :NO IT'S A 70
5069 033206 005037 003416    CLR      BAE         :CLEAR BAE
5070 033212 005037 003424    CLR      CS3         :CLEAR CS3
5071 033216 000137 033236    JMP      86$         :CONTINUE
5072 033222 017737 150132 003416 87$:  MOV      @RHBAE,BAE   :SAVE BUS ADDRESS EXTENSION
5073 033230 017737 150126 003424    MOV      @RHCS3,CS3   :SAVE RHCS3
5074 033236 017737 150076 003422 86$:  MOV      @RHCS2,CS2   :SAVE CS2
5075 033244 017737 150072 003432    MOV      @RHST,DS1    :SAVE TESTER STATUS
5076 033252 017737 150066 003436    MOV      @RHER,ER1    :SAVE ERROR REGISTER
5077 033260 017737 150064 003442    MOV      @RHTDB,TDR   :SAVE TESTER DATA REG.
5078 033266 017737 150044 003440    MOV      @RHMR2,TC    :SAVE MR2 TESTER REG.
5079 033274 032777 000200 150026    BIT      #RDY,@RHCS1 :IS READY SET
5080 033302 001003          BNE      SUPER      :RDY IS SET
5081 033304 104102          ERROR    102        :RDY DID NOT SET
5082 033306 004737 007260    JSR      R7,WHYFO    :ANY ERRORS SET
5083 033312 032777 004000 150042 SUPER: BIT      #WCELO,@RHCS3 :IS WCELO SET
5084 033320 001006          BNE      RITEON     :WCELO IS SET
5085 033322 104132          ERROR    132        :WCELO DID NOT SET IN RHCS3
5086 033324 004737 007260    JSR      R7,WHYFO    :ANY ERRORS SET
5087 033330 105737 001103    TSTB    $ERFLG      :WAS THERE AN ERROR
5088 033334 001005          BNE      TWANG      :YES
5089 033336 032777 010000 150016 RITEON: BIT      #WCEHI,@RHCS3 :IS WCEHI SET
5090 033344 001406          BEQ      TWANGY     :WCEHI DID NOT SET
5091 033346 104133          ERROR    133        :WCEHI SET WITH WCELO
5092 033350 032777 040000 147762 TWANG: BIT      #WCE,@RHCS2 :DID WCE SET IN CS2
5093 033356 001001          BNE      TWANGY     :YES,IT SHOULD BE
5094 033360 104134          ERROR    134        :WCE DID NOT SET IN RHCS2
5095 033362 004737 006626    TWANGY: JSR      R7,CLEER :CLEAR ERRORS
5096 033366 004737 050244    JSR      R7,ERRTST
5097 033372          FANG:
5098          :*****
5099          :*TEST 54      WCE OW ERROR TEST (WCEHI)
5100          :*THIS TEST CHECKS THAT WCEHI SETS IN RHCS3
5101          :*AND THAT WCE SETS IN RHCS1 ,IT ALSO TESTS
5102          :*THAT WCELO DOES NOT SET WITH WCEHI.....
5103          :*.....RH70 ONLY.....
5104          :*****
5105 033372 000004          TST54: SCOPE
5106 033374 005701          TST      R1           :IS IT AN 11 OR A 70
5107 033376 001402          BEQ      1$         :IT'S AN RH70
5108 033400 000137 034176    JMP      FANGY       :IT'S AN RH11, EXIT TEST
5109 033404 012777 000007 147726 1$:  MOV      #7,@RHCS2   :SET DEVICE 7
5110 033412 012777 177776 147712    MOV      #-2,@RHWC   :TWO WORD TRANSFER
5111 033420 012777 004000 147706    MOV      #EVENAD,@RHBA :SETUP BUS ADDRESS
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5112	033426	013737	004002	004000		MOV	ODDAD,EVENAD		:DUP ODDAD
5113	033434	012777	000061	147666		MOV	#WRITE0,@RHCS1		:TELL IT TO WRITE
5114	033442	005037	003446			CLR	BITCNT		:CLEAR BIT COUNTER
5115	033446	032777	000200	147654	18\$:	BIT	#RDY,@RHCS1		:IS RDY SET
5116	033454	001015				BNE	WCEOWT		:BIT IS SET
5117	033456	005237	003446			INC	BITCNT		:COUNT UP
5118	033462	001371				BNE	18\$		:NOT FINISHED COUNTING
5119	033464	005037	003446			CLR	BITCNT		:GET READY TO DO IT AGAIN
5120	033470	032777	000200	147632	19\$:	BIT	#RDY,@RHCS1		:IS IT SET YET?
5121	033476	001004				BNE	WCEOWT		:YES
5122	033500	005237	003446			INC	BITCNT		:COUNT UP
5123	033504	001401				BEQ	WCEOWT		:BIT IS NOT GOING TO SET
5124	033506	000770				BR	19\$		
5125	033510						WCEOWT:		
5126	033510	017737	147614	003420		MOV	@RHCS1,CS1		:SAVE RHCS1
5127	033516	017737	147610	003444		MOV	@RHWC,WC		:SAVE WORD COUNT
5128	033524	017737	147604	003414		MOV	@RHBA,BA		:SAVE BUS ADDRESS
5129	033532	005701				TST	R1		:IS IT AN RH11
5130	033534	001406				BEQ	87\$		:NO IT'S A 70
5131	033536	005037	003416			CLR	BAE		:CLEAR BAE
5132	033542	005037	003424			CLR	CS3		:CLEAR CS3
5133	033546	000137	033566			JMP	86\$		:CONTINUE
5134	033552	017737	147602	003416	87\$:	MOV	@RHBAE,BAE		:SAVE BUS ADDRESS EXTENSION
5135	033560	017737	147576	003424		MOV	@RHCS3,CS3		:SAVE RHCS3
5136	033566	017737	147546	003422	86\$:	MOV	@RHCS2,CS2		:SAVE CS2
5137	033574	017737	147542	003432		MOV	@RHST,DS1		:SAVE TESTER STATUS
5138	033602	017737	147536	003436		MOV	@RHER,ER1		:SAVE ERROR REGISTER
5139	033610	017737	147534	003442		MOV	@RHTDB,TDR		:SAVE TESTER DATA REG.
5140	033616	017737	147514	003440		MOV	@RHMR2,TC		:SAVE MR2 TESTER REG.
5141	033624	032777	000200	147476		BIT	#RDY,@RHCS1		:IS READY SET
5142	033632	001003				BNE	BEAU		:RDY IS SET
5143	033634	104102				ERROR	102		:RDY DID NOT SET
5144	033636	004737	007260			JSR	R7,WHYFO		:ANY ERRORS SET
5145	033642	052777	000040	147470	BEAU:	BIS	#40,@RHCS2		:DO A CONTROLLER CLEAR
5146	033650	005037	003446			CLR	BITCNT		:SET UP FOR DELAY
5147	033654	005237	003446		17\$:	INC	BITCNT		:COUNT UP
5148	033660	001375				BNE	17\$		
5149	033662	012777	000007	147450		MOV	#7,@RHCS2		:SELECT UNIT #7
5150	033670	005137	004002			COM	ODDAD		:REVERSE BITS IN ODDAD
5151	033674	012777	004000	147432		MOV	#EVENAD,@RHBA		:CORRECT BUS ADDRESS
5152	033702	012777	177776	147422		MOV	#-2,@RHWC		:CORRECT WC
5153	033710	012777	000051	147412		MOV	#WRCHO,@RHCS1		:TELL IT TO WRITE CHECK
5154	033716	005037	003446			CLR	BITCNT		:CLEAR BIT COUNTER
5155	033722	032777	000200	147400	18\$:	BIT	#RDY,@RHCS1		:IS RDY SET
5156	033730	001015				BNE	WCEERR		:BIT IS SET
5157	033732	005237	003446			INC	BITCNT		:COUNT UP
5158	033736	001371				BNE	18\$		:NOT FINISHED COUNTING
5159	033740	005037	003446			CLR	BITCNT		:GET READY TO DO IT AGAIN
5160	033744	032777	000200	147356	19\$:	BIT	#RDY,@RHCS1		:IS IT SET YET?
5161	033752	001004				BNE	WCEERR		:YES
5162	033754	005237	003446			INC	BITCNT		:COUNT UP
5163	033760	001401				BEQ	WCEERR		:BIT IS NOT GOING TO SET
5164	033762	000770				BR	19\$		
5165	033764						WCEERR:		
5166	033764	017737	147340	003420		MOV	@RHCS1,CS1		:SAVE RHCS1
5167	033772	017737	147334	003444		MOV	@RHWC,WC		:SAVE WORD COUNT

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5168 034000 017737 147330 003414      MOV    @RHBA,BA      ;SAVE BUS ADDRESS
5169 034006 005701                TST    R1            ;IS IT AN RH11
5170 034010 001406                BEQ    87$           ;NO IT'S A 70
5171 034012 005037 003416      CLR    BAE          ;CLEAR BAE
5172 034016 005037 003424      CLR    CS3         ;CLEAR CS3
5173 034022 000137 034042      JMP    86$         ;CONTINUE
5174 034026 017737 147326 003416 87$:  MOV    @RHBAE,BAE   ;SAVE BUS ADDRESS EXTENSION
5175 034034 017737 147322 003424      MOV    @RHCS3,CS3  ;SAVE RHCS3
5176 034042 017737 147272 003422 86$:  MOV    @RHCS2,CS2  ;SAVE CS2
5177 034050 017737 147266 003432      MOV    @RHST,DS1   ;SAVE TESTER STATUS
5178 034056 017737 147262 003436      MOV    @RHER,ER1   ;SAVE ERROR REGISTER
5179 034064 017737 147260 003442      MOV    @RHTDB,TDR  ;SAVE TESTER DATA REG.
5180 034072 017737 147240 003440      MOV    @RHMR2,TC   ;SAVE MR2 TESTER REG.
5181 034100 032777 000200 147222      BIT    #RDY,@RHCS1 ;IS READY SET
5182 034106 001003                BNE    ERTIP        ;RDY IS SET
5183 034110 104102                ERROR  102         ;RDY DID NOT SET
5184 034112 004737 007260      JSR    R7,WHYFO     ;ANY ERRORS SET
5185 034116 032777 010000 147236  ERTIP: BIT    #WCEHI,@RHCS3 ;IS WCEHI SET
5186 034124 001006                BNE    BUSH        ;WCEHI IS SET
5187 034126 104135                ERROR  135         ;WCEHI DID NOT SET IN RHCS3
5188 034130 004737 007260      JSR    R7,WHYFO     ;ANY OTHER ERRORS SET
5189 034134 105737 001103      TSTB   $ERFLG       ;WAS THERE AN ERROR
5190 034140 001012                BNE    LEAGUE       ;YES
5191 034142 032777 004000 147212  BUSH: BIT    #WCELO,@RHCS3 ;IS WCELO SET
5192 034150 001406                BEQ    LEAGUE       ;NO,WCELO IS OK
5193 034152 104137                ERROR  137         ;WCELO SET WITH WCEHI
5194 034154 032777 040000 147156  LEFOUT: BIT   #WCE,@RHCS2 ;DID WCE SET
5195 034162 001001                BNE    LEAGUE       ;WCE IS SET IN RHCS2
5196 034164 104136                ERROR  136         ;WCE DID NOT SET IN RHCS2
5197 034166 004737 006626      LEAGUE: JSR    R7,CLEER ;CLEAR ERRORS
5198 034172 004737 050244      JSR    R7,ERRTST
5199 034176
5200
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5205 034176 000004      TST55: SCOPE
5206 034200 012777 000007 147132      MOV    #7,@RHCS2   ;SETUP UNIT NUMBER
5207 034206 012777 004000 147120      MOV    #EVENAD,@RHBA ;SETUP BUS ADDRESS
5208 034214 005701                TST    R1            ;RH11 OR RH70 ?
5209 034216 100403                BMI    READY        ;ITS AN RH11
5210 034220 012777 000000 147132      MOV    #ZERO,@RHBAE ;ZERO THE BAE
5211 034226 012777 034510 147152  READY: MOV    #IETST,@VECADD ;SET UP VECTOR ADDRESS
5212 034234 012737 000340 177776      MOV    #340,PS     ;SET PRIORITY 7
5213 034242 012777 177777 147062      MOV    #-1,@RHWC   ;SET FOR ONE WORD
5214 034250 012777 000161 147052      MOV    #WRITE0!IE,@RHCS1 ;TELL IT TO WRITE
5215 034256 032777 000100 147044      BIT    #IE,@RHCS1  ;IS IE SET
5216 034264 001001                BNE    2$           ;YES CONTINUE TEST
5217 034266 104174                ERROR  174         ;IE WILL NOT SET
5218 034270 005037 177776      2$:  CLR    @#177776
5219 034274 005037 003446      CLR    BITCNT      ;CLEAR BIT COUNTER
5220 034300 032777 000200 147022  18$: BIT    #RDY,@RHCS1 ;IS RDY SET
5221 034306 001015                BNE    TSTIE        ;BIT IS SET
5222 034310 005237 003446      INC    BITCNT      ;COUNT UP
5223 034314 001371                BNE    18$         ;NOT FINISHED COUNTING

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5224	034316	005037	003446			CLR	BITCNT	:GET READY TO DO IT AGAIN
5225	034322	032777	000200	147000	19\$:	BIT	#RDY,@RHCS1	:IS IT SET YET?
5226	034330	001004				BNE	TSTIE	:YES
5227	034332	005237	003446			INC	BITCNT	:COUNT UP
5228	034336	001401				BEQ	TSTIE	:BIT IS NOT GOING TO SET
5229	034340	000770				BR	19\$	
5230	034342							
5231	034342	017737	146762	003420		MOV	@RHCS1,CS1	:SAVE RHCS1
5232	034350	017737	146756	003444		MOV	@RHWC,WC	:SAVE WORD COUNT
5233	034356	017737	146752	003414		MOV	@RHBA,BA	:SAVE BUS ADDRESS
5234	034364	005701				TST	R1	:IS IT AN RH11
5235	034366	001406				BEQ	87\$	:NO IT'S A 70
5236	034370	005037	003416			CLR	BAE	:CLEAR BAE
5237	034374	005037	003424			CLR	CS3	:CLEAR CS3
5238	034400	000137	034420			JMP	86\$	:CONTINUE
5239	034404	017737	146750	003416	87\$:	MOV	@RHBAE,BAE	:SAVE BUS ADDRESS EXTENSION
5240	034412	017737	146744	003424		MOV	@RHCS3,CS3	:SAVE RHCS3
5241	034420	017737	146714	003422	86\$:	MOV	@RHCS2,CS2	:SAVE CS2
5242	034426	017737	146710	003432		MOV	@RHST,DS1	:SAVE TESTER STATUS
5243	034434	017737	146704	003436		MOV	@RHER,ER1	:SAVE ERROR REGISTER
5244	034442	017737	146702	003442		MOV	@RHTDB,TDR	:SAVE TESTER DATA REG.
5245	034450	017737	146662	003440		MOV	@RHMR2,TC	:SAVE MR2 TESTER REG.
5246	034456	032777	000200	146644		BIT	#RDY,@RHCS1	:IS READY SET ?
5247	034464	001003				BNE	1\$	:YES
5248	034466	104102				ERROR	102	:READY DID NOT SET
5249	034470	000137	034522			JMP	SPLIT	:EXIT TEST
5250	034474	105737	001103		1\$:	TSTB	\$ERFLG	:WAS IE SET
5251	034500	001010				BNE	SPLIT	:NO,EXIT TEST
5252	034502	104173				ERROR	173	:RDY DID NOT CAUSE AN INTERUPT
5253	034504	000137	034522			JMP	SPLIT	:EXIT TEST
5254	034510	022626			IETST:	CMP	(SP)+,(SP)+	:CORRECT STACK

MASSBUS RH70 AND RH11 DIAGNOSTIC  
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T55 INTERRUPT ENABLE TEST

SEQ 0099

5255	034512	105737	001103
5256	034516	001401	
5257	034520	104175	
5258	034522	004737	006626
5259	034526	004737	050244

	TSTB	\$ERFLG			:DID IE SET
	BEQ	SPLIT			:YES,EXIT TEST
	ERROR	175			:IE HAS OPEN GOING TO BUS
SPLIT:	JSR	R7,CLEER	-	-	:CLEAR ERRORS
	JSR	R7,ERRTST			

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5268 034532 000004  
5269 034534 012777 000007 146576  
5270 034542 012777 177777 146562  
5271 034550 012777 004100 146556  
5272 034556 012737 000000 004100  
5273 034564 012777 125252 146556  
5274 034572 005701  
5275 034574 100403  
5276 034576 012777 000000 146554  
5277 034604 012777 000071 146516 1\$:  
5278 034612 005037 003446  
5279 034616 032777 000200 146504 18\$:  
5280 034624 001015  
5281 034626 005237 003446  
5282 034632 001371  
5283 034634 005037 003446  
5284 034640 032777 000200 146462 19\$:  
5285 034646 001004  
5286 034650 005237 003446  
5287 034654 001401  
5288 034656 000770  
5289 034660  
5290 034660 017737 146444 003420 2\$:  
5291 034666 017737 146440 003444  
5292 034674 017737 146434 003414  
5293 034702 005701  
5294 034704 001406  
5295 034706 005037 003416  
5296 034712 005037 003424  
5297 034716 000137 034736  
5298 034722 017737 146432 003416 87\$:  
5299 034730 017737 146426 003424  
5300 034736 017737 146376 003422 86\$:  
5301 034744 017737 146372 003432  
5302 034752 017737 146366 003436  
5303 034760 017737 146364 003442  
5304 034766 017737 146344 003440  
5305 034774 017737 146350 001162  
5306 035002 032777 000200 146320  
5307 035010 001003  
5308 035012 104102  
5309 035014 004737 007260  
5310 035020 023777 004100 146322 3\$:  
5311 035026 001407  
5312 035030 005737 004100  
5313 035034 001403  
5314 035036 104147  
5315

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:*****
:*TEST 56      READ OPERATIONAL TEST (NORMAL) #1
:*THESE TESTS VERIFY ALL READ AND WRITE CODES
:*WHETHER IT BE A READ REV. OR FWD OR A WRITE REV. OR FWD
:*DURING THESE TESTS THE TESTER TIMING IS MARGINED AND
:*NO ERRORS SHOULD OCCUR
:*****
TST56: SCOPE
MOV      #7,@RHCS2      ;SETUP UNIT SEVEN
MOV      #-1,@RHWC      ;FOR ONE WORD
MOV      #RBUF,@RHBA    ;SRTUP BA
MOV      #ZERO,RBUF     ;SETUP DATA
MOV      #OAB,@RHTDB    ;SETUP TESTER DB
TST      R1              ;IS IT AN 11 OR A 70
BMI      1$              ;IT'S AN RH11
MOV      #ZERO,@RHBAE   ;ZERO BAE
MOV      #READ0,@RHCS1  ;TELL IT TO READ0
CLR      BITCNT          ;CLEAR BIT COUNTER
BIT      #RDY,@RHCS1    ;IS RDY SET
BNE      2$              ;BIT IS SET
INC      BITCNT          ;COUNT UP
BNE      18$             ;NOT FINISHED COUNTING
CLR      BITCNT          ;GET READY TO DO IT AGAIN
BIT      #RDY,@RHCS1    ;IS IT SET YET?
BNE      2$              ;YES
INC      BITCNT          ;COUNT UP
BEQ      2$              ;BIT IS NOT GOING TO SET
BR       19$

2$:
MOV      @RHCS1,CS1     ;SAVE RHCS1
MOV      @RHWC,WC       ;SAVE WORD COUNT
MOV      @RHBA,BA       ;SAVE BUS ADDRESS
TST      R1              ;IS IT AN RH11
BEQ      87$            ;NO IT'S A 70
CLR      BAE             ;CLEAR BAE
CLR      CS3             ;CLEAR CS3
JMP      86$            ;CONTINUE
MOV      @RHBAE,BAE     ;SAVE BUS ADDRESS EXTENSION
MOV      @RHCS3,CS3     ;SAVE RHCS3
MOV      @RHCS2,CS2     ;SAVE CS2
MOV      @RHST,DS1      ;SAVE TESTER STATUS
MOV      @RHER,ER1      ;SAVE ERROR REGISTER
MOV      @RHTDB,TDR     ;SAVE TESTER DATA REG.
MOV      @RHMR2,TC      ;SAVE MR2 TESTER REG.
MOV      @RHTDB,$REGO   ;GET DATA
BIT      #RDY,@RHCS1    ;IS OR SET
BNE      3$              ;YES RDY IS SET
ERROR    102            ;READY DID NOT SET
JSR      R7,WHYFO        ;ARE ANY ERRORS SET
CMP      RBUF,@RHTDB    ;DID INFO GET WRITTEN OR READ
BEQ      4$              ;INFO GOT LOADED
TST      RBUF           ;DOES RBUF = 0
BEQ      5$              ;YES INFO DID NOT LOAD
ERROR    147            ;ALL BITS DID NOT LOAD DURING
                        ;AN READ0 OPERATION

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5316 035040 000137 035046
5317 035044 104150
5318
5319 035046 004737 007260
5320 035052 105737 001103
5321 035056 001402
5322 035060 104146
5323 035062 104170
5324 035064 004737 006626
5325 035070 004737 050244
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5334 035074 000004
5335 035076 012777 000007 146234
5336 035104 012737 125252 004000
5337 035112 012777 000003 146234
5338 035120 012777 177777 146204
5339 035126 005701
5340 035130 100403
5341 035132 012777 000000 146220
5342 035140 012777 004000 146166
5343 035146 012777 000061 146154
5344 035154 012777 000001 146172
5345 035162 005037 003446
5346 035166 005237 003446
5347 035172 022737 000015 003446
5348 035200 001372
5349 035202 012777 000003 146144
5350 035210 012777 000001 146136
5351 035216 012777 000003 146130
5352 035224 012777 000001 146122
5353 035232 012777 000000 146114
5354 035240 005037 003446
5355 035244 032777 000200 146056
5356 035252 001015
5357 035254 005237 003446
5358 035260 001371
5359 035262 005037 003446
5360 035266 032777 000200 146034
5361 035274 001004
5362 035276 005237 003446
5363 035302 001401
5364 035304 000770
5365 035306
5366 035306 017737 146016 003420
5367 035314 017737 146012 003444
5368 035322 017737 146006 003414
5369 035330 005701
5370 035332 001406
5371 035334 005037 003416
    
```

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JMP 4$ :EXIT TEST
5$: ERROR 150 :READO OPERATION DID NOT WORK
: NO BITS WHERE LOADED TO RBUF
4$: JSR R7,WHYFO :ANY ERRORS SET
TSTB $ERFLG :ANY ERRORS ?
BEQ 6$ :NO,EXIT TEST
ERROR 146 :PRINT REGISTERS
ERROR 170
6$: JSR R7,CLEER :CLEAR ERRORS
JSR R7,ERRTST
:*****
:*TEST 57 RH OPERATIONAL WRITE TEST #1
:*THESE TESTS VERIFY ALL READ AND WRITE CODES
:*WHETHER IT BE A READ REV. OR FWD OR A WRITE REV. OR FWD
:*DURING THESE TESTS THE TESTER TIMING IS MARGINED AND
:*NO ERRORS SHOULD OCCUR
:*****
TST57: SCOPE
MOV #7,@RHCS2 :SETUP UNIT SEVEN
MOV #OAB,EVENAD :SETUP INFORMATION
MOV #DMD!MCLK,@RHMR1 :SETUP DIAG. MODE
MOV #-1,@RHWC :FOR ONE WORD
TST R1 :IS IT A 11 OR 70
BMI 1$ :IT'S AN 11
MOV #ZERO,@RHBAE :ZERO BAE
1$: MOV #EVENAD,@RHBA :SETUP BA
MOV #WRITEO,@RHCS1 :TELL IT TO WRITETO
MOV #DMD,@RHMR1 :MANIPULATE CLOCK
CLR BITCNT :CLEAR LOOP COUNTER
2$: INC BITCNT :INCREMENT LOOP COUNTER
CMP #15,BITCNT :IS IT THIRD LOOP FOR 5USEC WAIT
BNE 2$ :NO LOOP AGAIN
MOV #DMD!MCLK,@RHMR1 :START CHANGING CLOCK
MOV #DMD,@RHMR1 :CHANGE CLOCK AGAIN
MOV #DMD!MCLK,@RHMR1 :CHANGE CLOCK AGAIN
MOV #DMD,@RHMR1 :CHANGE CLOCK AGAIN
MOV #ZERO,@RHMR1 :GET OUT OF DIAG MODE
CLR BITCNT :CLEAR BIT COUNTER
18$: BIT #RDY,@RHCS1 :IS RDY SET
BNE 7$ :BIT IS SET
INC BITCNT :COUNT UP
BNE 18$ :NOT FINISHED COUNTING
CLR BITCNT :GET READY TO DO IT AGAIN
19$: BIT #RDY,@RHCS1 :IS IT SET YET?
BNE 7$ :YES
INC BITCNT :COUNT UP
BR 19$ :BIT IS NOT GOING TO SET
7$: MOV @RHCS1,CS1 :SAVE RHCS1
MOV @RHWC,WC :SAVE WORD COUNT
MOV @RHBA,BA :SAVE BUS ADDRESS
TST R1 :IS IT AN RH11
BEQ 87$ :NO IT'S A 70
CLR BAE :CLEAR BAE
    
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5372 035340 005037 003424 CLR CS3 ;CLEAR CS3
5373 035344 000137 035364 JMP 86$ ;CONTINUE
5374 035350 017737 146004 003416 87$: MOV @RHBAE,BAE ;SAVE BUS ADDRESS EXTENSION
5375 035356 017737 146000 003424 MOV @RHCS3,CS3 ;SAVE RHCS3
5376 035364 017737 145750 003422 86$: MOV @RHCS2,CS2 ;SAVE CS2
5377 035372 017737 145744 003432 MOV @RHST,DS1 ;SAVE TESTER STATUS
5378 035400 017737 145740 003436 MOV @RHER,ER1 ;SAVE ERROR REGISTER
5379 035406 017737 145736 003442 MOV @RHTDB,TDR ;SAVE TESTER DATA REG.
5380 035414 017737 145716 003440 MOV @RHMR2,TC ;SAVE MR2 TESTER REG.
5381 035422 017737 145722 001162 MOV @RHTDB,$REGO ;GET DATA
5382 035430 032777 000200 145672 BIT #RDY,@RHCS1 ;IS READY SET
5383 035436 001001 BNE 8$ ;YES,CONTINUE TEST
5384 035440 104102 ERROR 102 ;READY DID NOT SET
5385 035442 022777 177777 145662 8$: CMP #-1,@RHWC ;DID WC INCREMENT
5386 035450 001001 BNE 3$ ;YES,CONT TEST
5387 035452 104140 ERROR 140 ;WRITETO OPERATION DID NOT INC WC
5388 035454 022777 004002 145652 3$: CMP #ODDAD,@RHBA ;DID BA INCREMENT
5389 035462 001401 BEQ 4$ ;YES CONT TEST
5390 035464 104141 ERROR 141 ;BA DID NOT INCREMENT AFTER AN WRITETO OPERATION
5391 035466 023777 004000 145654 4$: CMP EVENAD,@RHTDB ;DID INFO WRITETO TESTER
5392 035474 001401 BEQ 5$ ;YES,CONT
5393 035476 104142 ERROR 142 ;INFO DID NOT WRITETO TESTER
5394 035500 004737 007260 5$: JSR R7,WHYFO ;ARE ANY ERROR BITS SET
5395 035504 105737 001103 TSTB $ERFLG ;WAS THER AN ERROR
5396 035510 001402 BEQ 6$ ;NO EXIT TEST
5397 035512 104146 ERROR 146 ;THESE ARE THE CONTENTS OF ALL RH70 REG.
5398 035514 104170 ERROR 170 ;THIS IS TO COMPLETE ERROR PRINTOUT
5399 035516 004737 006626 6$: JSR R7,CLEER ;CLEER ERRORS IF ANY
5400 035522 004737 050244 JSR R7,ERRTST
5401 *****
5402 ;*TEST 60 READ OPERATIONAL TEST (NORMAL) #2
5403 ;*THESE TESTS VERIFY ALL READ AND WRITE CODES
5404 ;*WHETHER IT BE A READ REV. OR FWD OR A WRITE REV. OR FWD
5405 ;*DURING THESE TESTS THE TESTER TIMING IS MARGINED AND
5406 ;*NO ERRORS SHOULD OCCUR
5407 *****
5408
5409 035526 000004 TST60: SCOPE
5410 035530 012777 000007 145602 MOV #7,@RHCS2 ;SETUP UNIT SEVEN
5411 035536 012777 177777 145566 MOV #-1,@RHWC ;FOR ONE WORD
5412 035544 012777 004100 145562 MOV #RBUF,@RHBA ;SRTUP BA
5413 035552 012737 000000 004100 MOV #ZERO,RBUF ;SETUP DATA
5414 035560 012777 125252 145562 MOV #OAB,@RHTDB ;SETUP TESTER DB
5415 035566 005701 TST R1 ;IS IT AN 11 OR A 70
5416 035570 100403 BMI 1$ ;IT'S AN RH11
5417 035572 012777 000000 145560 MOV #ZERO,@RHBAE ;ZERO BAE
5418 035600 012777 000073 145522 1$: MOV #READ2,@RHCS1 ;TELL IT TO READ2
5419 035606 005037 003446 CLR BITCNT ;CLEAR BIT COUNTER
5420 035612 032777 000200 145510 18$: BIT #RDY,@RHCS1 ;IS RDY SET
5421 035620 001015 BNE 2$ ;BIT IS SET
5422 035622 005237 003446 INC BITCNT ;COUNT UP
5423 035626 001371 BNE 18$ ;NOT FINISHED COUNTING
5424 035630 005037 003446 CLR BITCNT ;GET READY TO DO IT AGAIN
5425 035634 032777 000200 145466 19$: BIT #RDY,@RHCS1 ;IS IT SET YET?
5426 035642 001004 BNE 2$ ;YES
5427 035644 005237 003446 INC BITCNT ;COUNT UP

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5428 035650 001401 BEQ 2$ ;BIT IS NOT GOING TO SET
5429 035652 000770 BR 19$
5430 035654 2$:
5431 035654 017737 145450 003420 MOV @RHCS1,CS1 ;SAVE RHCS1
5432 035662 017737 145444 003444 MOV @RHWC,WC ;SAVE WORD COUNT
5433 035670 017737 145440 003414 MOV @RHBA,BA ;SAVE BUS ADDRESS
5434 035676 005701 TST R1 ;IS IT AN RH11
5435 035700 001406 BEQ 87$ ;NO IT'S A 70
5436 035702 005037 003416 CLR BAE ;CLEAR BAE
5437 035706 005037 003424 CLR CS3 ;CLEAR CS3
5438 035712 000137 035732 JMP 86$ ;CONTINUE
5439 035716 017737 145436 003416 87$: MOV @RHBAE,BAE ;SAVE BUS ADDRESS EXTENSION
5440 035724 017737 145432 003424 MOV @RHCS3,CS3 ;SAVE RHCS3
5441 035732 017737 145402 003422 86$: MOV @RHCS2,CS2 ;SAVE CS2
5442 035740 017737 145376 003432 MOV @RHST,DS1 ;SAVE TESTER STATUS
5443 035746 017737 145372 003436 MOV @RHER,ER1 ;SAVE ERROR REGISTER
5444 035754 017737 145370 003442 MOV @RHTDB,TDR ;SAVE TESTER DATA REG.
5445 035762 017737 145350 003440 MOV @RHMR2,TC ;SAVE MR2 TESTER REG.
5446 035770 017737 145354 001162 MOV @RHTDB,$REGO ;GET DATA
5447 035776 032777 000200 145324 BIT #RDY,@RHCS1 ;IS OR SET
5448 036004 001003 BNE 3$ ;YES RDY IS SET
5449 036006 104102 ERROR 102 ;READY DID NOT SET
5450 036010 004737 007260 JSR R7,WHYFO ;ARE ANY ERRORS SET
5451 036014 023777 004100 145326 3$: CMP RBUF,@RHTDB ;DID INFO GET WRITTEN OR READ
5452 036022 001407 BEQ 4$ ;INFO GOT LOADED
5453 036024 005737 004100 TST RBUF ;DOES RBUF = 0
5454 036030 001403 BEQ 5$ ;YES INFO DID NOT LOAD
5455 036032 104147 ERROR 147 ;ALL BITS DID NOT LOAD DURING
5456 ;AN READ2 OPERATION
5457 036034 000137 036042 JMP 4$ ;EXIT TEST
5458 036040 104150 5$: ERROR 150 ;READ2 OPERATION DID NOT WORK
5459 ;NO BITS WERE LOADED TO RBUF
5460 036042 004737 007260 4$: JSR R7,WHYFO ;ANY ERRORS SET
5461 036046 105737 001103 TSTB $ERFLG ;ANY ERRORS ?
5462 036052 001402 BEQ 6$ ;NO,EXIT TEST
5463 036054 104146 ERROR 146 ;PRINT REGISTERS
5464 036056 104170 ERROR 170
5465 036060 004737 006626 6$: JSR R7,CLEER ;CLEAR ERRORS
5466 036064 004737 050244 JSR R7,ERRTST
5467 ;*****
5468 ;*TEST 61 READ OPERATIONAL TEST #1
5469 ;*THESE TESTS VERIFY ALL READ AND WRITE CODES
5470 ;*WHETHER IT BE A READ REV. OR FWD OR A WRITE REV. OR FWD
5471 ;*DURING THESE TESTS THE TESTER TIMING IS MARGINED AND
5472 ;*NO ERRORS SHOULD OCCUR
5473 ;*****
5474 ;*****
5475 036070 000004 TST61: SCOPE
5476 036072 012777 000007 145240 MOV #7,@RHCS2 ;SETUP UNIT SEVEN
5477 036100 012777 052525 145242 MOV #AB,@RHTDB ;SETUP INFORMATION
5478 036106 012777 000003 145240 MOV #DMD!MCLK,@RHMR1 ;SETUP DIAG. MODE
5479 036114 012777 177777 145210 MOV #-1,@RHWC ;FOR ONE WORD
5480 036122 005701 TST R1 ;IS IT A 11 OR 70
5481 036124 100403 BMI 1$ ;IT'S AN 11
5482 036126 012777 000000 145224 MOV #ZERO,@RHBAE ;ZERO BAE
5483 036134 012777 004000 145172 1$: MOV #EVENAD,@RHBA ;SETUP BA
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5484	036142	012777	000071	145160		MOV	#READ0,@RHCS1	:TELL IT TO READFROM
5485	036150	012777	000001	145176		MOV	#DMD,@RHMR1	:MANIPULATE CLOCK
5486	036156	005037	003446			CLR	BITCNT	:CLEAR LOOP COUNTER
5487	036162	005237	003446		2\$:	INC	BITCNT	:INCREMENT LOOP COUNTER
5488	036166	022737	000015	003446		CMP	#15,BITCNT	:IS IT THIRD LOOP FOR SUSEC WAIT
5489	036174	001372				BNE	2\$	:NO LOOP AGAIN
5490	036176	012777	000003	145150		MOV	#DMD!MCLK,@RHMR1	:START CHANGING CLOCK
5491	036204	012777	000001	145142		MOV	#DMD,@RHMR1	:CHANGE CLOCK AGAIN
5492	036212	012777	000003	145134		MOV	#DMD!MCLK,@RHMR1	:CHANGE CLOCK AGAIN
5493	036220	012777	000001	145126		MOV	#DMD,@RHMR1	:CHANGE CLOCK AGAIN
5494	036226	012777	000000	145120		MOV	#ZERO,@RHMR1	:GET OUT OF DIAG MODE
5495	036234	005037	003446			CLR	BITCNT	:CLEAR BIT COUNTER
5496	036240	032777	000200	145062	18\$:	BIT	#RDY,@RHCS1	:IS RDY SET
5497	036246	001015				BNE	7\$	:BIT IS SET
5498	036250	005237	003446			INC	BITCNT	:COUNT UP
5499	036254	001371				BNE	18\$	:NOT FINISHED COUNTING
5500	036256	005037	003446			CLR	BITCNT	:GET READY TO DO IT AGAIN
5501	036262	032777	000200	145040	19\$:	BIT	#RDY,@RHCS1	:IS IT SET YET?
5502	036270	001004				BNE	7\$	:YES
5503	036272	005237	003446			INC	BITCNT	:COUNT UP
5504	036276	001401				BEQ	7\$	:BIT IS NOT GOING TO SET
5505	036300	000770				BR	19\$	
5506	036302				7\$:			
5507	036302	017737	145022	003420		MOV	@RHCS1,CS1	:SAVE RHCS1
5508	036310	017737	145016	003444		MOV	@RHWC,WC	:SAVE WORD COUNT
5509	036316	017737	145012	003414		MOV	@RHBA,BA	:SAVE BUS ADDRESS
5510	036324	005701				TST	R1	:IS IT AN RH11
5511	036326	001406				BEQ	87\$	:NO IT'S A 70
5512	036330	005037	003416			CLR	BAE	:CLEAR BAE
5513	036334	005037	003424			CLR	CS3	:CLEAR CS3
5514	036340	000137	036360			JMP	86\$	:CONTINUE
5515	036344	017737	145010	003416	87\$:	MOV	@RHBAE,BAE	:SAVE BUS ADDRESS EXTENSION
5516	036352	017737	145004	003424		MOV	@RHCS3,CS3	:SAVE RHCS3
5517	036360	017737	144754	003422	86\$:	MOV	@RHCS2,CS2	:SAVE CS2
5518	036366	017737	144750	003432		MOV	@RHST,DS1	:SAVE TESTER STATUS
5519	036374	017737	144744	003436		MOV	@RHER,ER1	:SAVE ERROR REGISTER
5520	036402	017737	144742	003442		MOV	@RHTDB,TDR	:SAVE TESTER DATA REG.
5521	036410	017737	144722	003440		MOV	@RHMR2,TC	:SAVE MR2 TESTER REG.
5522	036416	017737	144726	001162		MOV	@RHTDB,\$REGO	:GET DATA
5523	036424	032777	000200	144676		BIT	#RDY,@RHCS1	:IS READY SET
5524	036432	001001				BNE	8\$	:YES,CONTINUE TEST
5525	036434	104102				ERROR	102	:READY DID NOT SET
5526	036436	022777	177777	144666	8\$:	CMP	#-1,@RHWC	:DID WC INCREMENT
5527	036444	001001				BNE	3\$	:YES,CONT TEST
5528	036446	104143				ERROR	143	:READFROM OPERATION DID NOT INC WC
5529	036450	022777	004002	144656	3\$:	CMP	#ODDAD,@RHBA	:DID BA INCREMENT
5530	036456	001401				BEQ	4\$	:YES CONT TEST
5531	036460	104144				ERROR	144	:BA DID NOT INCREMENT AFTER AN READFROM OPERATIO
5532	036462	023777	004000	144660	4\$:	CMP	EVENAD,@RHTDB	:DID INFO READFROM TESTER
5533	036470	001401				BEQ	5\$	:YES,CONT
5534	036472	104145				ERROR	145	:INFO DID NOT READFROM TESTER
5535	036474	004737	007260		5\$:	JSR	R7,WHYFO	:ARE ANY ERROR BITS SET
5536	036500	105737	001103			TSTB	\$ERFLG	:WAS THER AN ERROR
5537	036504	001402				BEQ	6\$	:NO EXIT TEST
5538	036506	104146				ERROR	146	:THESE ARE THE CONTENTS OF ALL RH70 REG.
5539	036510	104170				ERROR	170	:THIS IS TO COMPLETE ERROR PRINTOUT

5540 036512 004737 006626  
5541 036516 004737 050244  
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5550 036522 000004  
5551 036524 012777 000007 144606  
5552 036532 012777 177777 144572  
5553 036540 012777 004100 144566  
5554 036546 012737 000000 004100  
5555 036554 012777 125252 144566  
5556 036562 005701  
5557 036564 100403  
5558 036566 012777 000000 144564  
5559 036574 012777 000075 144526  
5560 036602 005037 003446  
5561 036606 032777 000200 144514  
5562 036614 001015  
5563 036616 005237 003446  
5564 036622 001371  
5565 036624 005037 003446  
5566 036630 032777 000200 144472  
5567 036636 001004  
5568 036640 005237 003446  
5569 036644 001401  
5570 036646 000770  
5571 036650  
5572 036650 017737 144454 003420  
5573 036656 017737 144450 003444  
5574 036664 017737 144444 003414  
5575 036672 005701  
5576 036674 001406  
5577 036676 005037 003416  
5578 036702 005037 003424  
5579 036706 000137 036726  
5580 036712 017737 144442 003416  
5581 036720 017737 144436 003424  
5582 036726 017737 144406 003422  
5583 036734 017737 144402 003432  
5584 036742 017737 144376 003436  
5585 036750 017737 144374 003442  
5586 036756 017737 144354 003440  
5587 036764 017737 144360 001162  
5588 036772 032777 000200 144330  
5589 037000 001003  
5590 037002 104102  
5591 037004 004737 007260  
5592 037010 023777 004100 144332  
5593 037016 001407  
5594 037020 005737 004100  
5595 037024 001403

6\$: JSR R7,CLEER ;CLEER ERRORS IF ANY  
JSR R7,ERRST  
:\*\*\*\*\*  
:\*TEST 62 READ OPERATIONAL TEST (NORMAL) #3  
:\*THESE TESTS VERIFY ALL READ AND WRITE CODES  
:\*WHETHER IT BE A READ REV. OR FWD OR A WRITE REV. OR FWD  
:\*DURING THESE TESTS THE TESTER TIMING IS MARGINED AND  
:\*NO ERRORS SHOULD OCCUR  
:\*\*\*\*\*  
TST62: SCOPE  
MOV #7,@RHCS2 ;SETUP UNIT SEVEN  
MOV #-1,@RHWC ;FOR ONE WORD  
MOV #RBUF,@RHBA ;SRTUP BA  
MOV #ZERO,RBUF ;SETUP DATA  
MOV #OAB,@RHTDB ;SETUP TESTER DB  
TST R1 ;IS IT AN 11 OR A 70  
BMI 1\$ ;IT'S AN RH11  
MOV #ZERO,@RHBAE ;ZERO BAE  
1\$: MOV #READ4,@RHCS1 ;TELL IT TO READ4  
CLR BITCNT ;CLEAR BIT COUNTER  
18\$: BIT #RDY,@RHCS1 ;IS RDY SET  
BNE 2\$ ;BIT IS SET  
INC BITCNT ;COUNT UP  
BNE 18\$ ;NOT FINISHED COUNTING  
CLR BITCNT ;GET READY TO DO IT AGAIN  
19\$: BIT #RDY,@RHCS1 ;IS IT SET YET?  
BNE 2\$ ;YES  
INC BITCNT ;COUNT UP  
BEQ 2\$ ;BIT IS NOT GOING TO SET  
BR 19\$  
2\$: MOV @RHCS1,CS1 ;SAVE RHCS1  
MOV @RHWC,WC ;SAVE WORD COUNT  
MOV @RHBA,BA ;SAVE BUS ADDRESS  
TST R1 ;IS IT AN RH11  
BEQ 87\$ ;NO IT'S A 70  
CLR BAE ;CLEAR BAE  
CLR CS3 ;CLEAR CS3  
JMP 86\$ ;CONTINUE  
87\$: MOV @RHBAE,BAE ;SAVE BUS ADDRESS EXTENSION  
MOV @RHCS3,CS3 ;SAVE RHCS3  
86\$: MOV @RHCS2,CS2 ;SAVE CS2  
MOV @RHST,DS1 ;SAVE TESTER STATUS  
MOV @RHER,ER1 ;SAVE ERROR REGISTER  
MOV @RHTDB,TDR ;SAVE TESTER DATA REG.  
MOV @RHMR2,TC ;SAVE MR2 TESTER REG.  
MOV @RHTDB,\$REGO ;GET DATA  
BIT #RDY,@RHCS1 ;IS OR SET  
BNE 3\$ ;YES RDY IS SET  
ERROR 102 ;READY DID NOT SET  
JSR R7,WHYFO ;ARE ANY ERRORS SET  
3\$: CMP RBUF,@RHTDB ;DID INFO GET WRITTEN OR READ  
BEQ 4\$ ;INFO GOT LOADED  
TST RBUF ;DOES RBUF = 0  
BEQ 5\$ ;YES INFO DID NOT LOAD

5596 037026 104147  
5597  
5598 037030 000137 037036  
5599 037034 104150  
5600  
5601 037036 004737 007260  
5602 037042 105737 001103  
5603 037046 001402  
5604 037050 104146  
5605 037052 104170  
5606 037054 004737 006626  
5607 037060 004737 050244

ERROR 147  
JMP 4\$  
5\$: ERROR 150  
4\$: JSR R7,WHYFO  
TSTB \$ERFLG  
BEQ 6\$  
ERROR 146  
ERROR 170  
6\$: JSR R7,CLEER  
JSR R7,ERRTST

:ALL BITS DID NOT LOAD DURING  
:AN READ4 OPERATION  
:EXIT TEST  
:READ4 OPERATION DID NOT WORK  
:NO BITS WERE LOADED TO RBUF  
:ANY ERRORS SET  
:ANY ERRORS ?  
:NO,EXIT TEST  
:PRINT REGISTERS  
:  
:CLEAR ERRORS

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5616 037064 000004

```
::*****  
;*TEST 63      RH OPERATIONAL WRITE TEST #2  
;*THESE TESTS VERIFY ALL READ AND WRITE CODES  
;*WHETHER IT BE A READ REV. OR FWD OR A WRITE REV. OR FWD  
;*DURING THESE TESTS THE TESTER TIMING IS MARGINED AND  
;*NO ERRORS SHOULD OCCUR  
  
::*****  
TST63: SCOPE
```

5617	037066	012777	000007	144244		MOV	#7,@RHCS2		:SETUP UNIT SEVEN
5618	037074	012737	125252	004000		MOV	#OAB,EVENAD		:SETUP INFORMATION
5619	037102	012777	001003	144244		MOV	#DMD!MCLK!SLKM,@RHMR1		:SETUP DIAG. MODE
5620	037110	012777	177777	144214		MOV	#-1,@RHWC		:FOR ONE WORD
5621	037116	005701				TST	R1		:IS IT A 11 OR 70
5622	037120	100403				BMI	1\$		:IT'S AN 11
5623	037122	012777	000000	144230		MOV	#ZERO,@RHBAE		:ZERO BAE
5624	037130	012777	004000	144176	1\$:	MOV	#EVENAD,@RHBA		:SETUP BA
5625	037136	012777	000063	144164		MOV	#WRITE2,@RHCS1		:TELL IT TO WRITETO
5626	037144	012777	001001	144202		MOV	#DMD!SLKM,@RHMR1		:MANIPULATE CLOCK
5627	037152	005037	003446			CLR	BITCNT		:CLEAR LOOP COUNTER
5628	037156	005237	003446		2\$:	INC	BITCNT		:INCREMENT LOOP COUNTER
5629	037162	022737	000015	003446		CMP	#15,BITCNT		:IS IT THIRD LOOP FOR 5USEC WAIT
5630	037170	001372				BNE	2\$		:NO LOOP AGAIN
5631	037172	012777	001003	144154		MOV	#DMD!MCLK!SLKM,@RHMR1		:START CHANGING CLOCK
5632	037200	012777	001001	144146		MOV	#DMD!SLKM,@RHMR1		:CHANGE CLOCK AGAIN
5633	037206	012777	001003	144140		MOV	#DMD!MCLK!SLKM,@RHMR1		:CHANGE CLOCK AGAIN
5634	037214	012777	001001	144132		MOV	#DMD!SLKM,@RHMR1		:CHANGE CLOCK AGAIN
5635	037222	012777	000000	144124		MOV	#ZERO,@RHMR1		:GET OUT OF DIAG MODE
5636	037230	005037	003446			CLR	BITCNT		:CLEAR BIT COUNTER
5637	037234	032777	000200	144066	18\$:	BIT	#RDY,@RHCS1		:IS RDY SET
5638	037242	001015				BNE	7\$		:BIT IS SET
5639	037244	005237	003446			INC	BITCNT		:COUNT UP
5640	037250	001371				BNE	18\$		:NOT FINISHED COUNTING
5641	037252	005037	003446			CLR	BITCNT		:GET READY TO DO IT AGAIN
5642	037256	032777	000200	144044	19\$:	BIT	#RDY,@RHCS1		:IS IT SET YET?
5643	037264	001004				BNE	7\$		:YES
5644	037266	005237	003446			INC	BITCNT		:COUNT UP
5645	037272	001401				BEQ	7\$		:BIT IS NOT GOING TO SET
5646	037274	000770				BR	19\$		
5647	037276				7\$:				
5648	037276	017737	144026	003420		MOV	@RHCS1,CS1		:SAVE RHCS1
5649	037304	017737	144022	003444		MOV	@RHWC,WC		:SAVE WORD COUNT
5650	037312	017737	144016	003414		MOV	@RHBA,BA		:SAVE BUS ADDRESS
5651	037320	005701				TST	R1		:IS IT AN RH11
5652	037322	001406				BEQ	87\$		:NO IT'S A 70
5653	037324	005037	003416			CLR	BAE		:CLEAR BAE
5654	037330	005037	003424			CLR	CS3		:CLEAR CS3
5655	037334	000137	037354			JMP	86\$		:CONTINUE
5656	037340	017737	144014	003416	87\$:	MOV	@RHBAE,BAE		:SAVE BUS ADDRESS EXTENSION
5657	037346	017737	144010	003424		MOV	@RHCS3,CS3		:SAVE RHCS3
5658	037354	017737	143760	003422	86\$:	MOV	@RHCS2,CS2		:SAVE CS2
5659	037362	017737	143754	003432		MOV	@RHST,DS1		:SAVE TESTER STATUS
5660	037370	017737	143750	003436		MOV	@RHER,ER1		:SAVE ERROR REGISTER
5661	037376	017737	143746	003442		MOV	@RHTDB,TDR		:SAVE TESTER DATA REG.
5662	037404	017737	143726	003440		MOV	@RHMR2,TC		:SAVE MR2 TESTER REG.
5663	037412	017737	143732	001162		MOV	@RHTDB,\$REGO		:GET DATA
5664	037420	032777	000200	143702		BIT	#RDY,@RHCS1		:IS READY SET
5665	037426	001001				BNE	8\$		:YES,CONTINUE TEST
5666	037430	104102				ERROR	102		:READY DID NOT SET
5667	037432	022777	177777	143672	8\$:	CMP	#-1,@RHWC		:DID WC INCREMENT
5668	037440	001001				BNE	3\$		:YES,CONT TEST
5669	037442	104140				ERROR	140		:WRITETO OPERATION DID NOT INC WC
5670	037444	022777	004002	143662	3\$:	CMP	#ODDAD,@RHBA		:DID BA INCREMENT
5671	037452	001401				BEQ	4\$		:YES CONT TEST
5672	037454	104141				ERROR	141		:BA DID NOT INCREMENT AFTER AN WRITETO OPERATION

5673	037456	023777	004000	143664	4\$:	CMP	EVENAD,@RHTDB	:DID INFO WRITETO TESTER
5674	037464	001401				BEQ	5\$	:YES,CONT
5675	037466	104142				ERROR	142	:INFO DID NOT WRITETO TESTER
5676	037470	004737	007260		5\$:	JSR	R7,WHYFO	:ARE ANY ERROR BITS SET
5677	037474	105737	001103			TSTB	\$ERFLG	:WAS THER AN ERROR
5678	037500	001402				BEQ	6\$	:NO EXIT TEST
5679	037502	104146				ERROR	146	:THESE ARE THE CONTENTS OF ALL RH70 REG.
5680	037504	104170				ERROR	170	:THIS IS TO COMPLETE ERROR PRINTOUT
5681	037506	004737	006626		6\$:	JSR	R7,CLEER	:CLEER ERRORS IF ANY
5682	037512	004737	050244			JSR	R7,ERTST	

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*****  
: *TEST 64 READ OPERATIONAL TEST (NORMAL) #4  
: *THESE TESTS VERIFY ALL READ AND WRITE CODES  
: *WHETHER IT BE A READ REV. OR FWD OR A WRITE REV. OR FWD  
: *DURING THESE TESTS THE TESTER TIMING IS MARGINED AND  
: *NO ERRORS SHOULD OCCUR  
*****
```

```
*****  
TST64: SCOPE  
MOV #7,@RHCS2 ; SETUP UNIT SEVEN  
MOV #-1,@RHWC ; FOR ONE WORD  
MOV #RBUF,@RHBA ; SRTUP BA  
MOV #ZERO,RBUF ; SETUP DATA  
MOV #OAB,@RHTDB ; SETUP TESTER DB  
TST R1 ; IS IT AN 11 OR A 70  
BMI 1$ ; IT'S AN RH11  
MOV #ZERO,@RHBAE ; ZERO BAE  
1$: MOV #READ6,@RHCS1 ; TELL IT TO READ6  
CLR BITCNT ; CLEAR BIT COUNTER  
18$: BIT #RDY,@RHCS1 ; IS RDY SET  
BNE 2$ ; BIT IS SET  
INC BITCNT ; COUNT UP  
BNE 18$ ; NOT FINISHED COUNTING  
CLR BITCNT ; GET READY TO DO IT AGAIN  
19$: BIT #RDY,@RHCS1 ; IS IT SET YET?  
BNE 2$ ; YES  
INC BITCNT ; COUNT UP  
BEQ 2$ ; BIT IS NOT GOING TO SET  
BR 19$  
2$: MOV @RHCS1,CS1 ; SAVE RHCS1  
MOV @RHWC,WC ; SAVE WORD COUNT  
MOV @RHBA,BA ; SAVE BUS ADDRESS  
TST R1 ; IS IT AN RH11  
BEQ 87$ ; NO IT'S A 70  
CLR BAE ; CLEAR BAE  
CLR CS3 ; CLEAR CS3  
JMP 86$ ; CONTINUE  
87$: MOV @RHBAE,BAE ; SAVE BUS ADDRESS EXTENSION  
MOV @RHCS3,CS3 ; SAVE RHCS3  
86$: MOV @RHCS2,CS2 ; SAVE CS2  
MOV @RHST,DS1 ; SAVE TESTER STATUS  
MOV @RHER,ER1 ; SAVE ERROR REGISTER  
MOV @RHTDB,TDR ; SAVE TESTER DATA REG.  
MOV @RHMR2,TC ; SAVE MR2 TESTER REG.  
MOV @RHTDB,$REGO ; GET DATA
```

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5729 037766 032777 000200 143334 BIT #RDY,@RHCS1 ;IS OR SET
5730 037774 001003 BNE 3$ ;YES RDY IS SET
5731 037776 104102 ERROR 102 ;READY DID NOT SET
5732 040000 004737 007260 JSR R7,WHYFO ;ARE ANY ERRORS SET
5733 040004 023777 004100 143336 3$: CMP RBUF,@RHTDB ;DID INFO GET WRITTEN OR READ
5734 040012 001407 BEQ 4$ ;INFO GOT LOADED
5735 040014 005737 004100 TST RBUF ;DOES RBUF = 0
5736 040020 001403 BEQ 5$ ;YES INFO DID NOT LOAD
5737 040022 104115 ERROR 115 ;ALL BITS DID NOT LOAD DURING
5738 ;AN READ6 OPERATION
5739 040024 000137 040032 JMP 4$ ;EXIT TEST
5740 040030 104107 5$: ERROR 107 ;READ6 OPERATION DID NOT WORK
5741 ;NO BITS WERE LOADED TO RBUF
5742 040032 004737 007260 4$: JSR R7,WHYFO ;ANY ERRORS SET
5743 040036 105737 001103 TSTB $ERFLG ;ANY ERRORS ?
5744 040042 001402 BEQ 6$ ;NO,EXIT TEST
5745 040044 104146 ERROR 146 ;PRINT REGISTERS
5746 040046 104170 ERROR 170
5747 040050 004737 006626 6$: JSR R7,CLEER ;CLEAR ERRORS
5748 040054 004737 050244 JSR R7,ERRTST
5749 ;*****
5750 ;*TEST 65 RH OPERATIONAL READ TEST #2
5751 ;*THESE TESTS VERIFY ALL READ AND WRITE CODES
5752 ;*WHETHER IT BE A READ REV. OR FWD OR A WRITE REV. OR FWD
5753 ;*DURING THESE TESTS THE TESTER TIMING IS MARGINED AND
5754 ;*NO ERRORS SHOULD OCCUR
5755
5756 ;*****
5757 040060 000004 TST65: SCOPE
5758 040062 012777 000007 143250 MOV #7,@RHCS2 ;SETUP UNIT SEVEN
5759 040070 012777 052525 143252 MOV #AB,@RHTDB ;SETUP INFORMATION
5760 040076 012777 001003 143250 MOV #DMD!MCLK!SLKM,@RHMR1 ;SETUP DIAG. MODE
5761 040104 012777 177777 143220 MOV #-1,@RHWC ;FOR ONE WORD
5762 040112 005701 TST R1 ;IS IT A 11 OR 70
5763 040114 100403 BMI 1$ ;IT'S AN 11
5764 040116 012777 000000 143234 MOV #ZERO,@RHBAE ;ZERO BAE
5765 040124 012777 004000 143202 1$: MOV #EVENAD,@RHBA ;SETUP BA
5766 040132 012777 000073 143170 MOV #READ2,@RHCS1 ;TELL IT TO READFROM
5767 040140 012777 001001 143206 MOV #DMD!SLKM,@RHMR1 ;MANIPULATE CLOCK
5768 040146 005037 003446 CLR BITCNT ;CLEAR LOOP COUNTER
5769 040152 005237 003446 2$: INC BITCNT ;INCREMENT LOOP COUNTER
5770 040156 022737 000015 003446 CMP #15,BITCNT ;IS IT THIRD LOOP FOR 5USEC WAIT
5771 040164 001372 BNE 2$ ;NO LOOP AGAIN
5772 040166 012777 001003 143160 MOV #DMD!MCLK!SLKM,@RHMR1 ;START CHANGING CLOCK
5773 040174 012777 001001 143152 MOV #DMD!SLKM,@RHMR1 ;CHANGE CLOCK AGAIN
5774 040202 012777 001003 143144 MOV #DMD!MCLK!SLKM,@RHMR1 ;CHANGE CLOCK AGAIN
5775 040210 012777 001001 143136 MOV #DMD!SLKM,@RHMR1 ;CHANGE CLOCK AGAIN
5776 040216 012777 000000 143130 MOV #ZERO,@RHMR1 ;GET OUT OF DIAG MODE
5777 040224 005037 003446 CLR BITCNT ;CLEAR BIT COUNTER
5778 040230 032777 000200 143072 18$: BIT #RDY,@RHCS1 ;IS RDY SET
5779 040236 001015 BNE 7$ ;BIT IS SET
5780 040240 005237 003446 INC BITCNT ;COUNT UP
5781 040244 001371 BNE 18$ ;NOT FINISHED COUNTING
5782 040246 005037 003446 CLR BITCNT ;GET READY TO DO IT AGAIN
5783 040252 032777 000200 143050 19$: BIT #RDY,@RHCS1 ;IS IT SET YET?
5784 040260 001004 BNE 7$ ;YES

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5785 040262 005237 003446      INC      BITCNT      :COUNT UP
5786 040266 001401      BEQ      7$          :BIT IS NOT GOING TO SET
5787 040270 000770      BR       19$
5788 040272      7$:
5789 040272 017737 143032 003420      MOV      @RHCS1,CS1   :SAVE RHCS1
5790 040300 017737 143026 003444      MOV      @RHWC,WC     :SAVE WORD COUNT
5791 040306 017737 143022 003414      MOV      @RHBA,BA     :SAVE BUS ADDRESS
5792 040314 005701      TST     R1           :IS IT AN RH11
5793 040316 001406      BEQ     87$         :NO IT'S A 70
5794 040320 005037 003416      CLR     BAE         :CLEAR BAE
5795 040324 005037 003424      CLR     CS3        :CLEAR CS3
5796 040330 000137 040350      JMP     86$         :CONTINUE
5797 040334 017737 143020 003416 87$:      MOV     @RHBAE,BAE   :SAVE BUS ADDRESS EXTENSION
5798 040342 017737 143014 003424      MOV     @RHCS3,CS3   :SAVE RHCS3
5799 040350 017737 142764 003422 86$:      MOV     @RHCS2,CS2   :SAVE CS2
5800 040356 017737 142760 003432      MOV     @RHST,DS1    :SAVE TESTER STATUS
5801 040364 017737 142754 003436      MOV     @RHER,ER1    :SAVE ERROR REGISTER
5802 040372 017737 142752 003442      MOV     @RHTDB,TDR   :SAVE TESTER DATA REG.
5803 040400 017737 142732 003440      MOV     @RMR2,TC     :SAVE MR2 TESTER REG.
5804 040406 017737 142736 001162      MOV     @RHTDB,$REGO :GET DATA
5805 040414 032777 000200 142706      BIT     #RDY,@RHCS1  :IS READY SET
5806 040422 001001      BNE     8$          :YES,CONTINUE TEST
5807 040424 104102      ERROR  102         :READY DID NOT SET
5808 040426 022777 177777 142676 8$:      CMP     #-1,@RHWC    :DID WC INCREMENT
5809 040434 001001      BNE     3$          :YES,CONT TEST
5810 040436 104143      ERROR  143         :READFROM OPERATION DID NOT INC WC
5811 040440 022777 004002 142666 3$:      CMP     #ODDAD,@RHBA :DID BA INCREMENT
5812 040446 001401      BEQ     4$          :YES CONT TEST
5813 040450 104144      ERROR  144         :BA DID NOT INCREMENT AFTER AN READFROM OPERATIO
5814 040452 023777 004000 142670 4$:      CMP     EVENAD,@RHTDB :DID INFO READFROM TESTER
5815 040460 001401      BEQ     5$          :YES,CONT
5816 040462 104145      ERROR  145         :INFO DID NOT READFROM TESTER
5817 040464 004737 007260 5$:      JSR    R7,WHYFO     :ARE ANY ERROR BITS SET
5818 040470 105737 001103      TSTB   $ERFLG      :WAS THER AN ERROR
5819 040474 001402      BEQ     6$          :NO EXIT TEST
5820 040476 104146      ERROR  146         :THESE ARE THE CONTENTS OF ALL RH70 REG.
5821 040500 104170      ERROR  170         :THIS IS TO COMPLETE ERROR PRINTOUT
5822 040502 004737 006626 6$:      JSR    R7,CLEER    :CLEER ERRORS IF ANY
5823 040506 004737 050244      JSR    R7,ERRTST
5824
5825      :*****
5826      :*TEST 66      WRITE OPERATIONAL TEST (NORMAL) #1
5827      :*THESE TESTS VERIFY ALL READ AND WRITE CODES
5828      :*WHETHER IT BE A READ REV. OR FWD OR A WRITE REV. OR FWD
5829      :*DURING THESE TESTS THE TESTER TIMING IS MARGINED AND
5830      :*NO ERRORS SHOULD OCCUR
5831      :*****
5832      TST66:  SCOPE
5833      MOV     #7,@RHCS2      :SETUP UNIT SEVEN
5834      MOV     #-1,@RHWC     :FOR ONE WORD
5835      MOV     #RBUF,@RHBA   :SRTUP BA
5836      MOV     #OAB,RBUF    :SETUP DATA
5837      MOV     #ZERO,@RHTDB :SETUP TESTER DB
5838      TST     R1           :IS IT AN 11 OR A 70
5839      BMI     1$           :IT'S AN RH11
5840      MOV     #ZERO,@RHBAE  :ZERO BAE
```



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5841 040564 012777 000061 142536 1$: MOV #WRITE0,@RHCS1 ;TELL IT TO WRITE0
5842 040572 005037 003446 CLR BITCNT ;CLEAR BIT COUNTER
5843 040576 032777 000200 142524 18$: BIT #RDY,@RHCS1 ;IS RDY SET
5844 040604 001015 BNE 2$ ;BIT IS SET
5845 040606 005237 003446 INC BITCNT ;COUNT UP
5846 040612 001371 BNE 18$ ;NOT FINISHED COUNTING
5847 040614 005037 003446 CLR BITCNT ;GET READY TO DO IT AGAIN
5848 040620 032777 000200 142502 19$: BIT #RDY,@RHCS1 ;IS IT SET YET?
5849 040626 001004 BNE 2$ ;YES
5850 040630 005237 003446 INC BITCNT ;COUNT UP
5851 040634 001401 BEQ 2$ ;BIT IS NOT GOING TO SET
5852 040636 000770 BR 19$
5853 040640 2$:
5854 040640 017737 142464 003420 MOV @RHCS1,CS1 ;SAVE RHCS1
5855 040646 017737 142460 003444 MOV @RHCW,WC ;SAVE WORD COUNT
5856 040654 017737 142454 003414 MOV @RHBA,BA ;SAVE BUS ADDRESS
5857 040662 005701 TST R1 ;IS IT AN RH11
5858 040664 001406 BEQ 87$ ;NO IT'S A 70
5859 040666 005037 003416 CLR BAE ;CLEAR BAE
5860 040672 005037 003424 CLR CS3 ;CLEAR CS3
5861 040676 000137 040716 JMP 86$ ;CONTINUE
5862 040702 017737 142452 003416 87$: MOV @RHBAE,BAE ;SAVE BUS ADDRESS EXTENSION
5863 040710 017737 142446 003424 MOV @RHCS3,CS3 ;SAVE RHCS3
5864 040716 017737 142416 003422 86$: MOV @RHCS2,CS2 ;SAVE CS2
5865 040724 017737 142412 003432 MOV @RHST,DS1 ;SAVE TESTER STATUS
5866 040732 017737 142406 003436 MOV @RHER,ER1 ;SAVE ERROR REGISTER
5867 040740 017737 142404 003442 MOV @RHTDB,TDR ;SAVE TESTER DATA REG.
5868 040746 017737 142364 003440 MOV @RHMR2,TC ;SAVE MR2 TESTER REG.
5869 040754 017737 142370 001162 MOV @RHTDB,$REGO ;GET DATA
5870 040762 032777 000200 142340 BIT #RDY,@RHCS1 ;IS OR SET
5871 040770 001003 BNE 3$ ;YES RDY IS SET
5872 040772 104102 ERROR 102 ;READY DID NOT SET
5873 040774 004737 007260 JSR R7,WHYFO ;ARE ANY ERRORS SET
5874 041000 023777 004100 142342 3$: CMP RBUF,@RHTDB ;DID INFO GET WRITTEN OR READ
5875 041006 001407 BEQ 4$ ;INFO GOT LOADED
5876 041010 005777 142334 TST @RHTDB ;DOES @RHTDB = 0
5877 041014 001403 BEQ 5$ ;YES INFO DID NOT LOAD
5878 041016 104151 ERROR 151 ;ALL BITS DID NOT LOAD DURING
5879 ;AN WRITE0 OPERATION
5880 041020 000137 041026 JMP 4$ ;EXIT TEST
5881 041024 104152 5$: ERROR 152 ;WRITE0 OPERATION DID NOT WORK
5882 ;NO BITS WERE LOADED TO @RHTDB
5883 041026 004737 007260 4$: JSR R7,WHYFO ;ANY ERRORS SET
5884 041032 105737 001103 TSTB $ERFLG ;ANY ERRORS ?
5885 041036 001402 BEQ 6$ ;NO,EXIT TEST
5886 041040 104146 ERROR 146 ;PRINT REGISTERS
5887 041042 104170 ERROR 170
5888 041044 004737 006626 6$: JSR R7,CLEER ;CLEAR ERRORS
5889 041050 004737 050244 JSR R7,ERRTST
5890 *****
5891 ;*TEST 67 RH OPERATIONAL WRITE TEST #3
5892 ;*THESE TESTS VERIFY ALL READ AND WRITE CODES
5893 ;*WHETHER IT BE A READ REV. OR FWD OR A WRITE REV. OR FWD
5894 ;*DURING THESE TESTS THE TESTER TIMING IS MARGINED AND
5895 ;*NO ERRORS SHOULD OCCUR
5896

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5898 041054 000004
5899 041056 012777 000007 142254
5900 041064 012737 125252 004000
5901 041072 012777 003003 142254
5902 041100 012777 177777 142224
5903 041106 005701
5904 041110 100403
5905 041112 012777 000000 142240
5906 041120 012777 004000 142206 1$:
5907 041126 012777 000065 142174
5908 041134 012777 003001 142212
5909 041142 005037 003446
5910 041146 005237 003446 2$:
5911 041152 022737 000015 003446
5912 041160 001372
5913 041162 012777 003003 142164
5914 041170 012777 003001 142156
5915 041176 012777 003003 142150
5916 041204 012777 003001 142142
5917 041212 012777 000000 142134
5918 041220 005037 003446
5919 041224 032777 000200 142076 18$:
5920 041232 001015
5921 041234 005237 003446
5922 041240 001371
5923 041242 005037 003446
5924 041246 032777 000200 142054 19$:
5925 041254 001004
5926 041256 005237 003446
5927 041262 001401
5928 041264 000770
5929 041266
5930 041266 017737 142036 003420 7$:
5931 041274 017737 142032 003444
5932 041302 017737 142026 003414
5933 041310 005701
5934 041312 001406
5935 041314 005037 003416
5936 041320 005037 003424
5937 041324 000137 041344
5938 041330 017737 142024 003416 87$:
5939 041336 017737 142020 003424
5940 041344 017737 141770 003422 86$:
5941 041352 017737 141764 003432
5942 041360 017737 141760 003436
5943 041366 017737 141756 003442
5944 041374 017737 141736 003440
5945 041402 017737 141742 001162
5946 041410 032777 000200 141712
5947 041416 001001
5948 041420 104102
5949 041422 022777 177777 141702 8$:
5950 041430 001001
5951 041432 104140
5952 041434 022777 004002 141672 3$:

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:*****
TST67: SCOPE
MOV #7,@RHCS2 ;SETUP UNIT SEVEN
MOV #OAB,EVENAD ;SETUP INFORMATION
MOV #DMD!MCLK!SLKM!ISLK,@RHMR1 ;SETUP DIAG. MODE
MOV #-1,@RHWC ;FOR ONE WORD
TST R1 ;IS IT A 11 OR 70
BMI 1$ ;IT'S AN 11
MOV #ZERO,@RHBAE ;ZERO BAE
MOV #EVENAD,@RHBA ;SETUP BA
MOV #WRITE4,@RHCS1 ;TELL IT TO WRITETO
MOV #DMD!SLKM!ISLK,@RHMR1 ;MANIPULATE CLOCK
CLR BITCNT ;CLEAR LOOP COUNTER
INC BITCNT ;INCREMENT LOOP COUNTER
CMP #15,BITCNT ;IS IT THIRD LOOP FOR SUSEC WAIT
BNE 2$ ;NO LOOP AGAIN
MOV #DMD!MCLK!SLKM!ISLK,@RHMR1 ;START CHANGING CLOCK
MOV #DMD!SLKM!ISLK,@RHMR1 ;CHANGE CLOCK AGAIN
MOV #DMD!MCLK!SLKM!ISLK,@RHMR1 ;CHANGE CLOCK AGAIN
MOV #DMD!SLKM!ISLK,@RHMR1 ;CHANGE CLOCK AGAIN
MOV #ZERO,@RHMR1 ;GET OUT OF DIAG MODE
CLR BITCNT ;CLEAR BIT COUNTER
BIT #RDY,@RHCS1 ;IS RDY SET
BNE 7$ ;BIT IS SET
INC BITCNT ;COUNT UP
BNE 18$ ;NOT FINISHED COUNTING
CLR BITCNT ;GET READY TO DO IT AGAIN
BIT #RDY,@RHCS1 ;IS IT SET YET?
BNE 7$ ;YES
INC BITCNT ;COUNT UP
BEQ 7$ ;BIT IS NOT GOING TO SET
BR 19$

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
MOV @RHBAE,BAE ;SAVE BUS ADDRESS EXTENSION
MOV @RHCS3,CS3 ;SAVE RHCS3
MOV @RHCS2,CS2 ;SAVE CS2
MOV @RHST,DS1 ;SAVE TESTER STATUS
MOV @RHER,ER1 ;SAVE ERROR REGISTER
MOV @RHTDB,TDR ;SAVE TESTER DATA REG.
MOV @RHMR2,TC ;SAVE MR2 TESTER REG.
MOV @RHTDB,$REGO ;GET DATA
BIT #RDY,@RHCS1 ;IS READY SET
BNE 8$ ;YES,CONTINUE TEST
ERROR 102 ;READY DID NOT SET
CMP #-1,@RHWC ;DID WC INCREMENT
BNE 3$ ;YES,CONT TEST
ERROR 140 ;WRITETO OPERATION DID NOT INC WC
CMP #ODDAD,@RHBA ;DID BA INCREMENT

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5953 041442 001401      BEQ      4$      ;YES CONT TEST
5954 041444 104141      ERROR    141     ;BA DID NOT INCREMENT AFTER AN WRITETO OPERATION
5955 041446 023777 004000 141674 4$:    CMP      EVENAD,@RHTDB ;DID INFO WRITETO TESTER
5956 041454 001401      BEQ      5$      ;YES,CONT
5957 041456 104142      ERROR    142     ;INFO DID NOT WRITETO TESTER
5958 041460 004737 007260 5$:    JSR      R7,WHYFO    ;ARE ANY ERROR BITS SET
5959 041464 105737 001103      TSTB     $ERFLG    ;WAS THER AN ERROR
5960 041470 001402      BEQ      6$      ;NO EXIT TEST
5961 041472 104146      ERROR    146     ;THESE ARE THE CONTENTS OF ALL RH70 REG.
5962 041474 104170      ERROR    170     ;THIS IS TO COMPLETE ERROR PRINTOUT
5963 041476 004737 006626 6$:    JSR      R7,CLEER    ;CLEAR ERRORS IF ANY
5964 041502 004737 050244      JSR      R7,ERRTST
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5973 041506 000004      ;*****
5974 041510 012777 000007 141622 ;*TEST 70      WRITE OPERATIONAL TEST (NORMAL) #2
5975 041516 012777 177777 141606 ;*THESE TESTS VERIFY ALL READ AND WRITE CODES
5976 041524 012777 004100 141602 ;*WHETHER IT BE A READ REV. OR FWD OR A WRITE REV. OR FWD
5977 041532 012737 125252 004100 ;*DURING THESE TESTS THE TESTER TIMING IS MARGINED AND
5978 041540 012777 000000 141602 ;*NO ERRORS SHOULD OCCUR
5979 041546 005701
5980 041550 100403
5981 041552 012777 000000 141600
5982 041560 012777 000063 141542 1$:    MOV      #ZERO,@RHBAE ;ZERO BAE
5983 041566 005037 003446      MOV      #WRITE2,@RHCS1 ;TELL IT TO WRITE2
5984 041572 032777 000200 141530 18$:   CLR      BITCNT      ;CLEAR BIT COUNTER
5985 041600 001015      BIT      #RDY,@RHCS1 ;IS RDY SET
5986 041602 005237 003446      BNE      2$      ;BIT IS SET
5987 041606 001371      INC      BITCNT      ;COUNT UP
5988 041610 005037 003446      BNE      18$     ;NOT FINISHED COUNTING
5989 041614 032777 000200 141506 19$:   CLR      BITCNT      ;GET READY TO DO IT AGAIN
5990 041622 001004      BIT      #RDY,@RHCS1 ;IS IT SET YET?
5991 041624 005237 003446      BNE      2$      ;YES
5992 041630 001401      INC      BITCNT      ;COUNT UP
5993 041632 000770      BEQ      2$      ;BIT IS NOT GOING TO SET
5994 041634
5995 041634 017737 141470 003420 2$:    MOV      @RHCS1,CS1    ;SAVE RHCS1
5996 041642 017737 141464 003444      MOV      @RHWC,WC     ;SAVE WORD COUNT
5997 041650 017737 141460 003414      MOV      @RHBA,BA     ;SAVE BUS ADDRESS
5998 041656 005701      TST      R1         ;IS IT AN RH11
5999 041660 001406      BEQ      87$     ;NO IT'S A 70
6000 041662 005037 003416      CLR      BAE        ;CLEAR BAE
6001 041666 005037 003424      CLR      CS3       ;CLEAR CS3
6002 041672 000137 041712      JMP      86$       ;CONTINUE
6003 041676 017737 141456 003416 87$:   MOV      @RHBAE,BAE   ;SAVE BUS ADDRESS EXTENSION
6004 041704 017737 141452 003424      MOV      @RHCS3,CS3  ;SAVE RHCS3
6005 041712 017737 141422 003422 86$:   MOV      @RHCS2,CS2  ;SAVE CS2
6006 041720 017737 141416 003432      MOV      @RHST,DS1   ;SAVE TESTER STATUS
6007 041726 017737 141412 003436      MOV      @RHER,ER1   ;SAVE ERROR REGISTER
6008 041734 017737 141410 003442      MOV      @RHTDB,TDR  ;SAVE TESTER DATA REG.

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6009 041742 017737 141370 003440      MOV      @RHMR2,TC      ;SAVE MR2 TESTER REG.
6010 041750 017737 141374 001162      MOV      @RHTDB,$REGO  ;GET DATA
6011 041756 032777 000200 141344      BIT      #RDY,@RHCS1   ;IS OR SET
6012 041764 001003                BNE      3$            ;YES RDY IS SET
6013 041766 104102                ERROR    102          ;READY DID NOT SET
6014 041770 004737 007260      JSR      R7,WHYFO      ;ARE ANY ERRORS SET
6015 041774 023777 004100 141346 3$:    CMP      RBUF,@RHTDB   ;DID INFO GET WRITTEN OR READ
6016 042002 001407                BEQ      4$            ;INFO GOT LOADED
6017 042004 005777 141340      TST      @RHTDB        ;DOES @RHTDB = 0
6018 042010 001403                BEQ      5$            ;YES INFO DID NOT LOAD
6019 042012 104151                ERROR    151          ;ALL BITS DID NOT LOAD DURING
6020                                ;AN WRITE2 OPERATION
6021 042014 000137 042022      JMP      4$            ;EXIT TEST
6022 042020 104152 5$:    ERROR    152          ;WRITE2 OPERATION DID NOT WORK
6023                                ;NO BITS WHERE LOADED TO @RHTDB
6024 042022 004737 007260 4$:    JSR      R7,WHYFO      ;ANY ERRORS SET
6025 042026 105737 001103      TSTB    $ERFLG        ;ANY ERRORS ?
6026 042032 001402                BEQ      6$            ;NO,EXIT TEST
6027 042034 104146                ERROR    146          ;PRINT REGISTERS
6028 042036 104170                ERROR    170
6029 042040 004737 006626 6$:    JSR      R7,CLEER      ;CLEAR ERRORS
6030 042044 004737 050244      JSR      R7,ERRTST
6031                                ;*****
6032                                ;*TEST 71      RH OPERATIONAL READ TEST #3
6033                                ;*THESE TESTS VERIFY ALL READ AND WRITE CODES
6034                                ;*WHETHER IT BE A READ REV. OR FWD OR A WRITE REV. OR FWD
6035                                ;*DURING THESE TESTS THE TESTER TIMING IS MARGINED AND
6036                                ;*NO ERRORS SHOULD OCCUR
6037                                ;*****
6038                                ;*****
6039 042050 000004                TST71:  SCOPE
6040 042052 012777 000007 141260      MOV      #7,@RHCS2    ;SETUP UNIT SEVEN
6041 042060 012777 052525 141262      MOV      #AB,@RHTDB   ;SETUP INFORMATION
6042 042066 012777 003003 141260      MOV      #DMD!SLKM!ISLK!MCLK,@RHMR1 ;SETUP DIAG. MODE
6043 042074 012777 177777 141230      MOV      #-1,@RHWC    ;FOR ONE WORD
6044 042102 005701                TST      R1            ;IS IT A 11 OR 70
6045 042104 100403                BMI      1$            ;IT'S AN 11
6046 042106 012777 000000 141244      MOV      #ZERO,@RHBAE ;ZERO BAE
6047 042114 012777 004000 141212 1$:    MOV      #EVENAD,@RHBA ;SETUP BA
6048 042122 012777 000075 141200      MOV      #READ4,@RHCS1 ;TELL IT TO READFROM
6049 042130 012777 003001 141216      MOV      #DMD!SLKM!ISLK,@RHMR1 ;MANIPULATE CLOCK
6050 042136 005037 003446      CLR      BITCNT        ;CLEAR LOOP COUNTER
6051 042142 005237 003446 2$:    INC      BITCNT        ;INCREMENT LOOP COUNTER
6052 042146 022737 000015 003446      CMP      #15,BITCNT   ;IS IT THIRD LOOP FOR 5USEC WAIT
6053 042154 001372                BNE      2$            ;NO LOOP AGAIN
6054 042156 012777 003003 141170      MOV      #DMD!SLKM!ISLK!MCLK,@RHMR1 ;START CHANGING CLOCK
6055 042164 012777 003001 141162      MOV      #DMD!SLKM!ISLK,@RHMR1 ;CHANGE CLOCK AGAIN
6056 042172 012777 003003 141154      MOV      #DMD!SLKM!ISLK!MCLK,@RHMR1 ;CHANGE CLOCK AGAIN
6057 042200 012777 003001 141146      MOV      #DMD!SLKM!ISLK,@RHMR1 ;CHANGE CLOCK AGAIN
6058 042206 012777 000000 141140      MOV      #ZERO,@RHMR1 ;GET OUT OF DIAG MODE
6059 042214 005037 003446      CLR      BITCNT        ;CLEAR BIT COUNTER
6060 042220 032777 000200 141102 18$:   BIT      #RDY,@RHCS1  ;IS RDY SET
6061 042226 001015                BNE      7$            ;BIT IS SET
6062 042230 005237 003446      INC      BITCNT        ;COUNT UP
6063 042234 001371                BNE      18$          ;NOT FINISHED COUNTING
6064 042236 005037 003446      CLR      BITCNT        ;GET READY TO DO IT AGAIN
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6065	042242	032777	000200	141060	19\$:	BIT	#RDY,@RHCS1		:IS IT SET YET?
6066	042250	001004				BNE	7\$		:YES
6067	042252	005237	003446			INC	BITCNT		:COUNT UP
6068	042256	001401				BEQ	7\$		:BIT IS NOT GOING TO SET
6069	042260	000770				BR	19\$		
6070	042262				7\$:				
6071	042262	017737	141042	003420		MOV	@RHCS1,CS1		:SAVE RHCS1
6072	042270	017737	141036	003444		MOV	@RHWC,WC		:SAVE WORD COUNT
6073	042276	017737	141032	003414		MOV	@RHBA,BA		:SAVE BUS ADDRESS
6074	042304	005701				TST	R1		:IS IT AN RH11
6075	042306	001406				BEQ	87\$		:NO IT'S A 70
6076	042310	005037	003416			CLR	BAE		:CLEAR BAE
6077	042314	005037	003424			CLR	CS3		:CLEAR CS3
6078	042320	000137	042340			JMP	86\$		:CONTINUE
6079	042324	017737	141030	003416	87\$:	MOV	@RHBAE,BAE		:SAVE BUS ADDRESS EXTENSION
6080	042332	017737	141024	003424		MOV	@RHCS3,CS3		:SAVE RHCS3
6081	042340	017737	140774	003422	86\$:	MOV	@RHCS2,CS2		:SAVE CS2
6082	042346	017737	140770	003432		MOV	@RHST,DS1		:SAVE TESTER STATUS
6083	042354	017737	140764	003436		MOV	@RHER,ER1		:SAVE ERROR REGISTER
6084	042362	017737	140762	003442		MOV	@RHTDB,TDR		:SAVE TESTER DATA REG.
6085	042370	017737	140742	003440		MOV	@RMR2,TC		:SAVE MR2 TESTER REG.
6086	042376	017737	140746	001162		MOV	@RHTDB,\$REGO		:GET DATA
6087	042404	032777	000200	140716		BIT	#RDY,@RHCS1		:IS READY SET
6088	042412	001001				BNE	8\$		:YES,CONTINUE TEST
6089	042414	104102				ERROR	102		:READY DID NOT SET
6090	042416	022777	177777	140706	8\$:	CMP	#-1,@RHWC		:DID WC INCREMENT
6091	042424	001001				BNE	3\$		:YES,CONT TEST
6092	042426	104143				ERROR	143		:READFROM OPERATION DID NOT INC WC
6093	042430	022777	004002	140676	3\$:	CMP	#ODDAD,@RHBA		:DID BA INCREMENT
6094	042436	001401				BEQ	4\$		:YES CONT TEST
6095	042440	104144				ERROR	144		:BA DID NOT INCREMENT AFTER AN READFROM OPERATIO
6096	042442	023777	004000	140700	4\$:	CMP	EVENAD,@RHTDB		:DID INFO READFROM TESTER
6097	042450	001401				BEQ	5\$		:YES,CONT
6098	042452	104145				ERROR	145		:INFO DID NOT READFROM TESTER
6099	042454	004737	007260		5\$:	JSR	R7,WHYFO		:ARE ANY ERROR BITS SET
6100	042460	105737	001103			TSTB	\$ERFLG		:WAS THER AN ERROR
6101	042464	001402				BEQ	6\$		:NO EXIT TEST
6102	042466	104146				ERROR	146		:THESE ARE THE CONTENTS OF ALL RH70 REG.
6103	042470	104170				ERROR	170		:THIS IS TO COMPLETE ERROR PRINTOUT
6104	042472	004737	006626		6\$:	JSR	R7,CLEER		:CLEER ERRORS IF ANY
6105	042476	004737	050244			JSR	R7,ERRTST		

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042502	000004		
042504	012777	000007	140626
042512	012777	177777	140612
042520	012777	004100	140606
042526	012737	125252	004100
042534	012777	000000	140606
042542	005701		
042544	100403		
042546	012777	000000	140604
042554	012777	000065	140546
042562	005037	003446	
042566	032777	000200	140534
042574	001015		
042576	005237	003446	
042602	001371		
042604	005037	003446	
042610	032777	000200	140512
042616	001004		
042620	005237	003446	
042624	001401		
042626	000770		
042630			
042630	017737	140474	003420
042636	017737	140470	003444
042644	017737	140464	003414
042652	005701		
042654	001406		
042656	005037	003416	
042662	005037	003424	
042666	000137	042706	
042672	017737	140462	003416
042700	017737	140456	003424
042706	017737	140426	003422
042714	017737	140422	003432
042722	017737	140416	003436
042730	017737	140414	003442
042736	017737	140374	003440
042744	017737	140400	001162
042752	032777	000200	140350
042760	001003		
042762	104102		
042764	004737	007260	
042770	023777	004100	140352
042776	001407		
043000	005777	140344	
043004	001403		
043006	104151		

```

*****
: *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
*****

TST72: SCOPE
MOV #7,@RHCS2 ;SETUP UNIT SEVEN
MOV #-1,@RHWC ;FOR ONE WORD
MOV #RBUF,@RHBA ;SRTUP BA
MOV #OAB,RBUF ;SETUP DATA
MOV #ZERO,@RHTDB ;SETUP TESTER DB
TST R1 ;IS IT AN 11 OR A 70
BMI 1$ ;IT'S AN RH11
MOV #ZERO,@RHBAE ;ZERO BAE
MOV #WRITE4,@RHCS1 ;TELL IT TO WRITE4
CLR BITCNT ;CLEAR BIT COUNTER
BIT #RDY,@RHCS1 ;IS RDY SET
BNE 2$ ;BIT IS SET
INC BITCNT ;COUNT UP
BNE 18$ ;NOT FINISHED COUNTING
CLR BITCNT ;GET READY TO DO IT AGAIN
BIT #RDY,@RHCS1 ;IS IT SET YET?
BNE 2$ ;YES
INC BITCNT ;COUNT UP
BEQ 2$ ;BIT IS NOT GOING TO SET
BR 19$

2$:
MOV @RHCS1,CS1 ;SAVE RHCS1
MOV @RHWC,WC ;SAVE WORD COUNT
MOV @RHBA,BA ;SAVE BUS ADDRESS
TST R1 ;IS IT AN RH11
BEQ 87$ ;NO IT'S A 70
CLR BAE ;CLEAR BAE
CLR CS3 ;CLEAR CS3
JMP 86$ ;CONTINUE
MOV @RHBAE,BAE ;SAVE BUS ADDRESS EXTENSION
MOV @RHCS3,CS3 ;SAVE RHCS3
MOV @RHCS2,CS2 ;SAVE CS2
MOV @RHST,DS1 ;SAVE TESTER STATUS
MOV @RHER,ER1 ;SAVE ERROR REGISTER
MOV @RHTDB,TDR ;SAVE TESTER DATA REG.
MOV @RHMR2,TC ;SAVE MR2 TESTER REG.
BIT #RDY,@RHCS1 ;GET DATA
BNE 3$ ;IS OR SET
ERROR 102 ;YES RDY IS SET
JSR R7,WHYFO ;READY DID NOT SET
CMP RBUF,@RHTDB ;ARE ANY ERRORS SET
BEQ 4$ ;DID INFO GET WRITTEN OR READ
TST @RHTDB ;INFO GOT LOADED
BEQ 5$ ;DOES @RHTDB = 0
ERROR 151 ;YES INFO DID NOT LOAD
;ALL BITS DID NOT LOAD DURING
;AN WRITE4 OPERATION

```

6162 043010 000137 043016  
6163 043014 104152  
6164  
6165 043016 004737 007260  
6166 043022 105737 001103  
6167 043026 001402  
6168 043030 104146  
6169 043032 104170  
6170 043034 004737 006626  
6171 043040 004737 050244  
6172  
6173  
6174  
6175  
6176  
6177  
6178  
6179  
6180 043044 000004  
6181 043046 012777 000007 140264  
6182 043054 012737 125252 004000  
6183 043062 012777 000003 140264  
6184 043070 012777 177777 140234  
6185 043076 005701  
6186 043100 100403  
6187 043102 012777 000000 140250  
6188 043110 012777 004000 140216  
6189 043116 012777 000067 140204  
6190 043124 012777 000001 140222  
6191 043132 005037 003446  
6192 043136 005237 003446  
6193 043142 022737 000015 003446  
6194 043150 001372  
6195 043152 012777 000003 140174  
6196 043160 012777 000001 140166  
6197 043166 012777 000003 140160  
6198 043174 012777 000001 140152  
6199 043202 012777 000000 140144  
6200 043210 005037 003446  
6201 043214 032777 000200 140106  
6202 043222 001015  
6203 043224 005237 003446  
6204 043230 001371  
6205 043232 005037 003446  
6206 043236 032777 000200 140064  
6207 043244 001004  
6208 043246 005237 003446  
6209 043252 001401  
6210 043254 000770  
6211 043256  
6212 043256 017737 140046 003420  
6213 043264 017737 140042 003444  
6214 043272 017737 140036 003414  
6215 043300 005701  
6216 043302 001406  
6217 043304 005037 003416

```

JMP 4$ ;EXIT TEST
5$: ERROR 152 ;WRITE4 OPERATION DID NOT WORK
;NO BITS WERE LOADED TO @RHTDB
4$: JSR R7,WHYFO ;ANY ERRORS SET
TSTB $ERFLG ;ANY ERRORS ?
BEQ 6$ ;NO,EXIT TEST
ERROR 146 ;PRINT REGISTERS
ERROR 170
6$: JSR R7,CLEER ;CLEAR ERRORS
JSR R7,ERRTST
:*****
:*TEST 73 RH OPERATIONAL WRITE TEST #4
:*THESE TESTS VERIFY ALL READ AND WRITE CODES
:*WHETHER IT BE A READ REV. OR FWD OR A WRITE REV. OR FWD
:*DURING THESE TESTS THE TESTER TIMING IS MARGINED AND
:*NO ERRORS SHOULD OCCUR
:*****
TST73: SCOPE
MOV #7,@RHCS2 ;SETUP UNIT SEVEN
MOV #0AB,EVENAD ;SETUP INFORMATION
MOV #DMD!MCLK,@RHMR1 ;SETUP DIAG. MODE
MOV #-1,@RHWC ;FOR ONE WORD
TST R1 ;IS IT A 11 OR 70
BMI 1$ ;IT'S AN 11
MOV #ZERO,@RHBAE ;ZERO BAE
1$: MOV #EVENAD,@RHBA ;SETUP BA
MOV #WRITE6,@RHCS1 ;TELL IT TO WRITETO
MOV #DMD,@RHMR1 ;MANIPULATE CLOCK
CLR BITCNT ;CLEAR LOOP COUNTER
2$: INC BITCNT ;INCREMENT LOOP COUNTER
CMP #15,BITCNT ;IS IT THIRD LOOP FOR 5USEC WAIT
BNE 2$ ;NO LOOP AGAIN
MOV #DMD!MCLK,@RHMR1 ;START CHANGING CLOCK
MOV #DMD,@RHMR1 ;CHANGE CLOCK AGAIN
MOV #DMD!MCLK,@RHMR1 ;CHANGE CLOCK AGAIN
MOV #DMD,@RHMR1 ;CHANGE CLOCK AGAIN
MOV #ZERO,@RHMR1 ;GET OUT OF DIAG MODE
CLR BITCNT ;CLEAR BIT COUNTER
18$: BIT #RDY,@RHCS1 ;IS RDY SET
BNE 7$ ;BIT IS SET
INC BITCNT ;COUNT UP
BNE 18$ ;NOT FINISHED COUNTING
CLR BITCNT ;GET READY TO DO IT AGAIN
19$: BIT #RDY,@RHCS1 ;IS IT SET YET?
BNE 7$ ;YES
INC BITCNT ;COUNT UP
BEQ 7$ ;BIT IS NOT GOING TO SET
BR 19$
7$: MOV @RHCS1,CS1 ;SAVE RHCS1
MOV @RHWC,WC ;SAVE WORD COUNT
MOV @RHBA,BA ;SAVE BUS ADDRESS
TST R1 ;IS IT AN RH11
BEQ 87$ ;NO IT'S A 70
CLR BAE ;CLEAR BAE

```

```
6218 043310 005037 003424 CLR CS3 ;CLEAR CS3
6219 043314 000137 043334 JMP 86$ ;CONTINUE
6220 043320 017737 140034 003416 87$: MOV @RHBAE,BAE ;SAVE BUS ADDRESS EXTENSION
6221 043326 017737 140030 003424 86$: MOV @RHCS3,CS3 ;SAVE RHCS3
6222 043334 017737 140000 003422 86$: MOV @RHCS2,CS2 ;SAVE CS2
6223 043342 017737 137774 003432 MOV @RHST,DS1 ;SAVE TESTER STATUS
6224 043350 017737 137770 003436 MOV @RHER,ER1 ;SAVE ERROR REGISTER
6225 043356 017737 137766 003442 MOV @RHTDB,TDR ;SAVE TESTER DATA REG.
6226 043364 017737 137746 003440 MOV @RHMR2,TC ;SAVE MR2 TESTER REG.
6227 043372 017737 137752 001162 MOV @RHTDB,$REGO ;GET DATA
6228 043400 032777 000200 137722 BIT #RDY,@RHCS1 ;IS READY SET
6229 043406 001001 BNE 8$ ;YES,CONTINUE TEST
6230 043410 104102 ERROR 102 ;READY DID NOT SET
6231 043412 022777 177777 137712 8$: CMP #-1,@RHWC ;DID WC INCREMENT
6232 043420 001001 BNE 3$ ;YES,CONT TEST
6233 043422 104140 ERROR 140 ;WRITETO OPERATION DID NOT INC WC
6234 043424 022777 003776 137702 3$: CMP #EVENAD-2,@RHBA ;DID BA INCREMENT
6235 043432 001401 BEQ 4$ ;YES CONT TEST
6236 043434 104141 ERROR 141 ;BA DID NOT INCREMENT AFTER AN WRITETO OPERATION
6237 043436 023777 004000 137704 4$: CMP EVENAD,@RHTDB ;DID INFO WRITETO TESTER
6238 043444 001401 BEQ 5$ ;YES,CONT.
6239 043446 104142 ERROR 142 ;INFO DID NOT WRITETO TESTER
6240 043450 004737 007260 5$: JSR R7,WHYFO ;ARE ANY ERROR BITS SET
6241 043454 105737 001103 TSTB $ERFLG ;WAS THER AN ERROR
6242 043460 001402 BEQ 6$ ;NO EXIT TEST
6243 043462 104146 ERROR 146 ;THESE ARE THE CONTENTS OF ALL RH70 REG.
6244 043464 104170 ERROR 170 ;THIS IS TO COMPLETE ERROR PRINTOUT
6245 043466 004737 006626 6$: JSR R7,CLEER ;CLEER ERRORS IF ANY
6246 043472 004737 050244 JSR R7,ERRTST
```

```
6247 *****
6248 ;*TEST 74 WRITE OPERATIONAL TEST (NORMAL) #4
6249 ;*THESE TESTS VERIFY ALL READ AND WRITE CODES
6250 ;*WHETHER IT BE A READ REV. OR FWD OR A WRITE REV. OR FWD
6251 ;*DURING THESE TESTS THE TESTER TIMING IS MARGINED AND
6252 ;*NO ERRORS SHOULD OCCUR
6253 *****
```

```
6254 *****
6255 TST74: SCOPE
6256 043476 000004 MOV #7,@RHCS2 ;SETUP UNIT SEVEN
6257 043500 012777 000007 137632 MOV #-1,@RHWC ;FOR ONE WORD
6258 043506 012777 177777 137616 MOV #RBUF,@RHBA ;SRTUP BA
6259 043514 012777 004100 137612 MOV #OAB,RBUF ;SETUP DATA
6260 043522 012737 125252 004100 MOV #ZERO,@RHTDB ;SETUP TESTER DB
6261 043536 005701 TST R1 ;IS IT AN 11 OR A 70
6262 043540 100403 BMI 1$ ;IT'S AN RH11
6263 043542 012777 000000 137610 MOV #ZERO,@RHBAE ;ZERO BAE
6264 043550 012777 000067 137552 1$: MOV #WRITE6,@RHCS1 ;TELL IT TO WRITE6
6265 043556 005037 003446 CLR BITCNT ;CLEAR BIT COUNTER
6266 043562 032777 000200 137540 18$: BIT #RDY,@RHCS1 ;IS RDY SET
6267 043570 001015 BNE 2$ ;BIT IS SET
6268 043572 005237 003446 INC BITCNT ;COUNT UP
6269 043576 001371 BNE 18$ ;NOT FINISHED COUNTING
6270 043600 005037 003446 CLR BITCNT ;GET READY TO DO IT AGAIN
6271 043604 032777 000200 137516 19$: BIT #RDY,@RHCS1 ;IS IT SET YET?
6272 043612 001004 BNE 2$ ;YES
6273 043614 005237 003446 INC BITCNT ;COUNT UP
```



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

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6330 044112 012777 000077 137210      MOV      #READ6,@RHCS1      :TELL IT TO READFROM
6331 044120 012777 000001 137226      MOV      #DMD,@RHMR1      :MANIPULATE CLOCK
6332 044126 005037 003446      CLR      BITCNT           :CLEAR LOOP COUNTER
6333 044132 005237 003446      2$:     INC      BITCNT           :INCREMENT LOOP COUNTER
6334 044136 022737 000015 003446      CMP      #15,BITCNT       :IS IT THIRD LOOP FOR 5USEC WAIT
6335 044144 001372      BNE      2$              :NO LOOP AGAIN
6336 044146 012777 000003 137200      MOV      #DMD!MCLK,@RHMR1 :START CHANGING CLOCK
6337 044154 012777 000001 137172      MOV      #DMD,@RHMR1     :CHANGE CLOCK AGAIN
6338 044162 012777 000003 137164      MOV      #DMD!MCLK,@RHMR1 :CHANGE CLOCK AGAIN
6339 044170 012777 000001 137156      MOV      #DMD,@RHMR1     :CHANGE CLOCK AGAIN
6340 044176 012777 000000 137150      MOV      #ZERO,@RHMR1    :GET OUT OF DIAG MODE
6341 044204 005037 003446      CLR      BITCNT           :CLEAR BIT COUNTER
6342 044210 032777 000200 137112 18$:     BIT      #RDY,@RHCS1      :IS RDY SET
6343 044216 001015      BNE      7$              :BIT IS SET
6344 044220 005237 003446      INC      BITCNT           :COUNT UP
6345 044224 001371      BNE      18$            :NOT FINISHED COUNTING
6346 044226 005037 003446      CLR      BITCNT           :GET READY TO DO IT AGAIN
6347 044232 032777 000200 137070 19$:     BIT      #RDY,@RHCS1      :IS IT SET YET?
6348 044240 001004      BNE      7$              :YES
6349 044242 005237 003446      INC      BITCNT           :COUNT UP
6350 044246 001401      BEQ      7$              :BIT IS NOT GOING TO SET
6351 044250 000770      BR       19$
6352 044252      7$:
6353 044252 017737 137052 003420      MOV      @RHCS1,CS1      :SAVE RHCS1
6354 044260 017737 137046 003444      MOV      @RHWC,WC       :SAVE WORD COUNT
6355 044266 017737 137042 003414      MOV      @RHBA,BA       :SAVE BUS ADDRESS
6356 044274 005701      TST      R1              :IS IT AN RH11
6357 044276 001406      BEQ      87$            :NO IT'S A 70
6358 044300 005037 003416      CLR      BAE             :CLEAR BAE
6359 044304 005037 003424      CLR      CS3            :CLEAR CS3
6360 044310 000137 044330      JMP      86$            :CONTINUE
6361 044314 017737 137040 003416 87$:     MOV      @RHBAE,BAE      :SAVE BUS ADDRESS EXTENSION
6362 044322 017737 137034 003424      MOV      @RHCS3,CS3     :SAVE RHCS3
6363 044330 017737 137004 003422 86$:     MOV      @RHCS2,CS2     :SAVE CS2
6364 044336 017737 137000 003432      MOV      @RHST,DS1      :SAVE TESTER STATUS
6365 044344 017737 136774 003436      MOV      @RHER,ER1      :SAVE ERROR REGISTER
6366 044352 017737 136772 003442      MOV      @RHTDB,TDR     :SAVE TESTER DATA REG.
6367 044360 017737 136752 003440      MOV      @RHMR2,TC      :SAVE MR2 TESTER REG.
6368 044366 017737 136756 001162      MOV      @RHTDB,$REGO   :GET DATA
6369 044374 032777 000200 136726      BIT      #RDY,@RHCS1    :IS READY SET
6370 044402 001001      BNE      8$              :YES,CONTINUE TEST
6371 044404 104102      ERROR   102             :READY DID NOT SET
6372 044406 022777 177777 136716 8$:     CMP      #-1,@RHWC      :DID WC INCREMENT
6373 044414 001001      BNE      3$              :YES,CONT TEST
6374 044416 104143      ERROR   143             :READFROM OPERATION DID NOT INC WC
6375 044420 022777 003776 136706 3$:     CMP      #EVENAD-2,@RHBA :DID BA INCREMENT
6376 044426 001401      BEQ      4$              :YES CONT TEST
6377 044430 104144      ERROR   144             :BA DID NOT INCREMENT AFTER AN READFROM OPERATIO
6378 044432 023777 004000 136710 4$:     CMP      EVENAD,@RHTDB  :DID INFO READFROM TESTER
6379 044440 001401      BEQ      5$              :YES,CONT
6380 044442 104145      ERROR   145             :INFO DID NOT READFROM TESTER
6381 044444 004737 007260 5$:     JSR      R7,WHYFO       :ARE ANY ERROR BITS SET
6382 044450 105737 001103      TSTB    $ERFLG         :WAS THER AN ERROR
6383 044454 001402      BEQ      6$              :NO EXIT TEST
6384 044456 104146      ERROR   146             :THESE ARE THE CONTENTS OF ALL RH70 REG.
6385 044460 104170      ERROR   170             :THIS IS TO COMPLETE ERROR PRINTOUT

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6386 044462 004737 006626  
6387 044466 004737 050244  
6388  
6389  
6390  
6391  
6392  
6393  
6394 044472 000004  
6395  
6396  
6397 044474 012777 000007 136636  
6398 044502 005037 177776  
6399 044506 005037 003452  
6400 044512 005037 003450  
6401 044516 005701  
6402 044520 100403  
6403 044522 012777 000000 136630  
6404 044530 012777 005000 136576  
6405 044536 012777 174000 136566  
6406 044544 012777 050370 136634  
6407  
6408 044552 005701  
6409 044554 001412  
6410 044556 005737 003452  
6411 044562 001407  
6412 044564 032737 000002 177570  
6413 044572 001571  
6414 044574 004737 047660  
6415 044600 000434  
6416 044602 012777 000161 136520  
6417  
6418 044610 005037 003446  
6419 044614 032777 000200 136506  
6420 044622 001015  
6421 044624 005237 003446  
6422 044630 001371  
6423 044632 005037 003446  
6424 044636 032777 000200 136464  
6425 044644 001004  
6426 044646 005237 003446  
6427 044652 001401  
6428 044654 000770  
6429 044656  
6430 044656 032777 000200 136444  
6431 044664 001001  
6432 044666 104102  
6433 044670 104205  
6434 044672  
6435 044672 017737 136432 003420  
6436 044700 017737 136426 003444  
6437 044706 017737 136422 003414  
6438 044714 005701  
6439 044716 001406  
6440 044720 005037 003416  
6441 044724 005037 003424

6\$: JSR R7,CLEER ;CLEER ERRORS IF ANY  
JSR R7,ERRST  
:\*\*\*\*\*  
:\*TEST 76 LARGE TRANSFER TEST  
:THIS TEST DOES A 4K (OCTAL) WORD TRANSFER  
:THE SECOND TIME THROUGH THE TEST SYNC CLOCK  
:IS MARGINED TO MAKE SURE NO ERRORS OCCUR  
:\*\*\*\*\*  
TST76: SCOPE  
  
MOV #7,@RHCS2  
CLR @#PSW  
CLR PASS  
BLITZ: CLR LOOCNT ;CLEAR THE LOOP COUNTER  
IN: TST R1 ;IS IT AN 11 OR 70  
BMI 1\$ ;IT IS AN 11  
MOV #ZERO,@RHBAE ;IT'S A 70 ZERO THE BAE  
1\$: MOV #5000,@RHBA ;SET THE BUS ADDRESS  
MOV #-4000,@RHWC  
MOV #BLKTST,@VECCADD ;USE IT IN INTERUPT MODE  
  
TST R1  
BEQ BLIP  
TST PASS  
BEQ BLIP  
BIT #BIT1,@#177570  
BEQ BOTTOM  
JSR R7,DUPORT  
BR RHNINT  
BLIP: MOV #WRITEO!IE,@RHCS1 ;SET INTERUPT AND TELL IT TO WRITE  
  
CLR BITCNT ;CLEAR BIT COUNTER  
18\$: BIT #RDY,@RHCS1 ;IS RDY SET  
BNE 2\$ ;BIT IS SET  
INC BITCNT ;COUNT UP  
BNE 18\$ ;NOT FINISHED COUNTING  
CLR BITCNT ;GET READY TO DO IT AGAIN  
19\$: BIT #RDY,@RHCS1 ;IS IT SET YET?  
BNE 2\$ ;YES  
INC BITCNT ;COUNT UP  
BEQ 2\$ ;BIT IS NOT GOING TO SET  
BR 19\$  
  
2\$: BIT #RDY,@RHCS1 ;DID READY SET  
BNE 25\$ ;YES READY SET  
ERROR 102 ;READY DID NOT SET  
25\$: ERROR 205 ;IT DID NOT INTERUPT  
RHNINT: 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

```
6442 044730 000137 044750      JMP      86$      :CONTINUE
6443 044734 017737 136420 003416 87$: MOV     @RHBAE,BAE :SAVE BUS ADDRESS EXTENSION
6444 044742 017737 136414 003424      MOV     @RHCS3,CS3 :SAVE RHCS3
6445 044750 017737 136364 003422 86$: MOV     @RHCS2,CS2 :SAVE CS2
6446 044756 017737 136360 003432      MOV     @RHST,DS1  :SAVE TESTER STATUS
6447 044764 017737 136354 003436      MOV     @RHER,ER1  :SAVE ERROR REGISTER
6448 044772 017737 136352 003442      MOV     @RHTDB,TDR :SAVE TESTER DATA REG.
6449 045000 017737 136332 003440      MOV     @RHMR2,TC  :SAVE MR2 TESTER REG.
6450 045006 032777 140000 136326 9$: BIT     #ATA!ERR,@RHST :IS ATTN OR ERROR SET
6451 045014 001033      BNE     3$      :YES THERE WAS A PROBLEM
6452 045016 032777 000200 136304      BIT     #RDY,@RHCS1 :DID RDY SET
6453 045024 001001      BNE     4$      :YES IT SET
6454 045026 104102      ERROR  102      :RDY DID NOT SET
6455 045030 022777 015000 136276 4$: CMP     #5000+<<4000*2>,@RHBA :DID BA INC PROPERLY
6456 045036 001401      BEQ     5$      :YES
6457 045040 104203      ERROR  203      :BA DID NOT INC PROPERLY
6458 045042 023777 014776 136300 5$: CMP     @#14776,@RHTDB ;WAS CORRECT INFO WRITTEN
6459 045050 001401      BEQ     6$      :YES
6460 045052 104204      ERROR  204      :CORRECT INFO NOT IN RHTDB
6461 045054 005777 136252      6$: TST     @RHWC      :IS WC 0
6462 045060 001401      BEQ     7$      :YES
6463 045062 104206      ERROR  206      :RHWC IS NOT ZERO
6464 045064 105737 001103      7$: TSTB   $ERFLG    :WAS THERE ANY ERRORS
6465 045070 001407      BEQ     8$      :NO
6466 045072 032777 002000 136230      BIT     #PSEL,@RHCS1
6467 045100 001401      BEQ     3$      :
6468 045102 104207      ERROR  207      :
6469 045104 104146      3$: ERROR  146      :OUTPUT THE REGISTERS
6470 045106 104170      ERROR  170      :
6471 045110 005737 003450      8$: TST     LOOCNT    :IS IT FIRST PASS IN TEST
6472 045114 001007      BNE     11$     :NO
6473 045116 005237 003450      INC     LOOCNT    :MAKE IT SECOND PASS
6474 045122 012777 000017 136206      MOV     #SCLK!7,@RHMR2
6475      :SET THE SYNC CLOCK BIT AND 441 BLK SIZE
6476 045130 000137 044516      JMP     IN        :DO THE TEST AGAIN
6477 045134 005037 003450      11$: CLR     LOOCNT    :CLEAR THE COUNTER
6478 045140 005737 003452      TST     PASS      :
6479 045144 001004      BNE     BOTTOM    :
6480 045146 005237 003452      INC     PASS      :
6481 045152 000137 044512      JMP     BLITZ     :
6482 045156 004737 007260      BOTTOM: JSR    R7,WHYFO :TO SEE WHY IT DIED
6483 045162 004737 006626      JSR    R7,CLEER  :CLEAR THE REGISTERS
6484 045166 004737 050244      JSR    R7,ERPTST :UNDERLINE ERROR MESGES
6485      :IF NEEDED
6486      :*****
6487      :*TEST 77      HERE IS WHERE I HANDLE 4 RH'S
6488      :*THIS IS THE ROUTINE THAT ALLOWS THE
6489      :*THE DIAGNOSTIC TO TEST FOUR RH'S
6490      :*****
6491 045172 000004      TST77: SCOPE
6492
6493 045174 005237 003376      ENDPAS: INC     DEVCNT :INCREMENT THE DEVICE COUNT
6494 045200 022737 000001 003376      CMP     #1,DEVCNT :IS IT DEVICE 2
6495 045206 001552      BEQ     CLEVER    :YES
6496 045210 022737 000002 003376      CMP     #2,DEVCNT :IS IT DEVICE 3
6497 045216 001002      BNE     1$      :
```

```

6498 045220 000137 045640      JMP      ROTEEN          :YES
6499 045224 022737 000003 003376 1$:  CMP      #3,DEVCNT      :IS IT DEVICE 4
6500 045232 001002          BNE      2$             :NO,CONTINUE SEARCH
6501 045234 000137 045744      JMP      IS             :YES
6502 045240 022737 000004 003376 2$:  CMP      #4,DEVCNT      :HAVE WE TESTED ALL 4 RH'S
6503 045246 001470          BEQ      RESTAT        :YES
6504 045250 104401 045256      TYPE    ,65$           ;;TYPE ASCIZ STRING
6505 045254 000421          BR       64$           ;;GET OVER THE ASCIZ
6506          ;;65$: .ASCIZ <15><12>/PROGRAM ERROR ON TESTING 4 RH'S/
6507 045320          64$:
6508 045320 104401 045326      TYPE    ,67$           ;;TYPE ASCIZ STRING
6509 045324 000426          BR       66$           ;;GET OVER THE ASCIZ
6510          ;;67$: .ASCIZ <15><12>/RESTARTING TO TEST RH #1 AT BASE ADDRESS /
6511 045402          66$:
6512 045402 013746 003366      MOV      DEVIC1,-(SP)   ;;SAVE DEVIC1 FOR TYPEOUT
6513 045406 104402          TYPOC          ;;GO TYPE--OCTAL ASCII(ALL DIGITS)
6514 045410 013737 003366 003400      MOV      DEVIC1,DEVIC5 :FOR REG. ADDRESS CREATION
6515 045416 012737 005302 003410      MOV      #GIGO,RETAIN  :GET ADDRESS ERROR RETURN
6516 045424 000137 046050          JMP      CORREG        :CORRECT REG. ADDRESSES
6517 045430 005037 003376      RESTAT: CLR      DEVCNT :CLEAR DEVICE COUNTER
6518 045434 005726          TST      (SP)+        :CORRECT STACK
6519 045436 013737 003366 003400      MOV      DEVIC1,DEVIC5 :SET UP TO CREATE ADDRESSES
6520 045444 104401 045452      TYPE    ,65$           ;;TYPE ASCIZ STRING
6521 045450 000421          BR       64$           ;;GET OVER THE ASCIZ
6522          ;;65$: .ASCIZ <15><12>/TESTING RH #1 AT BASE ADDRESS /
6523 045514          64$:
6524 045514 013746 003366      MOV      DEVIC1,-(SP)   ;;SAVE DEVIC1 FOR TYPEOUT
6525 045520 104402          TYPOC          ;;GO TYPE--OCTAL ASCII(ALL DIGITS)
6526 045522 012737 005302 003410      MOV      #GIGO,RETAIN  :SAVE RETURN ADDRESS
6527 045530 000137 046050          JMP      CORREG        :GO CREATE ADDRESSES
6528 045534 005737 003370      CLEVER: TST      DEVIC2 :IS IT 0
6529 045540 001733          BEQ      RESTAT        :YES,END PASS
6530 045542 013737 003370 003400      MOV      DEVIC2,DEVIC5 :GET READY TO CONSTRUCT
6531 045550 012737 005456 003410      MOV      #GIGO1,RETAIN :SAVE RETURN ERROR ADDRESS
6532 045556 104401 045564      TYPE    ,65$           ;;TYPE ASCIZ STRING
6533 045562 000421          BR       64$           ;;GET OVER THE ASCIZ
6534          ;;65$: .ASCIZ <15><12>/TESTING RH #2 AT BASE ADDRESS /
6535 045626          64$:
6536 045626 013746 003370      MOV      DEVIC2,-(SP)   ;;SAVE DEVIC2 FOR TYPEOUT
6537 045632 104402          TYPOC          ;;GO TYPE--OCTAL ASCII(ALL DIGITS)
6538 045634 000137 046050          JMP      CORREG        :CREATE REG. ADDRESSES
6539 045640 005737 003372      ROTEEN: TST      DEVIC3 :IS IT 0
6540 045644 001671          BEQ      RESTAT        ;YES ,END PASS
6541 045646 013737 003372 003400      MOV      DEVIC3,DEVIC5 :GET BASE ADDRESS
6542 045654 012737 005616 003410      MOV      #GIGO2,RETAIN :SAVE RETURN ADDRESS
6543 045662 104401 045670      TYPE    ,65$           ;;TYPE ASCIZ STRING
6544 045666 000421          BR       64$           ;;GET OVER THE ASCIZ
6545          ;;65$: .ASCIZ <15><12>/TESTING RH #3 AT BASE ADDRESS /
6546 045732          64$:
6547 045732 013746 003372      MOV      DEVIC3,-(SP)   ;;SAVE DEVIC3 FOR TYPEOUT
6548 045736 104402          TYPOC          ;;GO TYPE--OCTAL ASCII(ALL DIGITS)
6549 045740 000137 046050          JMP      CORREG        :CORRECT REG. ADDRESSES
6550 045744 005737 003374      IS:      TST      DEVIC4 :IS IT 0
6551 045750 001627          BEQ      RESTAT        :YES ,END PASS
6552 045752 013737 003374 003400      MOV      DEVIC4,DEVIC5 :GET BASE ADDRESS
6553 045760 012737 005756 003410      MOV      #GIGO3,RETAIN :SAVE RETURN ADDRESS

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```
6554 045766 104401 045774
6555 045772 000421
6556
6557 046036
6558 046036 013746 003374
6559 046042 104402
6560 046044 000137 046050
6561 046050 013737 003400 003402 CORREG: MOV DEVIC5,OFF11
6562 046056 012702 003330
6563 046062 013722 003402 BEHIND: MOV OFF11,(R2)+
6564 046066 022702 003360 CMP #RHBAE,R2
6565 046072 001405 BEQ AHEAD
6566 046074 062737 000002 003402 ADD #TWO,OFF11
6567 046102 000137 046062 JMP BEHIND
6568 046106 013737 003400 003402 AHEAD: MOV DEVIC5,@#OFF11
6569 046114 063737 003404 003402 ADD REGEND,OFF11
6570 046122 013737 003402 003360 MOV OFF11,RHBAE
6571 046130 062737 000002 003402 ADD #2,OFF11
6572 046136 013737 003402 003362 MOV OFF11,RHCS3
6573 046144 013737 003330 003364 MOV RHCS1,RHCS1B
6574 046152 005237 003364 INC RHCS1B
6575 046156 005037 001102 CLR $STNM
6576 046162 005237 001102 INC $STNM
6577 046166 012737 000001 001212 MOV #1,$TIMES
6578 046174 005737 003376 TST DEVCNT
6579 046200 001402 BEQ $EOP
6580 046202 000137 006306 JMP TSTADD
6581
6582
6583
6584
6585
6586
6587
6588
6589
6590 046206
6591 046206 000004
6592 046210 005037 001102
6593 046214 005037 001212
6594 046220 005237 001100
6595 046224 042737 100000 001100
6596 046232 005327
6597 046234 000001
6598 046236 003063
6599 046240 012737
6600 046242 000001
6601 046244 046234
6602 046246 104401 046254
6603 046252 000407
6604
6605 046272
6606 046272 013746 001100
6607
6608 046276 104405
6609 046300 104401 046306
```

```
TYPE .65$ ::TYPE ASCIZ STRING
BR 64$ ::GET OVER THE ASCIZ
::65$: .ASCIZ <15><12>/TESTING RH #4 AT BASE ADDRESS /
64$:
MOV DEVIC4,-(SP) ::SAVE DEVIC4 FOR TYPEOUT
TYPOC ::GO TYPE--OCTAL ASCII(ALL DIGITS)
JMP CORREG ::CORRECT REG. ADDRESSES
CORREG: MOV DEVIC5,OFF11 ::GET BASE ADDRESS
MOV #RHCS1,R2 ::GET ADDRESS TO START STORING
BEHIND: MOV OFF11,(R2)+ ::STORE ADDRESS
CMP #RHBAE,R2 ::WAS IT LAST ADDRESS
BEQ AHEAD ::YES
ADD #TWO,OFF11 ::CREATE NEXT ADDRESS
JMP BEHIND ::GO STORE IT
AHEAD: MOV DEVIC5,@#OFF11
ADD REGEND,OFF11 ::SETUP BAE ADDRESS
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 $STNM ::CLEAR TEST NUMBER
INC $STNM ::SET TO TEST 1
MOV #1,$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 $STNM ::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
$ENDCT: .WORD 1
TYPE .65$ ::TYPE ASCIZ STRING
BR 64$ ::GET OVER THE ASCIZ
::65$: .ASCIZ <12><15>/END PASS #/
64$:
MOV $PASS,-(SP) ::SAVE $PASS FOR TYPEOUT
TYPDS ::TYPE PASS NUMBER
TYPE .67$ ::GO TYPE--DECIMAL ASCII WITH SIGN
::TYPE ASCIZ STRING
```

```

6610 046304 000421          BR      66$          ;;GET OVER THE ASCIZ
6611          ;;67$: .ASCIZ / TOTAL ERRORS SINCE LAST REPORT /
6612 046350          66$:          MOV      $ERTTL,-(SP)      ;;SAVE $ERTTL FOR TYPEOUT
6613 046350 013746 001112          TYPDS          ;;TOTAL NUMBER OF ERRORS
6614          TYPE      , $CRLF          ;;GO TYPE--DECIMAL ASCII WITH SIGN
6615 046354 104405          CLR      $ERTTL          ;;TYPE CARRIAGE RETURN, LINE FEED
6616 046354 104401 001223          $GET42: MOV     @#42,R0          ;;CLEAR ERROR TOTAL
6617 046362 005037 001112          BEQ     $DOAGN          ;;GET MONITOR ADDRESS
6618 046366 013700 000042          RESET          ;;BRANCH IF NO MONITOR
6619 046372 001405          $ENDAD: JSR    PC,(R0)          ;;CLEAR THE WORLD
6620 046374 000005          NOP          ;;GO TO MONITOR
6621 046376 004710          NOP          ;;SAVE ROOM
6622 046400 000240          NOP          ;;FOR
6623 046402 000240          NOP          ;;ACT11
6624 046404 000240          $DOAGN:          ;;
6625 046406          JMP     @(PC)+          ;;RETURN
6626 046406 000137          $RTNAD: .WORD  BEGIN2
6627 046410 004166          $ENULL: .BYTE  -1,-1,0
6628 046412 377 377 000          .EVEN          ;;NULL CHARACTER STRING
6629 046416
6630
6631          ;;*****
6632          ;THIS IS THE WATBIT PROGRAM
6633          ;;*****
6634
6635 046416 032737 020000 177570 WATBIT: BIT    #SW13,@#177570          ;SKIP ERROR PRINTOUT ?
6636 046424 001155          BNE     RITURN          ;YES
6637          ;;*****
6638 046426 032737 000400 177570 CHGE2: BIT    #BIT8,@#177570
6639          ;;*****
6640 046434 001151          BNE     RITURN
6641          ;;*****
6642 046436 032737 000001 177570 CHGE3: BIT    #BIT0,@#177570
6643          ;;*****
6644 046444 001145          BNE     RITURN
6645 046446 005037 003446          CLR     BITCNT          ;CLEAR BIT COUNTER
6646 046452 013737 001162 001202          MOV     $REGO,$STMP2          ;SAVE GOOD DATA IN $REGO
6647 046460 013737 001200 001204          MOV     $STMP1,$STMP3          ;SAVE CONTENTS OF BAD DATA
6648 046466 043737 001162 001204          BIC     $REGO,$STMP3          ;WHERE EXTRA BITS SET ?
6649 046474 005737 001204          TST     $STMP3          ;FIND OUT
6650 046500 001447          BEQ     NEXTST          ;NO,FIND OUT WHAT BITS WHERE NOT SET
6651 046502 104401 046510          TYPE   ,65$          ;;TYPE ASCII STRING
6652 046506 000427          BR      64$          ;;GET OVER THE ASCIZ
6653          ;;65$: .ASCIZ <15><12>/THESE ARE THE BIT NO. OF THE EXTRA BITS./<15><12>
6654 046566          64$:
6655 046566 032737 000001 001204 MOAR:  BIT    #ONE,$STMP3          ;FIND THE EXTRA
6656 046574 001076          BNE     PRIBIT          ;GO TO PRINT BIT NO.
6657 046576 006037 001204 MOOR:  ROR     $STMP3          ;SETUP FOR NEXT BIT
6658 046602 022737 000017 003446          CMP     #17,BITCNT          ;IS IT BIT 15 LAST TESTED
6659 046610 001403          BEQ     NEXTST          ;YES,SEE IF ANY BITS WHER NOT SET
6660 046612 005237 003446          INC     BITCNT          ;NO NOT LAST BIT YET
6661 046616 000763          BR      MOAR          ;GO TO TEST NEXT BIT
6662 046620 005037 003446          NEXTST: CLR   BITCNT          ;ZERO BIT COUNTER
6663 046624 043737 001200 001202          BIC     $STMP1,$STMP2          ;FIND WHAT BITS WHER NOT SET
6664 046632 005737 001202          TST     $STMP2          ;WAS ALL BITS SET THAT SHOULD HAVE BEEN
6665 046636 001446          BEQ     RETURN          ;YES,AND TEST FINISHED

```

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



```

6722 047306
6723 047306 104401 047314
6724 047312 000420
6725
6726 047354
6727 047354 012637 004100
6728 047360 162737 000002 004100
6729 047366 013746 004100
6730 047372 104402
6731 047374 104401 047402
6732 047400 000406
6733
6734 047416
6735 047416 012637 004100
6736 047422 013746 004100
6737 047426 104402
6738 047430 005701
6739 047432 100507
6740 047434 104401 047442
6741 047440 000417
6742
6743 047500
6744 047500 013737 177742 004100
6745 047506 013746 004100
6746 047512 104402
6747 047514 104401 047522
6748 047520 000416
6749
6750 047556
6751 047556 013737 177740 004100
6752 047564 013746 004100
6753 047570 104402
6754 047572 104401 047600
6755 047576 000417
6756
6757 047636
6758 047636 013737 177744 004100
6759 047644 013746 004100
6760 047650 104402
6761 047652 013716 001106
6762 047656 000002
6763
6764
6765
6766
6767 047660 012777 002161 133442
6768 047666 005037 003446
6769 047672 032777 000200 133430
6770 047700 001015
6771 047702 005237 003446
6772 047706 001371
6773 047710 005037 003446
6774 047714 032777 000200 133406
6775 047722 001004
6776 047724 005237 003446
6777 047730 001401

```

```

64$:
TYPE ,67$          ;;TYPE ASCIZ STRING
BR 66$            ;;GET OVER THE ASCIZ
;;67$: .ASCIZ <15><12>/ADDRESS THAT CAUSED TRAP WAS /
66$:
MOV (SP)+,RBUF      ;GET PC+2
SUB #TWO,RBUF      ;CORECT PC
MOV RBUF,-(SP)     ;;SAVE RBUF FOR TYPEOUT
TYPOC              ;;GO TYPE--OCTAL ASCII(ALL DIGITS)
TYPE ,69$         ;;TYPE ASCIZ STRING
BR 68$            ;;GET OVER THE ASCIZ
;;69$: .ASCIZ <15><12>/PSW WAS /
68$:
MOV (SP)+,RBUF      ;GET OLD PSW
MOV RBUF,-(SP)     ;;SAVE RBUF FOR TYPEOUT
TYPOC              ;;GO TYPE--OCTAL ASCII(ALL DIGITS)
TST R1              ;ARE WE ON AN 11/70
BMI TRAPED         ;NO, ITS A 11/05-11/45
TYPE ,71$         ;;TYPE ASCIZ STRING
BR 70$            ;;GET OVER THE ASCIZ
;;71$: .ASCIZ <15><12>/HIGH ERROR ADDRESS REG. = /
70$:
MOV HERADD,RBUF
MOV RBUF,-(SP)     ;;SAVE RBUF FOR TYPEOUT
TYPOC              ;;GO TYPE--OCTAL ASCII(ALL DIGITS)
TYPE ,73$         ;;TYPE ASCIZ STRING
BR 72$            ;;GET OVER THE ASCIZ
;;73$: .ASCIZ <15><12>/LOW ERROR ADDRESS REG. = /
72$:
MOV LERADD,RBUF
MOV RBUF,-(SP)     ;;SAVE RBUF FOR TYPEOUT
TYPOC              ;;GO TYPE--OCTAL ASCII(ALL DIGITS)
TYPE ,75$         ;;TYPE ASCIZ STRING
BR 74$            ;;GET OVER THE ASCIZ
;;75$: .ASCIZ <15><12>/MEMORY SYSTEM ERROR REG. = /
74$:
MOV MEMERR,RBUF
MOV RBUF,-(SP)     ;;SAVE RBUF FOR TYPEOUT
TYPOC              ;;GO TYPE--OCTAL ASCII(ALL DIGITS)
TRAPED: MOV $LPADR,(SP) ;FAKE RETURN
RTI                ;RETURN WHERE LEFT OFF

```

```

;:*****
;:THIS IS THE DUAL PORT ROUTINE
;:*****
DUPORT: MOV #WRITE0!PSEL!IE,@RHCS1
CLR BITCNT ;CLEAR BIT COUNTER
18$: BIT #RDY,@RHCS1 ;IS RDY SET
BNE BULL ;BIT IS SET
INC BITCNT ;COUNT UP
BNE 18$ ;NOT FINISHED COUNTING
CLR BITCNT ;GET READY TO DO IT AGAIN
19$: BIT #RDY,@RHCS1 ;IS IT SET YET?
BNE BULL ;YES
INC BITCNT ;COUNT UP
BEQ BULL ;BIT IS NOT GOING TO SET

```

6778 047732 000770  
6779 047734  
6780 047734 032777 000200 133366  
6781 047742 001001  
6782 047744 104102  
6783 047746 000207  
6784  
6785  
6786  
6787  
6788 047750 012737 000000 001162  
6789 047756 017737 133346 001200  
6790 047764 042737 007777 001200  
6791  
6792 047772 000207  
6793 047774 012737 000000 001162  
6794 050002 017737 133332 001200  
6795 050010 042737 000377 001200  
6796  
6797 050016 000207  
6798 050020 012737 000000 001162  
6799 050026 017737 133312 001200  
6800 050034 042737 000000 001200  
6801  
6802 050042 000207  
6803 050044 012737 000000 001162  
6804 050052 017737 133264 001200  
6805 050060 042737 030600 001200  
6806  
6807 050066 000207  
6808 050070 012737 000007 001162  
6809 050076 017737 133236 001200  
6810 050104 042737 177770 001200  
6811  
6812 050112 000207  
6813 050114 012737 000000 001162  
6814 050122 017737 133234 001200  
6815 050130 042737 000117 001200  
6816  
6817 050136 000207  
6818  
6819  
6820  
6821  
6822  
6823 050140 013737 001102 003454  
6824 050146 105037 003455  
6825 050152 032737 020000 177570  
6826 050160 001026  
6827 050162 122737 000001 001103  
6828 050170 001022  
6829 050172 013737 003454 003456  
6830 050200 006137 003456  
6831 050204 012737 072446 003460  
6832 050212 063737 003456 003460  
6833 050220 017737 133234 050234

BR 19\$  
BULL: BIT #RDY,@RHCS1  
BNE CUTE  
ERROR 102  
CUTE: RTS PC  
;:\*\*\*\*\*  
;:THESE ARE THE CLEARS ROUTINES  
;:\*\*\*\*\*  
FINDIT: MOV #0,\$REG0 ;GET READY TO FIND ERROR  
MOV @RHCS1,\$TMP1 ;GET COMPARE READY  
BIC #READ6!GO!IE!RDY!A16!A17!PSEL!DVA,\$TMP1  
;CLEAR BITS NOT NEEDED  
RTS R7 ;RETURN TO PROGRAM  
LOOKFO: MOV #0,\$REG0 ;GET READY TO FIND ERROR  
MOV @RHCS2,\$TMP1 ;GET COMPARE READY  
BIC #US1!US2!US4!BAI!PAT!CLR!IR!OR,\$TMP1  
;CLEAR BITS NOT NEEDED  
RTS R7 ;RETURN TO PROGRAM  
LOOKED: MOV #0,\$REG0 ;GET READY TO FIND ERROR  
MOV @RHER,\$TMP1 ;GET COMPARE READY  
BIC #ZERO,\$TMP1  
;CLEAR BITS NOT NEEDED  
RTS R7 ;RETURN TO PROGRAM  
FIND: MOV #0,\$REG0 ;GET READY TO FIND ERROR  
MOV @RHST,\$TMP1 ;GET COMPARE READY  
BIC #DRY!DPR!MOL!PIP,\$TMP1  
;CLEAR BITS NOT NEEDED  
RTS R7 ;RETURN TO PROGRAM  
FOUND: MOV #7,\$REG0 ;GET READY TO FIND ERROR  
MOV @RHCS2,\$TMP1 ;GET COMPARE READY  
BIC #BAI!PAT!CLR!IR!OR!MPE!MXF!PGE!NEM!NED!UPE!WCE!DLT,\$TMP1  
;CLEAR BITS NOT NEEDED  
RTS R7 ;RETURN TO PROGRAM  
CS3ERR: MOV #0,\$REG0 ;GET READY TO FIND ERROR  
MOV @RHCS3,\$TMP1 ;GET COMPARE READY  
BIC #IE3!IPCK0!IPCK1!IPCK2!IPCK3,\$TMP1  
;CLEAR BITS NOT NEEDED  
RTS R7 ;RETURN TO PROGRAM  
;:\*\*\*\*\*  
;\* THIS ROUTINE IS THE TEST NUMBER CORRECTION ROUTINE  
;:\*\*\*\*\*  
TSTNMB: MOV \$TSTNM,TSTNM ;GET THE TEST NUMBER  
CLRB TSTNM+1 ;CLEAR UPPER BYTE  
BIT #SW13,@#177570 ;INHIBIT TYPEOUT  
BNE TSTNMA ;YES  
CMPB #1,\$ERFLG ;IS IT FIRST ERROR  
BNE TSTNMA ;NO  
MOV TSTNM,OFFSET ;GET TEST NUMBER  
ROL OFFSET ;CREAT OFFSET  
MOV #HEADER,HEDDAD ;GET BEGINING OF TABLE  
ADD OFFSET,HEDDAD ;CREATE MES ADDRESS  
MOV @HEDDAD,HEDADD ;SET UP FOR MESSAGE

6834 050226 104401 001223  
6835 050232 104401  
6836 050234 000000  
6837 050236 004737 074166  
6838 050242 000207  
6839  
6840  
6841  
6842  
6843  
6844  
6845 050244 105737 001103  
6846 050250 001446  
6847 050252 032737 020000 177570  
6848 050260 001042  
6849 050262 013737 001102 003454  
6850 050270 105037 003455  
6851 050274 104401 050302  
6852 050300 000406  
6853  
6854 050316  
6855 050316 013746 003454  
6856 050322 104402  
6857 050324 104401 050332  
6858 050330 000416  
6859  
6860 050366  
6861 050366 000207  
6862  
6863  
6864  
6865  
6866  
6867  
6868 050370 012716 044672  
6869 050374 000002

```
TYPE      ,SCLF
TYPE
HEDADD: 0
TSTNMA: JSR      R7,@#SERRTYP      ;GO TO ERROR TYPE ROUTINE
        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 INTERRUPT ROUTINE
;:      :FOR THE LARGE TRANSFER TEST
;:*****

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

6870  
6871  
6872  
6873  
6874 050376 044122 040440 042104  
6875 050404 042522 051523 042040  
6876 050412 041505 042117 020105  
6877 050420 042524 052123 024040  
6878 050426 042524 052123 030440  
6879 050434 000051  
6880 050436 046103 040505 020122  
6881 050444 052040 051505 020124  
6882 050452 052050 051505 020124  
6883 050460 024462 000  
6884 050463 124 051505 042524  
6885 050470 020122 047503 047116  
6886 050476 041505 042524 020104  
6887 050504 042524 052123 024040  
6888 050512 042524 052123 031440  
6889 050520 000051  
6890 050522 047527 042122 041440  
6891 050530 052517 052116 041440  
6892 050536 042514 051101 052040  
6893 050544 051505 020124 052050  
6894 050552 051505 020124 024464  
6895 050560 000  
6896 050561 122 041110 020101  
6897 050566 046103 040505 020122  
6898 050574 042524 052123 024040  
6899 050602 042524 052123 032440  
6900 050610 000051  
6901 050612 044122 040502 020105  
6902 050620 046103 040505 020122  
6903 050626 042524 052123 024040  
6904 050634 042524 052123 033040  
6905 050642 000051  
6906 050644 044122 041104 041440  
6907 050652 042514 051101 052040  
6908 050660 051505 020124 052050  
6909 050666 051505 020124 024467  
6910 050674 000  
6911 050675 120 047522 020115  
6912 050702 042522 044507 052123  
6913 050710 051105 042040 041505  
6914 050716 042117 020105 042524  
6915 050724 052123 024040 042524  
6916 050732 052123 030440 024460  
6917 050740 000  
6918 050741 122 041510 031523  
6919 050746 041040 052111 052040  
6920 050754 051505 020124 052050  
6921 050762 051505 020124 030461  
6922 050770 000051  
6923 050772 044122 041527 041040  
6924 051000 052111 052040 051505  
6925 051006 020124 052050 051505

::\*\*\*\*\*  
:;HEADER MESSAGES FOR ERROR PRINT OUTS  
:;\*\*\*\*\*

HED1: .ASCIZ/RH ADDRESS DECODE TEST (TEST 1)/

HED2: .ASCIZ/CLEAR TEST (TEST 2)/

HED3: .ASCIZ/TESTER CONNECTED TEST (TEST 3)/

HED4: .ASCIZ/WORD COUNT CLEAR TEST (TEST 4)/

HED5: .ASCIZ/RHBA CLEAR TEST (TEST 5)/

HED6: .ASCIZ/RHBAE CLEAR TEST (TEST 6)/

HED7: .ASCIZ/RHDB CLEAR TEST (TEST 7)/

HED10: .ASCIZ/PROM REGISTER DECODE TEST (TEST 10)/

HED11: .ASCIZ/RHCS3 BIT TEST (TEST 11)/

HED12: .ASCIZ/RHWC BIT TEST (TEST 12)/

6926	051014	020124	031061	000051	
6927	051022	044122	040502	020105	HED13: .ASCIZ/RHBAE BIT TEST (TEST 13)/
6928	051030	044502	020124	042524	
6929	051036	052123	024040	042524	
6930	051044	052123	030440	024463	
6931	051052	000			
6932	051053	122	041110	020101	HED14: .ASCIZ/RHBA BIT TEST (TEST 14)/
6933	051060	044502	020124	042524	
6934	051066	052123	024040	042524	
6935	051074	052123	030440	024464	
6936	051102	000			
6937	051103	122	042110	020102	HED15: .ASCIZ/RHDB BIT TEST (TEST 15)/
6938	051110	044502	020124	042524	
6939	051116	052123	024040	042524	
6940	051124	052123	030440	024465	
6941	051132	000			
6942	051133	122	053510	020103	HED16: .ASCIZ/RHWC OPERATIONAL TEST (TEST 16)/
6943	051140	050117	051105	052101	
6944	051146	047511	040516	020114	
6945	051154	042524	052123	024040	
6946	051162	042524	052123	030440	
6947	051170	024466	000		
6948	051173	122	041110	020101	HED17: .ASCIZ/RHBA OPERATIONAL TEST (TEST 17)/
6949	051200	050117	051105	052101	
6950	051206	047511	040516	020114	
6951	051214	042524	052123	024040	
6952	051222	042524	052123	030440	
6953	051230	024467	000		
6954	051233	116	046505	052054	HED20: .ASCIZ/NEM,TRE AND SC BIT TEST (TEST 20)/
6955	051240	042522	040440	042116	
6956	051246	051440	020103	044502	
6957	051254	020124	042524	052123	
6958	051262	024040	042524	052123	
6959	051270	031040	024460	000	
6960	051275	127	042503	052054	HED21: .ASCIZ/WCE,TRE AND SC BIT TEST (TEST 21)/
6961	051302	042522	040440	042116	
6962	051310	051440	020103	044502	
6963	051316	020124	042524	052123	
6964	051324	024040	042524	052123	
6965	051332	031040	024461	000	
6966	051337	115	050104	026105	HED22: .ASCIZ/MDPE,TRE AND SC BIT TEST (TEST 22)/
6967	051344	051124	020105	047101	
6968	051352	020104	041523	041040	
6969	051360	052111	052040	051505	
6970	051366	020124	052050	051505	
6971	051374	020124	031062	000051	
6972	051402	050125	026105	051124	HED23: .ASCIZ/UPE,TRE AND SC BIT TEST (TEST 23) RH11 ONLY/
6973	051410	020105	047101	020104	
6974	051416	041523	041040	052111	
6975	051424	052040	051505	020124	
6976	051432	052050	051505	020124	
6977	051440	031462	020051	044122	
6978	051446	030461	047440	046116	
6979	051454	000131			
6980	051456	050125	026105	051124	HED24: .ASCIZ/UPE,TRE AND SC BIT TEST (TEST 24)/
6981	051464	020105	047101	020104	

6982	051472	041523	041040	052111	
6983	051500	052040	051505	020124	
6984	051506	052050	051505	020124	
6985	051514	032062	000051		
6986	051520	042516	026104	051124	HED25: .ASCIZ/NED,TRE AND SC BIT TEST (TEST 25)/
6987	051526	020105	047101	020104	
6988	051534	041523	041040	052111	
6989	051542	052040	051505	020124	
6990	051550	052050	051505	020124	
6991	051556	032462	000051		
6992	051562	054115	026106	051124	HED26: .ASCIZ/MXF,TRE AND SC BIT TEST (TEST 26)/
6993	051570	020105	047101	020104	
6994	051576	041523	041040	052111	
6995	051604	052040	051505	020124	
6996	051612	052050	051505	020124	
6997	051620	033062	000051		
6998	051624	043520	020105	051124	HED27: .ASCIZ/PGE TRE AND SC BIT TEST (TEST 27)/
6999	051632	020105	047101	020104	
7000	051640	041523	041040	052111	
7001	051646	052040	051505	020124	
7002	051654	052050	051505	020124	
7003	051662	033462	000051		
7004	051666	054115	026106	051124	HED30: .ASCIZ/MXF,TRE AND SC BIT TEST (TEST 30)/
7005	051674	020105	047101	020104	
7006	051702	041523	041040	052111	
7007	051710	052040	051505	020124	
7008	051716	052050	051505	020124	
7009	051724	030063	000051		
7010	051730	041515	042520	040440	HED31: .ASCIZ/MCPE AND SC ERROR BIT TEST (TEST 31)/
7011	051736	042116	051440	020103	
7012	051744	051105	047522	020122	
7013	051752	044502	020124	042524	
7014	051760	052123	024040	042524	
7015	051766	052123	031440	024461	
7016	051774	000			
7017	051775	104	046102	052040	HED32: .ASCIZ/DBL TEST,1 WORD FROM A BASE 4 ADDRESS (TEST 32)/
7018	052002	051505	026124	020061	
7019	052010	047527	042122	043040	
7020	052016	047522	020115	020101	
7021	052024	040502	042523	032040	
7022	052032	040440	042104	042522	
7023	052040	051523	024040	042524	
7024	052046	052123	031440	024462	
7025	052054	000			
7026	052055	104	046102	052040	HED33: .ASCIZ/DBL TEST,2 WORD FROM A BASE 4 ADD. (TEST 33)/
7027	052062	051505	026124	020062	
7028	052070	047527	042122	043040	
7029	052076	047522	020115	020101	
7030	052104	040502	042523	032040	
7031	052112	040440	042104	020056	
7032	052120	052050	051505	020124	
7033	052126	031463	000051		
7034	052132	041104	020114	042524	HED34: .ASCIZ/DBL TEST,3 WORD FROM A BASE 4 ADD. (TEST 34)/
7035	052140	052123	031454	053440	
7036	052146	051117	020104	051106	
7037	052154	046517	040440	041040	

7038	052162	051501	020105	020064
7039	052170	042101	027104	024040
7040	052176	042524	052123	031440
7041	052204	024464	000	
7042	052207	104	046102	052040
7043	052214	051505	026124	020064
7044	052222	047527	042122	020123
7045	052230	051106	046517	040440
7046	052236	041040	051501	020105
7047	052244	020064	042101	027104
7048	052252	024040	042524	052123
7049	052260	031440	024465	000
7050	052265	104	046102	052040
7051	052272	051505	026124	020061
7052	052300	047527	042122	043040
7053	052306	047522	020115	020101
7054	052314	040502	042523	032040
7055	052322	040440	042104	024056
7056	052330	042524	052123	031440
7057	052336	024466	000	
7058	052341	104	046102	052040
7059	052346	051505	026124	020062
7060	052354	047527	042122	043040
7061	052362	047522	020115	020101
7062	052370	040502	042523	032040
7063	052376	040440	042104	020056
7064	052404	044527	044124	041040
7065	052412	044501	051440	052105
7066	052420	024040	042524	052123
7067	052426	031440	024467	000
7068	052433	104	046102	052040
7069	052440	051505	026124	020062
7070	052446	047527	042122	053440
7071	052454	052111	020110	040502
7072	052462	020111	042523	020124
7073	052470	047101	020104	051127
7074	052476	052111	020105	042522
7075	052504	020126	052051	051505
7076	052512	020124	030064	000051
7077	052520	041104	020114	042524
7078	052526	052123	047054	052117
7079	052534	040440	041040	051501
7080	052542	020105	020064	042101
7081	052550	020104	052050	051505
7082	052556	020124	030464	000051
7083	052564	041104	020114	042524
7084	052572	052123	041040	051501
7085	052600	020105	020064	042101
7086	052606	027104	053440	044522
7087	052614	042524	043040	042127
7088	052622	024040	042524	052123
7089	052630	032040	024462	000
7090	052635	104	046102	052040
7091	052642	051505	020124	031054
7092	052650	053440	051117	020104
7093	052656	047054	052117	040440

HED35: .ASCIZ/DBL TEST,4 WORDS FROM A BASE 4 ADD. (TEST 35)/

HED36: .ASCIZ/DBL TEST,1 WORD FROM A BASE 4 ADD.(TEST 36)/

HED37: .ASCIZ/DBL TEST,2 WORD FROM A BASE 4 ADD. WITH BAI SET (TEST 37)/

HED40: .ASCIZ/DBL TEST,2 WORD WITH BAI SET AND WRITE REV )TEST 40)/

HED41: .ASCIZ/DBL TEST,NOT A BASE 4 ADD (TEST 41)/

HED42: .ASCIZ/DBL TEST BASE 4 ADD. WRITE FWD (TEST 42)/

HED43: .ASCIZ/DBL TEST ,2 WORD ,NOT A BASE 4 ADD. (TEST 43)/

7094	052664	041040	051501	020105
7095	052672	020064	042101	027104
7096	052700	024040	042524	052123
7097	052706	032040	024463	000
7098	052713	104	046102	052040
7099	052720	051505	026124	020063
7100	052726	047527	042122	026040
7101	052734	047516	020124	020101
7102	052742	040502	042523	032040
7103	052750	040440	042104	026056
7104	052756	051127	052111	020105
7105	052764	042522	020126	052050
7106	052772	051505	020124	032064
7107	053000	000051		
7108	053002	041104	020114	042524
7109	053010	052123	031054	053440
7110	053016	051117	020104	042522
7111	053024	042101	043040	042127
7112	053032	024040	042524	052123
7113	053040	032040	024465	000
7114	053045	104	046102	052040
7115	053052	051505	026124	020062
7116	053060	047527	042122	051040
7117	053066	040505	020104	053506
7118	053074	026104	047516	020124
7119	053102	020101	040502	042523
7120	053110	032040	040440	042104
7121	053116	020056	052050	051505
7122	053124	020124	033064	000051
7123	053132	041104	020114	042524
7124	053140	052123	031054	053440
7125	053146	051117	020104	042522
7126	053154	042101	051040	053105
7127	053162	041054	051501	020105
7128	053170	020064	042101	027104
7129	053176	024040	042524	052123
7130	053204	032040	024467	000
7131	053211	104	046102	052040
7132	053216	051505	026124	020062
7133	053224	047527	042122	051040
7134	053232	040505	020104	042522
7135	053240	026126	047516	020124
7136	053246	020101	040502	042523
7137	053254	032040	040440	042104
7138	053262	020056	052050	051505
7139	053270	020124	030065	000051
7140	053276	041104	020114	042524
7141	053304	052123	031454	053440
7142	053312	051117	020104	042522
7143	053320	042101	043040	042127
7144	053326	041054	051501	020105
7145	053334	020064	042101	027104
7146	053342	024040	042524	052123
7147	053350	032440	024461	000
7148	053355	104	046102	052040
7149	053362	051505	026124	020063

HED44: .ASCIZ/DBL TEST,3 WORD ,NOT A BASE 4 ADD.,WRITE REV (TEST 44)/

HED45: .ASCIZ/DBL TEST,2 WORD READ FWD (TEST 45)/

HED46: .ASCIZ/DBL TEST,2 WORD READ FWD,NOT A BASE 4 ADD. (TEST 46)/

HED47: .ASCIZ/DBL TEST,2 WORD READ REV,BASE 4 ADD. (TEST 47)/

HED50: .ASCIZ/DBL TEST,2 WORD READ REV,NOT A BASE 4 ADD. (TEST 50)/

HED51: .ASCIZ/DBL TEST,3 WORD READ FWD,BASE 4 ADD. (TEST 51)/

HED52: .ASCIZ/DBL TEST,3 WORD READ REV,BASE 4 ADD. (TEST 52)/



7150	053370	047527	042122	051040	
7151	053376	040505	020104	042522	
7152	053404	026126	040502	042523	
7153	053412	032040	040440	042104	
7154	053420	020056	052050	051505	
7155	053426	020124	031065	000051	
7156	053434	041527	020105	053505	HED53: .ASCIZ/WCE EW ERROR TEST 'WCELO' (TEST 53)/
7157	053442	042440	051122	051117	
7158	053450	052040	051505	020124	
7159	053456	053442	042503	047514	
7160	053464	020042	052050	051505	
7161	053472	020124	031465	000051	
7162	053500	041527	020105	053517	HED54: .ASCIZ/WCE OW ERROR TEST 'WCEHI' (TEST 54)/
7163	053506	042440	051122	051117	
7164	053514	052040	051505	020124	
7165	053522	053442	042503	044510	
7166	053530	020042	052050	051505	
7167	053536	020124	032065	000051	
7168	053544	047111	042524	052522	HED55: .ASCIZ/INTERUPT ENABLE TEST (TEST 55)/
7169	053552	052120	042440	040516	
7170	053560	046102	020105	042524	
7171	053566	052123	024040	042524	
7172	053574	052123	032440	024465	
7173	053602	000			
7174	053603	122	040505	020104	HED56: .ASCIZ/READ OPERATIONAL TEST (NORMAL #1) (TEST 56)/
7175	053610	050117	051105	052101	
7176	053616	047511	040516	020114	
7177	053624	042524	052123	024040	
7178	053632	047516	046522	046101	
7179	053640	021440	024461	024040	
7180	053646	042524	052123	032440	
7181	053654	024466	000		
7182	053657	122	020110	050117	HED57: .ASCIZ/RH OPERATIONAL WRITE TEST #1 (TEST 57)/
7183	053664	051105	052101	047511	
7184	053672	040516	020114	051127	
7185	053700	052111	020105	042524	
7186	053706	052123	021440	020061	
7187	053714	052050	051505	020124	
7188	053722	033465	000051		
7189	053726	042522	042101	047440	HED60: .ASCIZ/READ OPERATIONAL TEST (NORMAL #2)(TEST 60)/
7190	053734	042520	040522	044524	
7191	053742	047117	046101	052040	
7192	053750	051505	020124	047050	
7193	053756	051117	040515	020114	
7194	053764	031043	024051	042524	
7195	053772	052123	033040	024460	
7196	054000	000			
7197	054001	122	020110	050117	HED61: .ASCIZ/RH OPERATIONAL READ TEST #1 (TEST 61)/
7198	054006	051105	052101	047511	
7199	054014	040516	020114	042522	
7200	054022	042101	052040	051505	
7201	054030	020124	030443	024040	
7202	054036	042524	052123	033040	
7203	054044	024461	000		
7204	054047	122	040505	020104	HED62: .ASCIZ/READ OPERATIONAL TEST (NORMAL #3)(TEST 62)/
7205	054054	050117	051105	052101	

7206	054062	047511	040516	020114	
7207	054070	042524	052123	024040	
7208	054076	047516	046522	046101	
7209	054104	021440	024463	052050	
7210	054112	051505	020124	031066	
7211	054120	000051			
7212	054122	044122	047440	042520	HED63: .ASCIZ/RH OPERATIONAL WRITE TEST #2 (TEST 63)/
7213	054130	040522	044524	047117	
7214	054136	046101	053440	044522	
7215	054144	042524	052040	051505	
7216	054152	020124	031043	024040	
7217	054160	042524	052123	033040	
7218	054166	024463	000		
7219	054171	122	040505	020104	HED64: .ASCIZ/READ OPERATIONAL TEST (NORMAL #4)(TEST 64)/
7220	054176	050117	051105	052101	
7221	054204	047511	040516	020114	
7222	054212	042524	052123	024040	
7223	054220	047516	046522	046101	
7224	054226	021440	024464	052050	
7225	054234	051505	020124	032066	
7226	054242	000051			
7227	054244	044122	047440	042520	HED65: .ASCIZ/RH OPERATIONAL READ TEST #2 (TEST 65)/
7228	054252	040522	044524	047117	
7229	054260	046101	051040	040505	
7230	054266	020104	042524	052123	
7231	054274	021440	020062	052050	
7232	054302	051505	020124	032466	
7233	054310	000051			
7234	054312	051127	052111	020105	HED66: .ASCIZ/WRITE OPERATIONAL TEST (NORMAL #1)(TEST 66)/
7235	054320	050117	051105	052101	
7236	054326	047511	040516	020114	
7237	054334	042524	052123	024040	
7238	054342	047516	046522	046101	
7239	054350	021440	024461	052050	
7240	054356	051505	020124	033066	
7241	054364	000051			
7242	054366	044122	047440	042520	HED67: .ASCIZ/RH OPERATIONAL WRITE TEST #3 (TEST 67)/
7243	054374	040522	044524	047117	
7244	054402	046101	053440	044522	
7245	054410	042524	052040	051505	
7246	054416	020124	031443	024040	
7247	054424	042524	052123	033040	
7248	054432	024467	000		
7249	054435	127	044522	042524	HED70: .ASCIZ/WRITE OPERATIONAL TEST (NORMAL #3)(TEST 70)/
7250	054442	047440	042520	040522	
7251	054450	044524	047117	046101	
7252	054456	052040	051505	020124	
7253	054464	047050	051117	040515	
7254	054472	020114	031443	024051	
7255	054500	042524	052123	033440	
7256	054506	024460	000		
7257	054511	122	020110	050117	HED71: .ASCIZ/RH OPERATIONAL READ TEST #3 (TEST 71)/
7258	054516	051105	052101	047511	
7259	054524	040516	020114	042522	
7260	054532	042101	052040	051505	
7261	054540	020124	031443	024040	

7262	054546	042524	052123	033440	
7263	054554	024461	000		
7264	054557	127	044522	042524	HED72: .ASCIZ/WRITE OPERATIONAL TEST (NORMAL #3)(TEST 72)/
7265	054564	047440	042520	040522	
7266	054572	044524	047117	046101	
7267	054600	052040	051505	020124	
7268	054606	047050	051117	040515	
7269	054614	020114	031443	024051	
7270	054622	042524	052123	033440	
7271	054630	024462	000		
7272	054633	122	020110	050117	HED73: .ASCIZ/RH OPERATIONAL WRITE TEST #4 (TEST 73)/
7273	054640	051105	052101	047511	
7274	054646	040516	020114	051127	
7275	054654	052111	020105	042524	
7276	054662	052123	021440	020064	
7277	054670	052050	051505	020124	
7278	054676	031467	000051		
7279	054702	051127	052111	020105	HED74: .ASCIZ/WRITE OPERATIONAL TEST (NORMAL #4)(TEST 74)/
7280	054710	050117	051105	052101	
7281	054716	047511	040516	020114	
7282	054724	042524	052123	024040	
7283	054732	047516	046522	046101	
7284	054740	021440	024464	052050	
7285	054746	051505	020124	032067	
7286	054754	000051			
7287	054756	044122	047440	042520	HED75: .ASCIZ/RH OPERATIONAL READ TEST #4 (TEST 75)/
7288	054764	040522	044524	047117	
7289	054772	046101	051040	040505	
7290	055000	020104	042524	052123	
7291	055006	021440	020064	052050	
7292	055014	051505	020124	032467	
7293	055022	000051			
7294	055024	040514	043522	020105	HED76: .ASCIZ/LARGE TRANSFER TEST 671 WORDS (TEST 76)/
7295	055032	051124	047101	043123	
7296	055040	051105	052040	051505	
7297	055046	020124	033466	020061	
7298	055054	047527	042122	020123	
7299	055062	052050	051505	020124	
7300	055070	033067	000051		

7301  
7302  
7303  
7304  
7305  
7306  
7307 055074 047503 051122 041505  
7308 055102 020124 044502 020124  
7309 055110 044504 020104 047516  
7310 055116 020124 042523 020124  
7311 055124 047111 051040 053510  
7312 055132 000103  
7313 055134 047503 051122 041505  
7314 055142 020124 044502 020124  
7315 055150 044504 020104 047516  
7316 055156 020124 042523 020124  
7317 055164 047111 051040 041110  
7318 055172 000101  
7319 055174 047503 051122 041505  
7320 055202 020124 044502 020124  
7321 055210 044504 020104 047516  
7322 055216 020124 042523 020124  
7323 055224 047111 041040 051525  
7324 055232 040440 042104 042522  
7325 055240 051523 051040 043505  
7326 055246 000056  
7327 055250 047503 051122 041505  
7328 055256 020124 044502 020124  
7329 055264 044504 020104 047516  
7330 055272 020124 042523 020124  
7331 055300 047111 051040 042110  
7332 055306 000102  
7333 055310 047516 026516 054105  
7334 055316 051511 040524 052116  
7335 055324 046440 046505 051117  
7336 055332 020131 044504 020104  
7337 055340 047516 020124 042523  
7338 055346 020124 047111 051040  
7339 055354 041510 031123 000  
7340 055361 040 047514 044507  
7341 055366 020103 047524 051440  
7342 055374 052105 052040 042522  
7343 055402 041040 052111 044440  
7344 055410 020116 044122 051503  
7345 055416 020061 042522 044507  
7346 055424 052123 051105 005015  
7347 055432 051511 047040 052117  
7348 055440 053440 051117 044513  
7349 055446 043516 043454 020117  
7350 055454 047524 024040 051503  
7351 055462 041122 020051 051120  
7352 055470 047111 051524 044440  
7353 055476 020106 044122 030461  
7354 055504 005015  
7355 055506 051117 024040 051503  
7356 055514 041124 020051 051120

::\*\*\*\*\*  
:ERROR MESSAGES  
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.EVEN  
EM1: .ASCIZ/CORRECT BIT DID NOT SET IN RHWC/  
  
EM2: .ASCIZ/CORRECT BIT DID NOT SET IN RHBA/  
  
EM3: .ASCIZ/CORRECT BIT DID NOT SET IN BUS ADDRESS REG./  
  
EM4: .ASCIZ/CORRECT BIT DID NOT SET IN RHDB/  
  
EM5: .ASCIZ/NON-EXISTANT MEMORY DID NOT SET IN RHCS2/  
  
EM6: .ASCII/ LOGIC TO SET TRE BIT IN RHCS1 REGISTER/<15><12>  
  
.ASCII/IS NOT WORKING,GO TO (CSRB) PRINTS IF RH11/<15><12>  
  
.ASCIZ/OR (CSTB) PRINTS IF RH70 IN LOCATION B7 ON BOTH PRINTS/

7357	055522	047111	051524	044440	
7358	055530	020106	044122	030067	
7359	055536	044440	020116	047514	
7360	055544	040503	044524	047117	
7361	055552	041040	020067	047117	
7362	055560	041040	052117	020110	
7363	055566	051120	047111	051524	
7364	055574	000			
7365	055575	116	046505	041040	EM7: .ASCIZ/NEM BIT DOES NOT READ AS SET IN RHCS2/
7366	055602	052111	042040	042517	
7367	055610	020123	047516	020124	
7368	055616	042522	042101	040440	
7369	055624	020123	042523	020124	
7370	055632	047111	051040	041510	
7371	055640	031123	000		
7372	055643	116	046505	040440	EM10: .ASCIZ/NEM AND SC NOT SET IN RHCS1/
7373	055650	042116	051440	020103	
7374	055656	047516	020124	042523	
7375	055664	020124	047111	051040	
7376	055672	041510	030523	000	
7377	055677	123	020103	044502	EM11: .ASCIZ/SC BIT SET BY ATTN OR MCPE ERROR/
7378	055704	020124	042523	020124	
7379	055712	054502	040440	052124	
7380	055720	020116	051117	046440	
7381	055726	050103	020105	051105	
7382	055734	047522	000122		
7383	055740	051440	020103	044504	EM12: .ASCIZ/ SC DID NOT SET/
7384	055746	020104	047516	020124	
7385	055754	042523	000124		
7386	055760	051124	020105	044502	EM13: .ASCIZ/TRE BIT IS SET BUT SC READS AS CLEARED/
7387	055766	020124	051511	051440	
7388	055774	052105	041040	052125	
7389	056002	051440	020103	042522	
7390	056010	042101	020123	051501	
7391	056016	041440	042514	051101	
7392	056024	042105	000		
7393	056027	127	042503	041040	EM14: .ASCIZ/WCE BIT DID NOT SET/
7394	056034	052111	042040	042111	
7395	056042	047040	052117	051440	
7396	056050	052105	000		
7397	056053	127	042503	041040	EM15: .ASCIZ/WCE BIT DID NOT SET/
7398	056060	052111	042040	042111	
7399	056066	047040	052117	051440	
7400	056074	052105	000		
7401	056077	124	042522	041040	EM16: .ASCIZ/TRE BIT NOT SET/
7402	056104	052111	047040	052117	
7403	056112	051440	052105	000	
7404	056117	127	042503	040440	EM17: .ASCIZ/WCE AND TRE ARE SET BUT SC BIT NOT SET/
7405	056124	042116	052040	042522	
7406	056132	040440	042522	051440	
7407	056140	052105	041040	052125	
7408	056146	051440	020103	044502	
7409	056154	020124	047516	020124	
7410	056162	042523	000124		
7411	056166	050125	020105	044504	EM20: .ASCIZ/UPE DID NOT SET IN RHCS2/
7412	056174	020104	047516	020124	

7413	056202	042523	020124	047111	
7414	056210	051040	041510	031123	
7415	056216	000			
7416	056217	124	042522	040440	EM21: .ASCII/TRE AND SC BITS ARE SET/
7417	056224	042116	051440	020103	
7418	056232	044502	051524	040440	
7419	056240	042522	051440	052105	
7420	056246	050125	020105	047101	EM22: .ASCIZ/UPE AND SC BIT DID NOT SET/
7421	056254	020104	041523	041040	
7422	056262	052111	042040	042111	
7423	056270	047040	052117	051440	
7424	056276	052105	000		
7425	056301	123	020103	044502	EM23: .ASCIZ/SC BIT NOT SET/
7426	056306	020124	047516	020124	
7427	056314	042523	000124		
7428	056320	042516	020104	044504	EM24: .ASCIZ/NED DID NOT SET IN RHCS2/
7429	056326	020104	047516	020124	
7430	056334	042523	020124	047111	
7431	056342	051040	041510	031123	
7432	056350	000			
7433	056351	124	042522	040440	EM25: .ASCIZ/TRE AND SC SHOULD NOT SET/
7434	056356	042116	051440	020103	
7435	056364	044123	052517	042114	
7436	056372	047040	052117	051440	
7437	056400	052105	000		
7438	056403	124	042522	051440	EM26: .ASCIZ/TRE SHOULD NOT BE SET/
7439	056410	047510	046125	020104	
7440	056416	047516	020124	042502	
7441	056424	051440	052105	000	
7442	056431	124	042522	041040	EM27: .ASCIZ/TRE BIT WAS NOT SET BY NED/
7443	056436	052111	053440	051501	
7444	056444	047040	052117	051440	
7445	056452	052105	041040	020131	
7446	056460	042516	000104		
7447	056464	054115	020106	044502	EM30: .ASCIZ/MXF BIT DID NOT SET IN RHCS2/
7448	056472	020124	044504	020104	
7449	056500	047516	020124	042523	
7450	056506	020124	047111	051040	
7451	056514	041510	031123	000	
7452	056521	115	043130	041040	EM31: .ASCIZ/MXF BIT SHOULD BE SET IN RHCS2/
7453	056526	052111	051440	047510	
7454	056534	046125	020104	042502	
7455	056542	051440	052105	044440	
7456	056550	020116	044122	051503	
7457	056556	000062			
7458	056560	054115	020106	047101	EM32: .ASCIZ/MXF AND SC ARE NOT SET/
7459	056566	020104	041523	040440	
7460	056574	042522	047040	052117	
7461	056602	051440	052105	000	
7462	056607	124	042522	051040	EM33: .ASCIZ/TRE READS AS CLEARED,MXF AND SC ARE SET/
7463	056614	040505	051504	040440	
7464	056622	020123	046103	040505	
7465	056630	042522	026104	054115	
7466	056636	020106	047101	020104	
7467	056644	041523	040440	042522	
7468	056652	051440	052105	000	

7469	056657	124	051505	042524	EM34:	.ASCIZ/TESTER DOES NOT READ AS BEING CONNECTED/
7470	056664	020122	047504	051505		
7471	056672	047040	052117	051040		
7472	056700	040505	020104	051501		
7473	056706	041040	044505	043516		
7474	056714	041440	047117	042516		
7475	056722	052103	042105	000		
7476	056727	102	052111	044440	EM35:	.ASCIZ/BIT IN RHCS3 WILL NOT SET/
7477	056734	020116	044122	051503		
7478	056742	020063	044527	046114		
7479	056750	047040	052117	051440		
7480	056756	052105	000			
7481	056761	122	020110	044504	EM36:	.ASCIZ/RH DID NOT RESPOND TO ADDRESS/
7482	056766	020104	047516	020124		
7483	056774	042522	050123	047117		
7484	057002	020104	047524	040440		
7485	057010	042104	042522	051523		
7486	057016	000				
7487	057017	104	052114	042040	EM37:	.ASCIZ/DLT DID NOT SET IN RHCS2/
7488	057024	042111	047040	052117		
7489	057032	051440	052105	044440		
7490	057040	020116	044122	051503		
7491	057046	000062				
7492	057050	046104	020124	051511	EM40:	.ASCII/DLT IS NOT SET IN RHCS2,BUT TRE AND SC ARE SET/<15><12>
7493	057056	047040	052117	051440		
7494	057064	052105	044440	020116		
7495	057072	044122	051503	026062		
7496	057100	052502	020124	051124		
7497	057106	020105	047101	020104		
7498	057114	041523	040440	042522		
7499	057122	051440	052105	005015		
7500	057130	051124	020105	047101		.ASCIZ/TRE AND SC COULD HAVE BEEN SET BY ANOTHER ERROR/
7501	057136	020104	041523	041440		
7502	057144	052517	042114	044040		
7503	057152	053101	020105	042502		
7504	057160	047105	051440	052105		
7505	057166	041040	020131	047101		
7506	057174	052117	042510	020122		
7507	057202	051105	047522	000122		
7508	057210	052517	050124	052125	EM41:	.ASCIZ/OUTPUT READY DID NOT SET WHEN INFO WAS LOADED INTO THE DATA BUFFER/
7509	057216	051040	040505	054504		
7510	057224	042040	042111	047040		
7511	057232	052117	051440	052105		
7512	057240	053440	042510	020116		
7513	057246	047111	047506	053440		
7514	057254	051501	046040	040517		
7515	057262	042504	020104	047111		
7516	057270	047524	052040	042510		
7517	057276	042040	052101	020101		
7518	057304	052502	043106	051105		
7519	057312	000				
7520	057313	101	046114	041040	EM42:	.ASCIZ/ALL BITS DID NOT LOAD INTO RHWC (177777)/
7521	057320	052111	020123	044504		
7522	057326	020104	047516	020124		
7523	057334	047514	042101	044440		
7524	057342	052116	020117	044122		

7525	057350	041527	024040	033461
7526	057356	033467	033467	000051
7527	057364	044122	041527	042040
7528	057372	042111	047040	052117
7529	057400	046040	040517	020104
7530	057406	047101	020131	044502
7531	057414	051524	024040	033461
7532	057422	033467	033467	000051
7533	057430	047523	042515	041040
7534	057436	052111	020123	046103
7535	057444	040505	042522	020104
7536	057452	047111	051040	053510
7537	057460	020103	043101	042524
7538	057466	020122	046103	020122
7539	057474	040527	020123	047514
7540	057502	042101	042105	044440
7541	057510	052116	020117	044122
7542	057516	051503	000062	
7543	057522	047516	026516	054105
7544	057530	051511	040524	052116
7545	057536	046440	046505	051117
7546	057544	020131	044502	020124
7547	057552	042523	020124	047111
7548	057560	051040	041510	031123
7549	057566	024040	042516	024515
7550	057574	000		
7551	057575	122	041110	020101
7552	057602	044504	020104	047516
7553	057610	020124	046103	020122
7554	057616	043101	042524	020122
7555	057624	046103	020122	040527
7556	057632	020123	047514	042101
7557	057640	042105	044440	052116
7558	057646	020117	044122	051503
7559	057654	000062		
7560	057656	046101	020114	044502
7561	057664	051524	042040	042111
7562	057672	047040	052117	046040
7563	057700	040517	020104	047111
7564	057706	047524	051040	041110
7565	057714	020101	030450	033467
7566	057722	033467	024466	000
7567	057727	114	040517	044504
7568	057734	043516	052040	042522
7569	057742	040440	052106	051105
7570	057750	044440	051524	051440
7571	057756	052105	042040	042517
7572	057764	020123	047516	020124
7573	057772	046103	040505	020122
7574	060000	051105	047522	000122
7575	060006	043520	020105	044504
7576	060014	020104	047516	020124
7577	060022	042523	020124	047111
7578	060030	051040	041510	031123
7579	060036	000		
7580	060037	124	042510	050040

EM43: .ASCIZ/RHWC DID NOT LOAD ANY BITS (177777)/

EM44: .ASCIZ/SOME BITS CLEARED IN RHWC AFTER CLR WAS LOADED INTO RHCS2/

EM45: .ASCIZ/NON-EXISTANT MEMORY BIT SET IN RHCS2 (NEM)/

EM46: .ASCIZ/RHBA DID NOT CLR AFTER CLR WAS LOADED INTO RHCS2/

EM47: .ASCIZ/ALL BITS DID NOT LOAD INTO RHBA (177776)/

EM50: .ASCIZ/LOADING TRE AFTER ITS SET DOES NOT CLEAR ERROR/

EM51: .ASCIZ/PGE DID NOT SET IN RHCS2/

EM52: .ASCII/THE PROM WHILE ACCESSING A REGISTER/<15><12>



7581	060044	047522	020115	044127
7582	060052	046111	020105	041501
7583	060060	042503	051523	047111
7584	060066	020107	020101	042522
7585	060074	044507	052123	051105
7586	060102	005015		
7587	060104	044127	041511	020110
7588	060112	047531	051125	052040
7589	060120	051505	042524	020122
7590	060126	040503	047116	052117
7591	060134	051440	050125	046120
7592	060142	020131	047111	047506
7593	060150	046522	052101	047511
7594	060156	006516	012	
7595	060161	106	051117	051440
7596	060166	054501	020123	047111
7597	060174	047506	044440	020123
7598	060202	051120	051505	047105
7599	060210	000124		
7600	060212	044122	051503	000061
7601	060220	044122	041527	000
7602	060225	122	041110	000101
7603	060232	044122	051115	000062
7604	060240	044122	051503	000062
7605	060246	044122	052123	000
7606	060253	122	042510	000122
7607	060260	044122	051501	000
7608	060265	122	052110	041104
7609	060272	000		
7610	060273	122	042110	000123
7611	060300	044122	051115	000061
7612	060306	044122	052104	000
7613	060313	122	041110	042501
7614	060320	000		
7615	060321	122	041510	031523
7616	060326	000		
7617	060327	104	053105	041511
7618	060334	020105	052516	041115
7619	060342	051105	044440	020116
7620	060350	044122	051115	020062
7621	060356	047504	051505	047040
7622	060364	052117	042440	052521
7623	060372	046101	040440	033440
7624	060400	043101	042524	020122
7625	060406	020101	046103	040505
7626	060414	000122		
7627	060416	044122	051503	020061
7628	060424	040510	020123	047101
7629	060432	042440	051122	051117
7630	060440	041040	052111	051440
7631	060446	052105	005015	000
7632	060453	105	051122	051117
7633	060460	041040	052111	051440
7634	060466	052105	044440	020116
7635	060474	044122	051503	000062
7636	060502	051105	047522	020122

.ASCII/WHICH YOUR TESTER CANNOT SUPPLY INFORMATION/<15><12>

.ASCIZ/FOR SAYS INFO IS PRESENT/

EM53: .ASCIZ/RHCS1/  
EM54: .ASCIZ/RHWC/  
EM55: .ASCIZ/RHBA/  
EM56: .ASCIZ/RHMR2/  
EM57: .ASCIZ/RHCS2/  
EM60: .ASCIZ/RHST/  
EM61: .ASCIZ/RHER/  
EM62: .ASCIZ/RHAS/  
EM63: .ASCIZ/RHTDB/  
EM64: .ASCIZ/RHDS/  
EM65: .ASCIZ/RHMR1/  
EM66: .ASCIZ/RHDT/  
EM67: .ASCIZ/RHBAE/  
EM70: .ASCIZ/RHCS3/  
EM71: .ASCIZ/DEVICE NUMBER IN RHMR2 DOES NOT EQUAL A 7AFTER A CLEAR/  
EM72: .ASCIZ/RHCS1 HAS AN ERROR BIT SET/<15><12>  
EM73: .ASCIZ/ERROR BIT SET IN RHCS2/  
EM74: .ASCIZ/ERROR BIT SET IN RHER/

7637	060510	044502	020124	042523
7638	060516	020124	047111	051040
7639	060524	042510	000122	
7640	060530	051105	047522	020122
7641	060536	044502	020124	042523
7642	060544	020124	047111	051040
7643	060552	051510	006524	000012
7644	060560	044122	040502	044440
7645	060566	041516	042522	042515
7646	060574	052116	042105	041040
7647	060602	052125	044440	020124
7648	060610	044504	020104	047516
7649	060616	020124	040503	051122
7650	060624	020131	053117	051105
7651	060632	052040	020117	044122
7652	060640	040502	026105	044122
7653	060646	040502	020105	044123
7654	060654	052517	042114	036440
7655	060662	030064	000	
7656	060665	122	054504	042040
7657	060672	042111	047040	052117
7658	060700	051440	052105	040454
7659	060706	042116	053440	051117
7660	060714	020104	047503	047125
7661	060722	020124	044504	020104
7662	060730	047516	020124	047111
7663	060736	051103	046505	047105
7664	060744	006524	012	
7665	060747	104	044517	043516
7666	060754	040440	053440	044522
7667	060762	042524	047440	042520
7668	060770	040522	044524	047117
7669	060776	000		
7670	060777	122	041110	042501
7671	061004	042040	042111	047040
7672	061012	052117	041440	042514
7673	061020	051101	040440	052106
7674	061026	051105	041440	051114
7675	061034	053440	051501	046040
7676	061042	040517	042504	006504
7677	061050	012		
7678	061051	111	052116	020117
7679	061056	044122	051503	000062
7680	061064	051127	052111	020105
7681	061072	042522	042526	051522
7682	061100	020105	050117	051105
7683	061106	052101	047511	020116
7684	061114	044504	020104	047516
7685	061122	020124	047527	045522
7686	061130	000		
7687				
7688	061131	122	054504	042040
7689	061136	042111	047040	052117
7690	061144	051440	052105	044440
7691	061152	020116	044122	051503
7692	061160	000061		

EM75: .ASCIZ/ERROR BIT SET IN RHST/<15><12>

EM76: .ASCIZ/RHBA INCREMENTED BUT IT DID NOT CARRY OVER TO RHBAE,RHBAE SHOULD =40/

EM77: .ASCII/RDY DID NOT SET,AND WORD COUNT DID NOT INCREMENT/<15><12>

.ASCIZ/DOING A WRITE OPERATION/

EM100: .ASCII/RHBAE DID NOT CLEAR AFTER CLR WAS LOADED/<15><12>

.ASCIZ/INTO RHCS2/

EM101: .ASCIZ/WRITE REVERSE OPERATION DID NOT WORK/

EM102: .ASCIZ/RDY DID NOT SET IN RHCS1/

7693	061162	052504	044522	043516
7694	061170	040440	053440	044522
7695	061176	042524	047440	042520
7696	061204	040522	044524	047117
7697	061212	051040	054504	042040
7698	061220	042111	047040	052117
7699	061226	051440	052105	005015
7700	061234	047527	042122	041440
7701	061242	052517	052116	042040
7702	061250	042111	047040	052117
7703	061256	044440	041516	042522
7704	061264	042515	052116	041054
7705	061272	052125	044440	043116
7706	061300	051117	040515	044524
7707	061306	047117	005015	
7708	061312	040527	020123	051127
7709	061320	052111	042524	020116
7710	061326	047524	052040	051505
7711	061334	042524	000122	
7712	061340	052504	044522	043516
7713	061346	040440	053440	044522
7714	061354	042524	047440	042520
7715	061362	040522	044524	047117
7716	061370	051040	054504	042040
7717	061376	042111	047040	052117
7718	061404	051440	052105	005015
7719	061412	047527	042122	041440
7720	061420	052517	052116	042040
7721	061426	042111	047040	052117
7722	061434	044440	041516	042522
7723	061442	042515	052116	040454
7724	061450	042116	044440	043116
7725	061456	051117	040515	044524
7726	061464	047117	005015	
7727	061470	040527	020123	047516
7728	061476	020124	051124	047101
7729	061504	043123	051105	042105
7730	061512	052040	020117	044124
7731	061520	020105	042524	052123
7732	061526	051105	000	
7733	061531	102	042501	044440
7734	061536	020123	042515	051523
7735	061544	042105	052440	026120
7736	061552	052111	051440	047510
7737	061560	046125	020104	050505
7738	061566	040525	020114	030064
7739	061574	000054		
7740	061576	040502	020105	044504
7741	061604	020104	047516	020124
7742	061612	047111	051103	046505
7743	061620	047105	000124	
7744	061624	042522	042101	051040
7745	061632	053105	047440	042520
7746	061640	040522	044524	047117
7747	061646	042040	042111	047040
7748	061654	052117	051040	040505

EM103: .ASCII/DURING A WRITE OPERATION RDY DID NOT SET/<15><12>

.ASCII/WORD COUNT DID NOT INCREMENT,BUT INFORMATION/<15><12>

.ASCIZ/WAS WRITTEN TO TESTER/

EM104: .ASCII/DURING A WRITE OPERATION RDY DID NOT SET/<15><12>

.ASCII/WORD COUNT DID NOT INCREMENT,AND INFORMATION/<15><12>

.ASCIZ/WAS NOT TRANSFERED TO THE TESTER/

EM105: .ASCIZ/BAE IS MESSED UP,IT SHOULD EQUAL 40, /

EM106: .ASCIZ/BAE DID NOT INCREMENT/

EM107: .ASCIZ/READ REV OPERATION DID NOT READ FROM TESTER TO STORAGE LOCATION (RBUF)/

7749	061662	020104	051106	046517	
7750	061670	052040	051505	042524	
7751	061676	020122	047524	051440	
7752	061704	047524	040522	042507	
7753	061712	046040	041517	052101	
7754	061720	047511	020116	051050	
7755	061726	052502	024506	000	
7756	061733	122	041110	042501	EM110: .ASCII/RHBAE EQUALS 0,IT SHOULD EQUAL 40/<15><12>
7757	061740	042440	052521	046101	
7758	061746	020123	026060	052111	
7759	061754	051440	047510	046125	
7760	061762	020104	050505	040525	
7761	061770	020114	030064	005015	
7762	061776	043101	042524	020122	.ASCIZ/AFTER A ONE WORD WRITE/
7763	062004	020101	047117	020105	
7764	062012	047527	042122	053440	
7765	062020	044522	042524	000	
7766	062025	101	033461	042040	EM111: .ASCIZ/A17 DID NOT SET AFTER BA WAS INCREMENTED/<15><12>
7767	062032	042111	047040	052117	
7768	062040	051440	052105	040440	
7769	062046	052106	051105	041040	
7770	062054	020101	040527	020123	
7771	062062	047111	051103	046505	
7772	062070	047105	042524	006504	
7773	062076	000012			
7774	062100	040502	042040	042111	EM112: .ASCIZ/BA DID NOT INCREMENT/
7775	062106	047040	052117	044440	
7776	062114	041516	042522	042515	
7777	062122	052116	000		
7778	062125	102	020101	047111	EM113: .ASCII/BA INCREMENTED BUT IT DID NOT CARRY TO/<15><12>
7779	062132	051103	046505	047105	
7780	062140	042524	020104	052502	
7781	062146	020124	052111	042040	
7782	062154	042111	047040	052117	
7783	062162	041440	051101	054522	
7784	062170	052040	006517	012	
7785	062175	101	033061	040440	.ASCIZ/A16 AND A17 IN RHCS1/
7786	062202	042116	040440	033461	
7787	062210	044440	020116	044122	
7788	062216	051503	000061		
7789	062222	052517	050124	052125	EM114: .ASCII/OUTPUT READY WAS NOT NEGATED AFTER CLR WAS/<15><12>
7790	062230	051040	040505	054504	
7791	062236	053440	051501	047040	
7792	062244	052117	047040	043505	
7793	062252	052101	042105	040440	
7794	062260	052106	051105	041440	
7795	062266	051114	053440	051501	
7796	062274	005015			
7797	062276	047514	042101	042105	.ASCIZ/LOADED INTO RHCS2/
7798	062304	044440	052116	020117	
7799	062312	044122	051503	000062	
7800	062320	046101	020114	044502	EM115: .ASCIZ/ALL BITS DID NOT READ TO STORAGE LOC. (RBUF) DURING A READ REV. OPERATION
7801	062326	051524	042040	042111	
7802	062334	047040	052117	051040	
7803	062342	040505	020104	047524	
7804	062350	051440	047524	040522	

7805	062356	042507	046040	041517	
7806	062364	020056	051050	052502	
7807	062372	024506	042040	051125	
7808	062400	047111	020107	020101	
7809	062406	042522	042101	051040	
7810	062414	053105	020056	050117	
7811	062422	051105	052101	047511	
7812	062430	000116			
7813	062432	042115	042520	042040	EM116: .ASCIZ/MDPE DID NOT SET IN RHCS2/
7814	062440	042111	047040	052117	
7815	062446	051440	052105	044440	
7816	062454	020116	044122	051503	
7817	062462	000062			
7818	062464	047111	047506	042040	EM117: .ASCII/INFO DID NOT WRITE TO TESTER DOING A/<15><12>
7819	062472	042111	047040	052117	
7820	062500	053440	044522	042524	
7821	062506	052040	020117	042524	
7822	062514	052123	051105	042040	
7823	062522	044517	043516	040440	
7824	062530	005015			
7825	062532	051127	052111	020105	.ASCIZ/WRITE REVERSE OPERATION/
7826	062540	042522	042526	051522	
7827	062546	020105	050117	051105	
7828	062554	052101	047511	000116	
7829	062562	051124	020105	047101	EM120: .ASCIZ/TRE AND SC WHERE NOT SET BY MDPE/
7830	062570	020104	041523	053440	
7831	062576	042510	042522	047040	
7832	062604	052117	051440	052105	
7833	062612	041040	020131	042115	
7834	062620	042520	000		
7835	062623	124	042522	044440	EM121: .ASCIZ/TRE IS SET IN RHCS1,MDPE AND SC/
7836	062630	020123	042523	020124	
7837	062636	047111	051040	041510	
7838	062644	030523	046454	050104	
7839	062652	020105	047101	020104	
7840	062660	041523	000		
7841	062663	123	047510	046125	.ASCIZ/SHOULD ALSO BE SET/
7842	062670	020104	046101	047523	
7843	062676	041040	020105	042523	
7844	062704	000124			
7845	062706	042115	042520	040440	EM122: .ASCIZ/MDPE AND SC SHOULD BE SET/
7846	062714	042116	051440	020103	
7847	062722	044123	052517	042114	
7848	062730	041040	020105	042523	
7849	062736	000124			
7850	062740	051124	020105	047101	EM123: .ASCIZ/TRE AND SC ARE SET, PGE SHOULD ALSO BE SET/
7851	062746	020104	041523	040440	
7852	062754	042522	051440	052105	
7853	062762	020054	043520	020105	
7854	062770	044123	052517	042114	
7855	062776	040440	051514	020117	
7856	063004	042502	051440	052105	
7857	063012	000			
7858	063013	104	046102	042040	EM124: .ASCII/DBL DID NOT SET AFTER A 4 WORD WRITE FROM/<15><12>
7859	063020	042111	047040	052117	
7860	063026	051440	052105	040440	

7861	063034	052106	051105	040440
7862	063042	032040	053440	051117
7863	063050	020104	051127	052111
7864	063056	020105	051106	046517
7865	063064	005015		
7866	063066	047101	042440	042526
7867	063074	020116	042101	051104
7868	063102	051505	000123	
7869	063106	041104	020114	042523
7870	063114	020124	047111	051040
7871	063122	041510	031523	042040
7872	063130	044517	043516	040440
7873	063136	030440	053440	051117
7874	063144	020104	051127	052111
7875	063152	020105	051106	046517
7876	063160	005015		
7877	063162	047101	042440	042526
7878	063170	020116	042101	051104
7879	063176	051505	000123	
7880	063202	041104	020114	042523
7881	063210	020124	047111	051040
7882	063216	041510	031523	047440
7883	063224	020116	020101	020063
7884	063232	047527	042122	053440
7885	063240	044522	042524	043040
7886	063246	047522	006515	012
7887	063253	101	020116	053105
7888	063260	047105	040440	042104
7889	063266	042522	051523	000
7890	063273	104	046102	042040
7891	063300	042111	047040	052117
7892	063306	051440	052105	044440
7893	063314	020116	044122	051503
7894	063322	020063	043101	042524
7895	063330	020122	020101	020062
7896	063336	047527	042122	005015
7897	063344	051106	046517	040440
7898	063352	020116	053105	047105
7899	063360	040440	042104	042522
7900	063366	051523	000	
7901	063371	115	050103	020105
7902	063376	042523	020124	047111
7903	063404	051040	041510	030523
7904	063412	041040	052125	051440
7905	063420	020103	042522	042101
7906	063426	020123	051501	041440
7907	063434	042514	051101	042105
7908	063442	000		
7909	063443	115	050103	020105
7910	063450	044504	020104	047516
7911	063456	020124	042523	020124
7912	063464	047111	051040	041510
7913	063472	030523	000	
7914	063475	127	042503	046040
7915	063502	020117	047111	051040
7916	063510	041510	031523	042040

.ASCIZ/AN EVEN ADDRESS/

EM125: .ASCII/DBL SET IN RHCS3 DOING A 1 WORD WRITE FROM/<15><12>

.ASCIZ/AN EVEN ADDRESS/

EM126: .ASCII/DBL SET IN RHCS3 ON A 3 WORD WRITE FROM/<15><12>

.ASCIZ/AN EVEN ADDRESS/

EM127: .ASCII/DBL DID NOT SET IN RHCS3 AFTER A 2 WORD/<15><12>

.ASCIZ/FROM AN EVEN ADDRESS/

EM130: .ASCIZ/MCPE SET IN RHCS1 BUT SC READS AS CLEARED/

EM131: .ASCIZ/MCPE DID NOT SET IN RHCS1/

EM132: .ASCIZ/WCE LO IN RHCS3 DID NOT SET/

7917	063516	042111	047040	052117
7918	063524	051440	052105	000
7919	063531	127	042503	046040
7920	063536	020117	044123	052517
7921	063544	042114	047440	046116
7922	063552	020131	042502	051440
7923	063560	052105	044440	020116
7924	063566	044122	051503	020063
7925	063574	052502	006524	012
7926	063601	127	042503	044040
7927	063606	020111	046101	047523
7928	063614	051040	040505	051504
7929	063622	040440	020123	042523
7930	063630	000124		
7931	063632	041527	020105	047514
7932	063640	051440	052105	044440
7933	063646	020116	044122	051503
7934	063654	020063	052502	020124
7935	063662	041527	020105	044504
7936	063670	020104	047516	020124
7937	063676	042523	020124	047111
7938	063704	051040	041510	031123
7939	063712	000		
7940	063713	127	042503	044040
7941	063720	020111	044504	020104
7942	063726	047516	020124	042523
7943	063734	020124	047111	051040
7944	063742	041510	031523	000
7945	063747	127	042503	044040
7946	063754	020111	042523	020124
7947	063762	047111	051040	041510
7948	063770	031523	041040	052125
7949	063776	053440	042503	042040
7950	064004	042111	047040	052117
7951	064012	051440	052105	044440
7952	064020	020116	044122	051503
7953	064026	000062		
7954	064030	041527	020105	044510
7955	064036	051440	047510	046125
7956	064044	020104	047117	054514
7957	064052	041040	020105	042523
7958	064060	020124	047111	051040
7959	064066	041510	031523	041040
7960	064074	052125	005015	
7961	064100	041527	020105	047514
7962	064106	040440	051514	020117
7963	064114	042522	042101	020123
7964	064122	051501	051440	052105
7965	064130	000		
7966	064131	127	044522	042524
7967	064136	047440	042520	040522
7968	064144	044524	047117	042040
7969	064152	042111	047040	052117
7970	064160	044440	041516	042522
7971	064166	042515	052116	053440
7972	064174	051117	020104	047503

EM133: .ASCII/WCE LO SHOULD ONLY BE SET IN RHCS3 BUT/<15><12>

.ASCIZ/WCE HI ALSO READS AS SET/

EM134: .ASCIZ/WCE LO SET IN RHCS3 BUT WCE DID NOT SET IN RHCS2/

EM135: .ASCIZ/WCE HI DID NOT SET IN RHCS3/

EM136: .ASCIZ/WCE HI SET IN RHCS3 BUT WCE DID NOT SET IN RHCS2/

EM137: .ASCII/WCE HI SHOULD ONLY BE SET IN RHCS3 BUT/<15><12>

.ASCIZ/WCE LG ALSO READS AS SET/

EM140: .ASCIZ/WRITE OPERATION DID NOT INCREMENT WORD COUNT/

7973	064202	047125	000124		
7974	064206	052502	020123	042101	EM141: .ASCIZ/BUS ADDRESS DID NOT INCREMENT AFTER A WRITE/
7975	064214	051104	051505	020123	
7976	064222	044504	020104	047516	
7977	064230	020124	047111	051103	
7978	064236	046505	047105	020124	
7979	064244	043101	042524	020122	
7980	064252	020101	051127	052111	
7981	064260	000105			
7982	064262	047111	047506	046522	EM142: .ASCIZ/INFORMATION DID NOT GET WRITTEN TO TESTER/
7983	064270	052101	047511	020116	
7984	064276	044504	020104	047516	
7985	064304	020124	042507	020124	
7986	064312	051127	052111	042524	
7987	064320	020116	047524	052040	
7988	064326	051505	042524	000122	
7989	064334	042522	042101	047440	EM143: .ASCIZ/READ OPERATION DID NOT INCREMENT WORD COUNT/
7990	064342	042520	040522	044524	
7991	064350	047117	042040	042111	
7992	064356	047040	052117	044440	
7993	064364	041516	042522	042515	
7994	064372	052116	053440	051117	
7995	064400	020104	047503	047125	
7996	064406	000124			
7997	064410	052502	020123	042101	EM144: .ASCII/BUS ADDRESS DID NOT INCREMENT AFTER A READ/<15><12>
7998	064416	051104	051505	020123	
7999	064424	044504	020104	047516	
8000	064432	020124	047111	051103	
8001	064440	046505	047105	020124	
8002	064446	043101	042524	020122	
8003	064454	020101	042522	042101	
8004	064462	005015			
8005	064464	050117	051105	052101	.ASCIZ/OPERATION/
8006	064472	047511	000116		
8007	064476	047111	047506	046522	EM145: .ASCIZ/INFORMATION DID NOT READ FROM TESTER/
8008	064504	052101	047511	020116	
8009	064512	044504	020104	047516	
8010	064520	020124	042522	042101	
8011	064526	043040	047522	020115	
8012	064534	042524	052123	051105	
8013	064542	000			
8014	064543	124	044510	020123	EM146: .ASCIZ/THIS IS THE CONTENTS OF THE RH REGISTERS/
8015	064550	051511	052040	042510	
8016	064556	041440	047117	042524	
8017	064564	052116	020123	043117	
8018	064572	052040	042510	051040	
8019	064600	020110	042522	044507	
8020	064606	052123	051105	000123	
8021	064614	046101	020114	044502	EM147: .ASCII/ALL BITS DID NOT GET TRANSFERED DURING A/<15><12>
8022	064622	051524	042040	042111	
8023	064630	047040	052117	043440	
8024	064636	052105	052040	040522	
8025	064644	051516	042506	042522	
8026	064652	020104	052504	044522	
8027	064660	043516	040440	005015	
8028	064666	042522	042101	047440	.ASCIZ/READ OPERATION/



8029	064674	042520	040522	044524
8030	064702	047117	000	
8031	064705	122	040505	020104
8032	064712	050117	051105	052101
8033	064720	047511	020116	044504
8034	064726	020104	047516	020124
8035	064734	042523	046505	052040
8036	064742	020117	047527	045522
8037	064750	047054	020117	005015
8038	064756	047111	047506	046522
8039	064764	052101	047511	020116
8040	064772	040527	020123	051124
8041	065000	047101	043123	051105
8042	065006	042105	052040	020117
8043	065014	052123	051117	043501
8044	065022	020105	047514	027103
8045	065030	051050	052502	024506
8046	065036	000		
8047	065037	101	046114	041040
8048	065044	052111	020123	044127
8049	065052	051105	020105	047516
8050	065060	020124	051124	047101
8051	065066	043123	051105	042105
8052	065074	052040	020117	042524
8053	065102	052123	051105	005015
8054	065110	052504	044522	043516
8055	065116	040440	053440	044522
8056	065124	042524	047440	042520
8057	065132	040522	044524	047117
8058	065140	000		
8059	065141	127	044522	042524
8060	065146	047440	042520	040522
8061	065154	044524	047117	042040
8062	065162	042111	047040	052117
8063	065170	053440	044522	042524
8064	065176	052040	020117	042524
8065	065204	052123	051105	000
8066	065211	104	046102	051440
8067	065216	052105	047440	020116
8068	065224	020101	020062	047527
8069	065232	042122	052040	040522
8070	065240	051516	042506	020122
8071	065246	044527	044124	041040
8072	065254	044501	005015	
8073	065260	042523	020124	047111
8074	065266	051040	041510	031123
8075	065274	000		
8076	065275	104	046102	051440
8077	065302	052105	044440	020116
8078	065310	044122	051503	020063
8079	065316	047117	040440	030440
8080	065324	053440	051117	020104
8081	065332	042522	042101	043040
8082	065340	047522	006515	000012
8083	065346	047101	042440	042526
8084	065354	020116	042101	051104

EM150: .ASCII/READ OPERATION DID NOT SEEM TO WORK,NO /<15><12>

.ASCIZ/INFORMATION WAS TRANSFERED TO STORAGE LOC.(RBUF)/

EM151: .ASCII/ALL BITS WHERE NOT TRANSFERED TO TESTER/<15><12>

.ASCIZ/DURING A WRITE OPERATION/

EM152: .ASCIZ/WRITE OPERATION DID NOT WRITE TO TESTER/

EM153: .ASCII/DBL SET ON A 2 WORD TRANSFER WITH BAI/<15><12>

.ASCIZ/SET IN RHCS2/

EM154: .ASCIZ/DBL SET IN RHCS3 ON A 1 WORD READ FROM/<15><12>

.ASCIZ/AN EVEN ADDRESS/

8085	065362	051505	000123		
8086	065366	041104	020114	042523	EM155: .ASCII/DBL SET ON A 2 WORD WRITE REV. WITH BAI SET/<15><12>
8087	065374	020124	047117	040440	
8088	065402	031040	053440	051117	
8089	065410	020104	051127	052111	
8090	065416	020105	042522	027126	
<hr/>					
8091	065424	053440	052111	020110	
8092	065432	040502	020111	042523	
8093	065440	006524	012		
8094	065443	111	020116	044122	.ASCIZ/IN RHCS2/
8095	065450	051503	000062		
8096	065454	041104	020114	042523	EM156: .ASCII/DBL SET ON A 2 WORD TRANSFER(WRITE)/<15><12>
8097	065462	020124	047117	040440	
8098	065470	031040	053440	051117	
8099	065476	020104	051124	047101	
8100	065504	043123	051105	053450	
8101	065512	044522	042524	006451	
8102	065520	012			
8103	065521	106	047522	020115	.ASCIZ/FROM AN ODD ADDRESS/
8104	065526	047101	047440	042104	
8105	065534	040440	042104	042522	
8106	065542	051523	000		
8107	065545	104	046102	042040	EM157: .ASCII/DBL DID NOT SET ON A 2 WORD WRITE REV.FROM AN EVEN/<15><12>
8108	065552	042111	047040	052117	
8109	065560	051440	052105	047440	
8110	065566	020116	020101	020062	
8111	065574	047527	042122	053440	
8112	065602	044522	042524	051040	
8113	065610	053105	043056	047522	
8114	065616	020115	047101	042440	
8115	065624	042526	006516	012	
8116	065631	101	042104	042522	.ASCIZ/ADDRESS/
8117	065636	051523	000		
8118	065641	104	046102	051440	EM160: .ASCII/DBL SET ON A 2 WORD WRITE REVERSE/<15><12>
8119	065646	052105	047440	020116	
8120	065654	020101	020062	047527	
8121	065662	042122	053440	044522	
8122	065670	042524	051040	053105	
8123	065676	051105	042523	005015	
8124	065704	051106	046517	040440	.ASCIZ/FROM AN ODD ADDRESS/
8125	065712	020116	042117	020104	
8126	065720	042101	051104	051505	
8127	065726	000123			
8128	065730	041104	020114	042523	EM161: .ASCII/DBL SET ON A 3 WORD WRITE REVERSE/<15><12>
8129	065736	020124	047117	040440	
8130	065744	031440	053440	051117	
8131	065752	020104	051127	052111	
8132	065760	020105	042522	042526	
8133	065766	051522	006505	012	
8134	065773	106	047522	020115	.ASCIZ/FROM AN ODD ADDRESS/
8135	066000	047101	047440	042104	
8136	066006	040440	042104	042522	
8137	066014	051523	000		
8138	066017	104	046102	042040	EM162: .ASCII/DBL DID NOT SET ON A 2 WORD READ FROM AN/<15><12>
8139	066024	042111	047040	052117	
8140	066032	051440	052105	047440	

8141	066040	020116	020101	020062	
8142	066046	047527	042122	051040	
8143	066054	040505	020104	051106	
8144	066062	046517	040440	006516	
8145	066070	012			
8146	066071	105	042526	020116	.ASCIZ/EVEN ADDRESS/
8147	066076	042101	051104	051505	
8148	066104	000123			
8149	066106	041104	020114	042523	EM163: .ASCII/DBL SET ON A 2 WORD READ FROM/<15><12>
8150	066114	020124	047117	040440	
8151	066122	031040	053440	051117	
8152	066130	020104	042522	042101	
8153	066136	043040	047522	006515	
8154	066144	012			
8155	066145	101	020116	042117	.ASCIZ/AN ODD ADDRESS/
8156	066152	020104	042101	051104	
8157	066160	051505	000123		
8158	066164	041104	020114	042523	EM164: .ASCII/DBL SET ON A 2 WORD READ REVERSE/<15><12>
8159	066172	020124	047117	040440	
8160	066200	031040	053440	051117	
8161	066206	020104	042522	042101	
8162	066214	051040	053105	051105	
8163	066222	042523	005015		
8164	066226	051106	046517	040440	.ASCIZ/FROM AN EVEN ADDRESS/
8165	066234	020116	053105	047105	
8166	066242	040440	042104	042522	
8167	066250	051523	000		
8168	066253	104	046102	042040	EM165: .ASCII/DBL DID NOT SET ON A 2 WORD READ REVERSE/<15><12>
8169	066260	042111	047040	052117	
8170	066266	051440	052105	047440	
8171	066274	020116	020101	020062	
8172	066302	047527	042122	051040	
8173	066310	040505	020104	042522	
8174	066316	042526	051522	006505	
8175	066324	012			
8176	066325	106	047522	020115	.ASCIZ/FROM AN ODD ADDRESS/
8177	066332	047101	047440	042104	
8178	066340	040440	042104	042522	
8179	066346	051523	000		
8180	066351	104	046102	051440	EM166: .ASCII/DBL SET ON A 3 WORD READ FROM/<15><12>
8181	066356	052105	047440	020116	
8182	066364	020101	020063	047527	
8183	066372	042122	051040	040505	
8184	066400	020104	051106	046517	
8185	066406	005015			
8186	066410	047101	042440	042526	.ASCIZ/AN EVEN ADDRESS/
8187	066416	020116	042101	051104	
8188	066424	051505	000123		
8189	066430	041104	020114	044504	EM167: .ASCII/DBL DID NOT SET ON A 3 WORD READ REVERSE/<15><12>
8190	066436	020104	047516	020124	
8191	066444	042523	020124	047117	
8192	066452	040440	031440	053440	
8193	066460	051117	020104	042522	
8194	066466	042101	051040	053105	
8195	066474	051105	042523	005015	
8196	066502	051106	046517	040440	.ASCIZ/FROM AN EVEN ADDRESS/

8197	066510	020116	053105	047105	
8198	066516	040440	042104	042522	
8199	066524	051523	000		
8200	066527	124	042522	051040	EM171: .ASCIZ/TRE READS AS SET PGE AND SC SHOULD BE SET/
8201	066534	040505	051504	040440	
8202	066542	020123	042523	020124	
8203	066550	043520	020105	047101	
8204	066556	020104	041523	051440	
8205	066564	047510	046125	020104	
8206	066572	042502	051440	052105	
8207	066600	000			
8208	066601	123	020103	044123	EM172: .ASCIZ/SC SHOULD BE SET/
8209	066606	052517	042114	041040	
8210	066614	020105	042523	000124	
8211	066622	042122	020131	047111	EM173: .ASCIZ/RDY IN RHCS1 DID NOT CAUSE AN INTERRUPT WITH IE SET/
8212	066630	051040	041510	030523	
8213	066636	042040	042111	047040	
8214	066644	052117	041440	052501	
8215	066652	042523	040440	020116	
8216	066660	047111	042524	051122	
8217	066666	050125	020124	044527	
8218	066674	044124	044440	020105	
8219	066702	042523	000124		
8220	066706	042511	053440	046111	EM174: .ASCIZ/IE WILL NOT SET IN RHCS1/
8221	066714	020114	047516	020124	
8222	066722	042523	020124	047111	
8223	066730	051040	041510	030523	
8224	066736	000			
8225	066737	111	020105	040510	EM175: .ASCIZ/IE HAS AN OPEN GOING TO THE BUS/
8226	066744	020123	047101	047440	
8227	066752	042520	020116	047507	
8228	066760	047111	020107	047524	
8229	066766	052040	042510	041040	
8230	066774	051525	000		
8231	066777	122	041510	031523	EM176: .ASCIZ/RHCS3 HAS AN ERROR BIT SET/
8232	067004	044040	051501	040440	
8233	067012	020116	051105	047522	
8234	067020	020122	044502	020124	
8235	067026	042523	000124		
8236	067032	046104	020124	047101	EM177: .ASCIZ/DLT AND TRE ARE SET,SC SHOULD BE SET/
8237	067040	020104	051124	020105	
8238	067046	051101	020105	042523	
8239	067054	026124	041523	051440	
8240	067062	047510	046125	020104	
8241	067070	042502	051440	052105	
8242	067076	000			
8243	067077	110	041111	052131	EM200: .ASCIZ/HIBYTE ,LOBYTE GATE FOR RHWC NOT WORKING PROPERLY/
8244	067104	020105	046054	041117	
8245	067112	052131	020105	040507	
8246	067120	042524	043040	051117	
8247	067126	051040	053510	020103	
8248	067134	047516	020124	047527	
8249	067142	045522	047111	020107	
8250	067150	051120	050117	051105	
8251	067156	054514	000		
8252	067161	110	041111	052131	EM201: .ASCIZ/HIBYTE ,LOBYTE GATE FOR RHDB NOT WORKING PROPERLY/

8253	067166	020105	046054	041117
8254	067174	052131	020105	040507
8255	067202	042524	043040	051117
8256	067210	051040	042110	020102
8257	067216	047516	020124	047527
8258	067224	045522	047111	020107
8259	067232	051120	050117	051105
8260	067240	054514	000	
8261	067243	110	041111	052131
8262	067250	020105	046054	041117
8263	067256	052131	020105	040507
8264	067264	042524	043040	051117
8265	067272	051040	041110	020101
8266	067300	047516	020124	047527
8267	067306	045522	047111	020107
8268	067314	051120	050117	051105
8269	067322	054514	000	
8270	067325	124	042510	041040
8271	067332	051525	040440	042104
8272	067340	042522	051523	044440
8273	067346	020123	047111	047503
8274	067354	051122	041505	020124
8275	067362	052111	051440	047510
8276	067370	046125	020104	042502
8277	067376	030440	030065	030060
8278	067404	000		
8279	067405	124	051505	042524
8280	067412	020122	040504	040524
8281	067420	041040	043125	042506
8282	067426	020122	047504	051505
8283	067434	047040	052117	041440
8284	067442	047117	040524	047111
8285	067450	052040	042510	041440
8286	067456	051117	042522	052103
8287	067464	044440	043116	000117
8288	067472	044122	042040	042111
8289	067500	047040	052117	044440
8290	067506	052116	051105	050125
8291	067514	020124	047514	045517
8292	067522	040440	020124	051503
8293	067530	020061	047524	051440
8294	067536	042505	044440	020106
8295	067544	042511	044440	020123
8296	067552	042523	000124	
8297	067556	044122	041527	051440
8298	067564	047510	046125	020104
8299	067572	042502	055040	051105
8300	067600	000117		
8301				
8302	067602	051124	047101	043123
8303	067610	051105	053440	051501
8304	067616	042040	047117	020105
8305	067624	047117	050040	051117
8306	067632	020124	000102	
8307	067636	041520	020040	020040
8308	067644	020040	042524	052123

EM202: .ASCIZ/HIBYTE ,LOBYTE GATE FOR RHBA NOT WORKING PROPERLY/

EM203: .ASCIZ/THE BUS ADDRESS IS INCORRECT IT SHOULD BE 15000/

EM204: .ASCIZ/TESTER DATA BUFFER DOES NOT CONTAIN THE CORRECT INFO/

EM205: .ASCIZ/RH DID NOT INTERRUPT LOOK AT CS1 TO SEE IF IE IS SET/

EM206: .ASCIZ/RHWC SHOULD BE ZERO/

EM207: .ASCIZ/TRANSFER WAS DONE ON PORT B/

DH1: .ASCII/PC TEST RHWC CONTENTS RHWC/<15><12>

8309	067652	020040	020040	044122				
8310	067660	041527	020040	020040				
8311	067666	047503	052116	047105				
8312	067674	051524	051040	053510				
8313	067702	006503	012					
8314	067705	040	020040	020040		.ASCIZ/	NO.	SHOULD HAVE BEEN/
8315	067712	020040	047040	027117				
8316	067720	020040	020040	020040				
8317	067726	020040	020040	020040				
8318	067734	051440	047510	046125				
8319	067742	020104	040510	042526				
8320	067750	041040	042505	000116				
8321	067756	041520	020040	020040	DH2:	.ASCII/PC	TEST	RHBAE CONTENTS RHBAE/<15><12>
8322	067764	020040	042524	052123				
8323	067772	020040	020040	044122				
8324	070000	040502	020105	020040				
8325	070006	047503	052116	047105				
8326	070014	051524	051040	041110				
8327	070022	042501	005015					
8328	070026	020040	020040	020040		.ASCIZ/	NO.	SHOULD HAVE BEEN/
8329	070034	020040	047516	020056				
8330	070042	020040	020040	020040				
8331	070050	020040	020040	020040				
8332	070056	044123	052517	042114				
8333	070064	044040	053101	020105				
8334	070072	042502	047105	000				
8335	070077	120	020103	020040	DH3:	.ASCII/PC	TEST	RHBA CONTENTS RHBA/<15><12>
8336	070104	020040	052040	051505				
8337	070112	020124	020040	051040				
8338	070120	041110	020101	020040				
8339	070126	041440	047117	042524				
8340	070134	052116	020123	044122				
8341	070142	040502	005015					
8342	070146	020040	020040	020040		.ASCIZ/	NO.	SHOULD HAVE BEEN/
8343	070154	020040	047516	020056				
8344	070162	020040	020040	020040				
8345	070170	020040	020040	020040				
8346	070176	044123	052517	042114				
8347	070204	044040	053101	020105				
8348	070212	042502	047105	000				
8349	070217	120	020103	020040	DH4:	.ASCII/PC	TEST	RHDB CONTENTS RHDB/<15><12>
8350	070224	020040	052040	051505				
8351	070232	020124	020040	051040				
8352	070240	042110	020102	020040				
8353	070246	041440	047117	042524				
8354	070254	052116	020123	044122				
8355	070262	041104	005015					
8356	070266	020040	020040	020040		.ASCIZ/	NO.	SHOULD HAVE BEEN/
8357	070274	020040	047516	020056				
8358	070302	020040	020040	020040				
8359	070310	020040	020040	020040				
8360	070316	044123	052517	042114				
8361	070324	044040	053101	020105				
8362	070332	042502	047105	000				
8363	070337	120	020103	020040	DH5:	.ASCII/PC	TEST	RHCS2 TRE AND SC/<15><12>
8364	070344	020040	052040	051505				

8365	070352	020124	020040	051040					
8366	070360	041510	031123	020040					
8367	070366	052040	042522	040440					
8368	070374	042116	051440	006503					
8369	070402	012							
8370	070403	040	020040	020040		.ASCIZ/	NO.		BITS/
8371	070410	020040	047040	027117					
8372	070416	020040	020040	020040					
8373	070424	020040	020040	020040					
8374	070432	020040	020040	041040					
8375	070440	052111	000123						
8376	070444	041520	020040	020040	DH11:	.ASCII/PC	TEST	CONTENTS OF/<15><12>	
8377	070452	020040	042524	052123					
8378	070460	020040	020040	047503					
8379	070466	052116	047105	051524					
8380	070474	047440	006506	012					
8381	070501	040	020040	020040		.ASCIZ/	NO.		RHCS2/
8382	070506	020040	047040	027117					
8383	070514	020040	020040	020040					
8384	070522	020040	044122	051503					
8385	070530	000062							
8386	070532	041520	020040	020040	DH34:	.ASCII/PC	TEST	DEVICE/<15><12>	
8387	070540	020040	042524	052123					
8388	070546	020040	020040	042504					
8389	070554	044526	042503	005015					
8390	070562	020040	020040	020040		.ASCIZ/	NO.		CODE/
8391	070570	020040	047516	020056					
8392	070576	020040	020040	047503					
8393	070604	042504	000						
8394	070607	120	000103		DH35:	.ASCIZ/PC/			
8395	070612	041520	020040	020040	DH36:	.ASCII/PC	TEST	FAILING/<15><12>	
8396	070620	020040	042524	052123					
8397	070626	020040	020040	040506					
8398	070634	046111	047111	006507					
8399	070642	012							
8400	070643	040	020040	020040		.ASCIZ/	NO.		ADDRESS/
8401	070650	020040	047040	027117					
8402	070656	020040	020040	040440					
8403	070664	042104	042522	051523					
8404	070672	000							
8405	070673	120	020103	020040	DH41:	.ASCIZ/PC		TEST NUMBER/	
8406	070700	020040	052040	051505					
8407	070706	020124	052516	041115					
8408	070714	051105	000						
8409	070717	120	020103	020040	DH52:	.ASCII/PC	TEST	ADDRESS DATA	RHAS/<15><12>
8410	070724	020040	052040	051505					
8411	070732	020124	020040	040440					
8412	070740	042104	042522	051523					
8413	070746	020040	040504	040524					
8414	070754	020040	051040	040510					
8415	070762	006523	012						
8416	070765	040	020040	020040		.ASCIZ/	NO.		CONTENTS/
8417	070772	020040	047040	027117					
8418	071000	020040	020040	041440					
8419	071006	047117	042524	052116					
8420	071014	000123							

8421	071016	041520	020040	020040	DH71:	.ASCII/PC	TEST	DEVICE/<15><12>
8422	071024	020040	042524	052123				
8423	071032	020040	020040	042504				
8424	071040	044526	042503	005015				
8425	071046	020040	020040	020040		.ASCIZ/	NO.	NUMBER/
8426	071054	020040	047516	020056				
8427	071062	020040	020040	052516				
8428	071070	041115	051105	000				
8429	071075	120	020103	020040	DH72:	.ASCII/PC	TEST	CONTENTS JF/<15><12>
8430	071102	020040	052040	051505				
8431	071110	020124	020040	041440				
8432	071116	047117	042524	052116				
8433	071124	020123	043117	005015				
8434	071132	020040	020040	020040		.ASCIZ/	NO.	REGISTER/
8435	071140	020040	047516	020056				
8436	071146	020040	020040	051040				
8437	071154	043505	051511	042524				
8438	071162	000122						
8439	071164	041520	020040	020040	DH76:	.ASCIZ/PC	TEST NO.	RHBAE RHBA/
8440	071172	052040	051505	020124				
8441	071200	047516	020056	051040				
8442	071206	041110	042501	020040				
8443	071214	051040	041110	000101				
8444	071222	041520	020040	020040	DH105:	.ASCIZ/PC	TEST NO.	RHBAE RHBA RHWC/
8445	071230	052040	051505	020124				
8446	071236	047516	020056	044122				
8447	071244	040502	020105	020040				
8448	071252	044122	040502	020040				
8449	071260	020040	044122	041527				
8450	071266	000						
8451	071267	120	020103	020040	DH111:	.ASCIZ/PC	TEST NO.	RHCS1 RHBA RHWC/
8452	071274	020040	042524	052123				
8453	071302	047040	027117	051040				
8454	071310	041510	030523	020040				
8455	071316	051040	041110	020101				
8456	071324	020040	051040	053510				
8457	071332	000103						
8458	071334	041520	020040	020040	DH121:	.ASCIZ/PC	TEST NO.	RHCS1 RHCS2/
8459	071342	052040	051505	020124				
8460	071350	047516	020056	044122				
8461	071356	051503	020061	020040				
8462	071364	044122	051503	000062				
8463	071372	041520	020040	020040	DH130:	.ASCIZ/PC	TEST NO.	RHCS1/
8464	071400	052040	051505	020124				
8465	071406	047516	020056	044122				
8466	071414	051503	000061					
8467	071420	041520	020040	020040	DH132:	.ASCIZ/PC	TEST NO.	RHBAE RHBA RHCS2 RHCS3/
8468	071426	052040	051505	020124				
8469	071434	047516	020056	044122				
8470	071442	040502	020105	020040				
8471	071450	044122	040502	020040				
8472	071456	020040	044122	051503				
8473	071464	020062	020040	044122				
8474	071472	051503	000063					
8475	071476	041520	020040	020040	DH142:	.ASCIZ/PC	TEST NO.	EVENAD RHTDB/
8476	071504	052040	051505	020124				



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

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

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

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MASSBUS RH70 AND RH11 DIAGNOSTIC  
CZRHF.P11 26-JUL-79 10:13

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END OF PASS ROUTINE

SEQ 0163

8645	072624	054366
8646	072626	054435
8647	072630	054511
8648	072632	054557
8649	072634	054633
8650	072636	054702
8651	072640	054756
8652	072642	055024

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072644  
072644 104407  
072646 032777 040000 106264  
072654 001111  
  
072656 000416  
  
072660 013746 000004  
072664 012737 072704 000004  
072672 005737 177060  
072676 012637 000004  
072702 000463  
072704 022626  
072706 012637 000004  
072712 000423  
072714  
072714 032777 000400 106216  
072722 001404  
072724 127737 106210 001102  
072732 001462  
072734 105737 001103  
072740 001421  
072742 123737 001115 001103  
072750 101015  
072752 032777 001000 106160  
072760 001404  
072762 013737 001110 001106  
072770 000443  
072772 105037 001103  
072776 005037 001212  
073002 000415  
073004 032777 004000 106126  
073012 001011  
073014 005737 001100  
073020 001406  
073022 005237 001104  
073026 023737 001212 001104  
073034 002021  
073036 012737 000001 001104  
073044 013737 073114 001212  
073052 105237 001102  
073056 011637 001106

.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
    
```

```

$SCOPE:
1$:      CKSWR          ;;TEST FOR CHANGE IN SOFT-SWR
        BIT          #BIT14,@SWR      ;;LOOP ON PRESENT TEST?
        BNE          $OVER            ;;YES IF SW14=1
        #####START OF CODE FOR THE XOR TESTER#####
$XTSTR:  BR          6$
        MOV          @#ERRVEC,-(SP)    ;;IF RUNNING ON THE 'XOR' TESTER CHANGE
        MOV          #5$,@#ERRVEC     ;;THIS INSTRUCTION TO A 'NOP' (NOP=240)
        TST          @#177060         ;;SAVE THE CONTENTS OF THE ERROR VECTOR
        MOV          (SP)+,@#ERRVEC   ;;SET FOR TIMEOUT
        BR          $SVLAD            ;;TIME OUT ON XOR?
        BR          $SVLAD            ;;RESTORE THE ERROR VECTOR
5$:      CMP          (SP)+,(SP)+     ;;GO TO THE NEXT TEST
        MOV          (SP)+,@#ERRVEC   ;;CLEAR THE STACK AFTER A TIME OUT
        BR          7$              ;;RESTORE THE ERROR VECTOR
        #####END OF CODE FOR THE XOR TESTER#####
6$:      BIT          #BIT08,@SWR     ;;LOOP ON SPEC. TEST?
        BEQ          2$              ;;BR IF NO
        CMPB        @SWR,$TSTNM      ;;ON THE RIGHT TEST? SWR<7:0>
        BEQ          $OVER            ;;BR IF YES
        TSTB        $ERFLG          ;;HAS AN ERROR OCCURRED?
        BEQ          3$              ;;BR IF NO
        CMPB        $ERMAX,$ERFLG    ;;MAX. ERRORS FOR THIS TEST OCCURRED?
        BHI          3$              ;;BR IF NO
        BIT          #BIT09,@SWR     ;;LOOP ON ERROR?
        BEQ          4$              ;;BR IF NO
7$:      MOV          $LPERR,$LPADR   ;;SET LOOP ADDRESS TO LAST SCOPE
        BR          $OVER
4$:      CLRB        $ERFLG          ;;ZERO THE ERROR FLAG
        CLR          $TIMES          ;;CLEAR THE NUMBER OF ITERATIONS TO MAKE
        BR          1$              ;;ESCAPE TO THE NEXT TEST
3$:      BIT          #BIT11,@SWR     ;;INHIBIT ITERATIONS?
        BNE          1$              ;;BR IF YES
        TST          $PASS          ;;IF FIRST PASS OF PROGRAM
        BEQ          1$              ;;INHIBIT ITERATIONS
        INC          $ICNT          ;;INCREMENT ITERATION COUNT
        CMP          $TIMES,$ICNT    ;;CHECK THE NUMBER OF ITERATIONS MADE
        BGE          $OVER            ;;BR IF MORE ITERATION REQUIRED
1$:      MOV          #1,$ICNT        ;;REINITIALIZE THE ITERATION COUNTER
        MOV          $MXCNT,$TIMES   ;;SET NUMBER OF ITERATIONS TO DO
$SVLAD:  INCB        $TSTNM          ;;COUNT TEST NUMBERS
        MOV          (SP),$LPADR     ;;SAVE SCOPE LOOP ADDRESS
    
```

```
8709 073062 011637 001110          MOV    (SP), $LPERR      ;;SAVE ERROR LOOP ADDRESS
8710 073066 005037 001214          CLR    $ESCAPE          ;;CLEAR THE ESCAPE FROM ERROR ADDRESS
8711 073072 112737 000001 001115    MOVB   #1, $ERMAX       ;;ONLY ALLOW ONE(1) ERROR ON NEXT TEST
8712 073100 013777 001102 106034 $OVER: MOV    $TSTNM, @DISPLAY ;;DISPLAY TEST NUMBER
8713 073106 013716 001106          MOV    $LPADR, (SP)     ;;FUDGE RETURN ADDRESS
8714 073112 000002                RTI                    ;;FIXES PS
8715 073114 000100          $MXCNT: 100            ;;MAX. NUMBER OF ITERATIONS
8716          .SBTTL POWER DOWN AND UP ROUTINES
8717
8718          ;;*****
8719          :POWER DOWN ROUTINE
8720 073116 012737 073256 000024 $PWRDN: MOV    # $ILLUP, @PWRVEC ;;SET FOR FAST UP
8721 073124 012737 000340 000026    MOV    #340, @PWRVEC+2 ;;PRIO:7
8722 073132 010046                MOV    R0, -(SP)        ;;PUSH R0 ON STACK
8723 073134 010146                MOV    R1, -(SP)        ;;PUSH R1 ON STACK
8724 073136 010246                MOV    R2, -(SP)        ;;PUSH R2 ON STACK
8725 073140 010346                MOV    R3, -(SP)        ;;PUSH R3 ON STACK
8726 073142 010446                MOV    R4, -(SP)        ;;PUSH R4 ON STACK
8727 073144 010546                MOV    R5, -(SP)        ;;PUSH R5 ON STACK
8728 073146 017746 105766          MOV    @SWR, -(SP)      ;;PUSH @SWR ON STACK
8729 073152 010637 073262          MOV    SP, $SAVR6      ;;SAVE SP
8730 073156 012737 073170 000024    MOV    # $PWRUP, @PWRVEC ;;SET UP VECTOR
8731 073164 000000                HALT
8732 073166 000776                BR     .-2              ;;HANG UP
8733
8734          ;;*****
8735          :POWER UP ROUTINE
8736 073170 012737 073256 000024 $PWRUP: MOV    # $ILLUP, @PWRVEC ;;SET FOR FAST DOWN
8737 073176 013706 073262          MOV    $SAVR6, SP      ;;GET SP
8738 073202 005037 073262          CLR    $SAVR6         ;;WAIT LOOP FOR THE TTY
8739 073206 005237 073262          1$:  INC    $SAVR6      ;;WAIT FOR THE INC
8740 073212 001375                BNE    1$              ;;OF WORD
8741 073214 012677 105720          MOV    (SP)+, @SWR     ;;POP STACK INTO @SWR
8742 073220 012605                MOV    (SP)+, R5       ;;POP STACK INTO R5
8743 073222 012604                MOV    (SP)+, R4       ;;POP STACK INTO R4
8744 073224 012603                MOV    (SP)+, R3       ;;POP STACK INTO R3
8745 073226 012602                MOV    (SP)+, R2       ;;POP STACK INTO R2
8746 073230 012601                MOV    (SP)+, R1       ;;POP STACK INTO R1
8747 073232 012600                MOV    (SP)+, R0       ;;POP STACK INTO R0
8748 073234 012737 073116 000024    MOV    # $PWRDN, @PWRVEC ;;SET UP THE POWER DOWN VECTOR
8749 073242 012737 000340 000026    MOV    #340, @PWRVEC+2 ;;PRIO:7
8750 073250 104401                TYPE   $POWER          ;;REPORT THE POWER FAILURE
8751 073252 073264          $PWRMG: .WORD $POWER  ;;POWER FAIL MESSAGE POINTER
8752 073254 000002                RTI
8753 073256 000000          $ILLUP: HALT          ;;THE POWER UP SEQUENCE WAS STARTED
8754 073260 000776                BR     .-2              ;;BEFORE THE POWER DOWN WAS COMPLETE
8755 073262 000000          $SAVR6: 0              ;;PUT THE SP HERE
8756 073264 005015 047520 042527 $POWER: .ASCIZ <15><12>'POWER'
8757 073272 000122
8758          .EVEN
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8776 073274 105737 001157  
8777 073300 100002  
8778 073302 000000  
8779 073304 000407  
8780 073306 010046  
8781 073310 017600 000002  
8782 073314 112046  
8783 073316 001005  
8784 073320 005726  
8785 073322 012600  
8786 073324 062716 000002  
8787 073330 000002  
8788 073332 122716 000011  
8789 073336 001430  
8790 073340 122716 000200  
8791 073344 001006  
8792 073346 005726  
8793 073350 104401  
8794 073352 001223  
8795 073354 105037 073510  
8796 073360 000755  
8797 073362 004737 073444  
8798 073366 123726 001156  
8799 073372 001350  
8800 073374 013746 001154  
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8802 073400 105366 000001  
8803 073404 002770  
8804 073406 004737 073444  
8805 073412 105337 073510  
8806 073416 000770  
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8810 073420 112716 000040  
8811 073424 004737 073444  
8812 073430 132737 000007 073510  
8813 073436 001372  
8814 073440 005726

```
.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
:*
$TYPE:  TSTB      $TPFLG      ;;IS THERE A TERMINAL?
        BPL      1$          ;;BR IF YES
        HALT     ;;HALT HERE IF NO TERMINAL
        BR       3$          ;;LEAVE
1$:     MOV      RO,-(SP)     ;;SAVE RO
        MOV      @2(SP),RO    ;;GET ADDRESS OF ASCIZ STRING
2$:     MOV      (RO)+,-(SP)  ;;PUSH CHARACTER TO BE TYPED ONTO STACK
        BNE     4$          ;;BR IF IT ISN'T THE TERMINATOR
        TST     (SP)+        ;;IF TERMINATOR POP IT OFF THE STACK
60$:    MOV      (SP)+,RO     ;;RESTORE RO
3$:     ADD      #2,(SP)     ;;ADJUST RETURN PC
        RTI     ;;RETURN
4$:     CMPB    #HT,(SP)     ;;BRANCH IF <HT>
        BEQ     8$
        CMPB    #CRLF,(SP)  ;;BRANCH IF NOT <CRLF>
        BNE     5$
        TST     (SP)+        ;;POP <CR><LF> EQUIV
                                ;;TYPE A CR AND LF
8795:   CLR     $CHARCNT     ;;CLEAR CHARACTER COUNT
        BR      2$          ;;GET NEXT CHARACTER
5$:     JSR     PC,$TYPEPC   ;;GO TYPE THIS CHARACTER
6$:     CMPB    $FILLC,(SP)+ ;;IS IT TIME FOR FILLER CHARS.?
        BNE     2$          ;;IF NO GO GET NEXT CHAR.
        MOV     $NULL,-(SP)  ;;GET # OF FILLER CHARS. NEEDED
                                ;;AND THE NULL CHAR.
8802:   DECB   1(SP)        ;;DOES A NULL NEED TO BE TYPED?
        BLT     6$          ;;BR IF NO--GO POP THE NULL OFF OF STACK
        JSR     PC,$TYPEPC   ;;GO TYPE A NULL
        DECB   $CHARCNT     ;;DO NOT COUNT AS A COUNT
        BR      7$          ;;LOOP
7$:
;HORIZONTAL TAB PROCESSOR
8810:   MOV     #' ,(SP)     ;;REPLACE TAB WITH SPACE
8811:   JSR     PC,$TYPEPC   ;;TYPE A SPACE
8812:   BIT     #7,$CHARCNT  ;;BRANCH IF NOT AT
        BNE     9$          ;;TAB STOP
8813:   TST     (SP)+        ;;POP SPACE OFF STACK
9$:
8814:   TST     (SP)+
```

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



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8854 073514 017646 000000
8855 073520 116637 000001 073737
8856 073526 112637 073741
8857 073532 062716 000002
8858 073536 000406
8859 073540 112737 000001 073737
8860 073546 112737 000006 073741
8861 073554 112737 000005 073736
8862 073562 010346
8863 073564 010446
8864 073566 010546
8865 073570 113704 073741
8866 073574 005404
8867 073576 062704 000006
8868 073602 110437 073740
8869 073606 113704 073737
8870 073612 016605 000012
8871 073616 005003
8872 073620 006105 1$:
8873 073622 000404 BR 3$
8874 073624 006105 2$:
8875 073626 006105 ROL R5
8876 073630 006105 ROL R5
8877 073632 010503 MOV R5,R3
8878 073634 006103 3$:
8879 073636 105337 073740 ROL R3
8880 073642 100016 DECB $OMODE
8881 073644 042703 177770 BPL 7$
8882 073650 001002 BIC #177770,R3
8883 073652 005704 BNE 4$
8884 073654 001403 TST R4
BEQ 5$

```

```

.SBTTL BINARY TO OCTAL (ASCII) AND TYPE
:*****
:*THIS ROUTINE IS USED TO CHANGE A 16-BIT BINARY NUMBER TO A 6-DIGIT
:*OCTAL (ASCII) NUMBER AND TYPE IT.
:*$TYPOS---ENTER HERE TO SETUP SUPPRESS ZEROS AND NUMBER OF DIGITS TO TYPE
:*CALL:
:*      MOV      NUM,-(SP)      ;;NUMBER TO BE TYPED
:*      TYPOS      ;;CALL FOR TYPEOUT
:*      .BYTE    N              ;;N=1 TO 6 FOR NUMBER OF DIGITS TO TYPE
:*      .BYTE    M              ;;M=1 OR 0
:*                                  ;;1=TYPE LEADING ZEROS
:*                                  ;;0=SUPPRESS LEADING ZEROS
:*$TYPON---ENTER HERE TO TYPE OUT WITH THE SAME PARAMETERS AS THE LAST
:*$TYPOS OR $TYPOC
:*CALL:
:*      MOV      NUM,-(SP)      ;;NUMBER TO BE TYPED
:*      TYPON      ;;CALL FOR TYPEOUT
:*$TYPOC---ENTER HERE FOR TYPEOUT OF A 16 BIT NUMBER
:*CALL:
:*      MOV      NUM,-(SP)      ;;NUMBER TO BE TYPED
:*      TYPOC      ;;CALL FOR TYPEOUT
$TYPOS: MOV      @(SP),-(SP)      ;;PICKUP THE MODE
        MOV      1(SP),$OFILL    ;;LOAD ZERO FILL SWITCH
        MOV      (SP)+,$OMODE+1  ;;NUMBER OF DIGITS TO TYPE
        ADD      #2,(SP)         ;;ADJUST RETURN ADDRESS
        BR      $TYPON
$TYPOC: MOV      #1,$OFILL      ;;SET THE ZERO FILL SWITCH
        MOV      #6,$OMODE+1    ;;SET FOR SIX(6) DIGITS
$TYPON: MOV      #5,$OCNT       ;;SET THE ITERATION COUNT
        MOV      R3,-(SP)       ;;SAVE R3
        MOV      R4,-(SP)       ;;SAVE R4
        MOV      R5,-(SP)       ;;SAVE R5
        MOV      $OMODE+1,R4    ;;GET THE NUMBER OF DIGITS TO TYPE
        NEG      R4
        ADD      #6,R4          ;;SUBTRACT IT FOR MAX. ALLOWED
        MOV      R4,$OMODE      ;;SAVE IT FOR USE
        MOV      $OFILL,R4     ;;GET THE ZERO FILL SWITCH
        MOV      12(SP),R5     ;;PICKUP THE INPUT NUMBER
        CLR      R3            ;;CLEAR THE OUTPUT WORD
1$:    ROL      R5              ;;ROTATE MSB INTO 'C'
        BR      3$            ;;GO DO MSB
2$:    ROL      R5              ;;FORM THIS DIGIT
        ROL      R5
        MOV      R5,R3
3$:    ROL      R3              ;;GET LSB OF THIS DIGIT
        DECB    $OMODE         ;;TYPE THIS DIGIT?
        BPL     7$            ;;BR IF NO
        BIC     #177770,R3    ;;GET RID OF JUNK
        BNE     4$            ;;TEST FOR 0
        TST     R4            ;;SUPPRESS THIS 0?
        BEQ     5$            ;;BR IF YES

```

8885	073656	005204		4\$:	INC	R4	::DON'T SUPPRESS ANYMORE 0'S
8886	073660	052703	000060		BIS	#'0,R3	::MAKE THIS DIGIT ASCII
8887	073664	052703	000040	5\$:	BIS	#',R3	::MAKE ASCII IF NOT ALREADY
8888	073670	110337	073734		MOVB	R3,8\$	::SAVE FOR TYPING
8889	073674	104401	073734		TYPE	,8\$	::GO TYPE THIS DIGIT
8890	073700	105337	073736	7\$:	DECB	\$OCNT	::COUNT BY 1
8891	073704	003347			BGT	2\$	::BR IF MORE TO DO
8892	073706	002402			BLT	6\$	::BR IF DONE
8893	073710	005204			INC	R4	::INSURE LAST DIGIT ISN'T A BLANK
8894	073712	000744			BR	2\$	::GO DO THE LAST DIGIT
8895	073714	012605		6\$:	MOV	(SP)+,R5	::RESTORE R5
8896	073716	012604			MOV	(SP)+,R4	::RESTORE R4
8897	073720	012603			MOV	(SP)+,R3	::RESTORE R3
8898	073722	016666	000002 000004		MOV	2(SP),4(SP)	::SET THE STACK FOR RETURNING
8899	073730	012616			MOV	(SP)+,(SP)	
8900	073732	000002			RTI		::RETURN
8901	073734	000		8\$:	.BYTE	0	::STORAGE FOR ASCII DIGIT
8902	073735	000			.BYTE	0	::TERMINATOR FOR TYPE ROUTINE
8903	073736	000		\$OCNT:	.BYTE	0	::OCTAL DIGIT COUNTER
8904	073737	000		\$OFILL:	.BYTE	0	::ZERO FILL SWITCH
8905	073740	000000		\$OMODE:	.WORD	0	::NUMBER OF DIGITS TO TYPE

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8906 .SBTTL CONVERT BINARY TO DECIMAL AND TYPE ROUTINE
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8918 073742
8919 073742 010046
8920 073744 010146
8921 073746 010246
8922 073750 010346
8923 073752 010546
8924 073754 012746 020200
8925 073760 016605 000020
8926 073764 100004
8927 073766 005405
8928 073770 112766 000055 000001
8929 073776 005000 1$:
8930 074000 012703 074156
8931 074004 112723 000040
8932 074010 005002 2$:
8933 074012 016001 074146
8934 074016 160105 3$:
8935 074020 002402
8936 074022 005202
8937 074024 000774
8938 074026 060105 4$:
8939 074030 005702
8940 074032 001002
8941 074034 105716
8942 074036 100407
8943 074040 106316 5$:
8944 074042 103003
8945 074044 116663 000001 177777
8946 074052 052702 000060 6$:
8947 074056 052702 000040 7$:
8948 074062 110223
8949 074064 005720
8950 074066 020027 000010
8951 074072 002746
8952 074074 003002
8953 074076 010502
8954 074100 000764
8955 074102 105726 8$:
8956 074104 100003
8957 074106 116663 177777 177776
8958 074114 105013 9$:
8959 074116 012605
8960 074120 012603
8961 074122 012602

;*****
;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

$TYPDS:
MOV R0,-(SP) ;:PUSH R0 ON STACK
MOV R1,-(SP) ;:PUSH R1 ON STACK
MOV R2,-(SP) ;:PUSH R2 ON STACK
MOV R3,-(SP) ;:PUSH R3 ON STACK
MOV R5,-(SP) ;:PUSH R5 ON STACK
MOV #20200,-(SP) ;:SET BLANK SWITCH AND SIGN
MOV 20(SP),R5 ;:GET THE INPUT NUMBER
BPL 1$ ;:BR IF INPUT IS POS.
NEG R5 ;:MAKE THE BINARY NUMBER POS.
MOVB #'-,1(SP) ;:MAKE THE ASCII NUMBER NEG.
CLR R0 ;:ZERO THE CONSTANTS INDEX
MOV #SDBLK,R3 ;:SETUP THE OUTPUT POINTER
MOVB #' ,(R3)+ ;:SET THE FIRST CHARACTER TO A BLANK
CLR R2 ;:CLEAR THE BCD NUMBER
MOV $DTBL(R0),R1 ;:GET THE CONSTANT
SUB R1,R5 ;:FORM THIS BCD DIGIT
BLT 4$ ;:BR IF DONE
INC R2 ;:INCREASE THE BCD DIGIT BY 1
BR 3$
4$:
ADD R1,R5 ;:ADD BACK THE CONSTANT
TST R2 ;:CHECK IF BCD DIGIT=0
BNE 5$ ;:FALL THROUGH IF 0
TSTB (SP) ;:STILL DOING LEADING 0'S?
BMI 7$ ;:BR IF YES
5$:
ASLB (SP) ;:MSD?
BCC 6$ ;:BR IF NO
MOVB 1(SP),-1(R3) ;:YES--SET THE SIGN
BIS #'0,R2 ;:MAKE THE BCD DIGIT ASCII
BIS #' ,R2 ;:MAKE IT A SPACE IF NOT ALREADY A DIGIT
MOVB R2,(R3)+ ;:PUT THIS CHARACTER IN THE OUTPUT BUFFER
TST (R0)+ ;:JUST INCREMENTING
CMP R0,#10 ;:CHECK THE TABLE INDEX
BLT 2$ ;:GO DO THE NEXT DIGIT
BGT 8$ ;:GO TO EXIT
MOV R5,R2 ;:GET THE LSD
BR 6$ ;:GO CHANGE TO ASCII
8$:
TSTB (SP)+ ;:WAS THE LSD THE FIRST NON-ZERO?
BPL 9$ ;:BR IF NO
MOVB -1(SP),-2(R3) ;:YES--SET THE SIGN FOR TYPING
CLRB (R3) ;:SET THE TERMINATOR
MOV (SP)+,R5 ;:POP STACK INTO R5
MOV (SP)+,R3 ;:POP STACK INTO R3
MOV (SP)+,R2 ;:POP STACK INTO R2

```

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

```

8973
8974
8975
8976
8977
8978
8979
8980 074166
8981 074166 104401 001223
8982 074172 010046
8983 074174 005000
8984 074176 153700 001114
8985 074202 001004
8986
8987 074204 013746 001116
8988
8989 074210 104402
8990 074212 000426
8991 074214 005300
8992 074216 006300
8993 074220 006300
8994 074222 006300
8995 074224 062700 001226
8996 074230 012037 074240
8997 074234 001404
8998 074236 104401
8999 074240 000000
9000 074242 104401 001223
9001 074246 012037 074256
9002 074252 001404
9003 074254 104401
9004 074256 000000
9005 074260 104401 001223
9006 074264 011000
9007 074266 001004
9008 074270 012600
9009 074272 104401 001223
9010 074276 000207
9011 074300
9012 074300 013046
9013 074302 104402
9014 074304 005710
9015 074306 001770
9016 074310 104401 074316
9017 074314 000771
9018 074316 020040 000
9019 074322

```

.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.

```

\$ERRTYP:

```

      TYPE      , $CRLF      ;; 'CARRIAGE RETURN' & 'LINE FEED'
      MOV      RO, -(SP)    ;; SAVE RO
      CLR      RO          ;; PICKUP THE ITEM INDEX
      BISB     @#$ITEMB, RO
      BNE      1$         ;; IF ITEM NUMBER IS ZERO, JUST
                          ;; TYPE THE PC OF THE ERROR
                          ;; SAVE $ERRPC FOR TYPEOUT
                          ;; ERROR ADDRESS
                          ;; GO TYPE--OCTAL ASCII(ALL DIGITS)
      MOV      $ERRPC, -(SP)
                          ;; GET OUT
                          ;; ADJUST THE INDEX SO THAT IT WILL
                          ;; WORK FOR THE ERROR TABLE
      TYPOC
      BR       6$
1$:   DEC      RO
      ASL      RO
      ASL      RO
      ASL      RO
      ADD      # $ERRTB, RO  ;; FORM TABLE POINTER
      MOV      (RO)+, 2$    ;; PICKUP 'ERROR MESSAGE' POINTER
      BEQ      3$          ;; SKIP TYPEOUT IF NO POINTER
      TYPE     'ERROR MESSAGE'
                          ;; 'ERROR MESSAGE' POINTER GOES HERE
2$:   .WORD    0           ;; 'CARRIAGE RETURN' & 'LINE FEED'
      TYPE     , $CRLF
3$:   MOV      (RO)+, 4$    ;; PICKUP 'DATA HEADER' POINTER
      BEQ      5$          ;; SKIP TYPEOUT IF 0
      TYPE     'DATA HEADER'
                          ;; 'DATA HEADER' POINTER GOES HERE
4$:   .WORD    0           ;; 'CARRIAGE RETURN' & 'LINE FEED'
      TYPE     , $CRLF
5$:   MOV      (RO), RO     ;; PICKUP 'DATA TABLE' POINTER
      BNE      7$          ;; GO TYPE THE DATA
6$:   MOV      (SP)+, RO    ;; RESTORE RO
      TYPE     , $CRLF     ;; 'CARRIAGE RETURN' & 'LINE FEED'
      RTS      PC         ;; RETURN
7$:   MOV      @ (RO)+, -(SP) ;; SAVE @ (RO)+ FOR TYPEOUT
      TYPOC
      TST     (RO)        ;; GO TYPE--OCTAL ASCII(ALL DIGITS)
                          ;; IS THERE ANOTHER NUMBER?
      BEQ     6$          ;; BR IF NO
      TYPE     , 8$       ;; TYPE TWO(2) SPACES
      BR      7$         ;; LOOP
8$:   .ASCIZ  / /         ;; TWO(2) SPACES
      .EVEN

```

9020  
9021  
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9041  
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9047  
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9050  
9051  
9052  
9053  
9054  
9055  
9056  
9057  
9058  
9059  
9060  
9061  
9062

074322  
074322 104407  
074324 105237 001103  
074330 001775  
074332 013777 001102 104602  
074340 032777 002000 104572  
074346 001402  
074350 104401 001216  
074354 005237 001112  
074360 011637 001116  
074364 162737 000002 001116  
074372 117737 104520 001114  
074400 032777 020000 104532  
074406 001004  
074410 004737 050140  
074414 104401 001223  
074420  
074420 005777 104514  
074424 100002  
074426 000000  
074430 104407  
074432 032777 001000 104500  
074440 001402  
074442 013716 001110  
074446 005737 001214  
074452 001402  
074454 013716 001214  
074460  
074460 000002

```

.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

$ERROR:
7$:      CKSWR          ;;TEST FOR CHANGE IN SOFT-SWR
        INCB          $ERFLG      ;;SET THE ERROR FLAG
        BEQ           7$          ;;DON'T LET THE FLAG GO TO ZERO
        MOV          $TSTNM,@DISPLAY ;;DISPLAY TEST NUMBER AND ERROR FLAG
        BIT          #BIT10,@SWR   ;;BELL ON ERROR?
        BEQ           1$          ;;NO - SKIP
        TYPE        ,SBELL        ;;RING BELL
        INC          $ERTTL        ;;COUNT THE NUMBER OF ERRORS
        MOV          (SP), $ERRPC   ;;GET ADDRESS OF ERROR INSTRUCTION
        SUB          #2, $ERRPC
        MOV          @ $ERRPC, $ITEMB ;;STRIP AND SAVE THE ERROR ITEM CODE
        BIT          #BIT13,@SWR   ;;SKIP TYPEOUT IF SET
        BNE          20$          ;;SKIP TYPEOUTS
        JSR          PC, TSTNMB    ;;GO TO USER ERROR ROUTINE
        TYPE        , $CRLF

20$:
2$:      TST          @SWR          ;;HALT ON ERROR
        BPL          3$          ;;SKIP IF CONTINUE
        HALT        ;;HALT ON ERROR!
        CKSWR          ;;TEST FOR CHANGE IN SOFT-SWR
        BIT          #BIT09,@SWR   ;;LOOP ON ERROR SWITCH SET?
        BEQ          4$          ;;BR IF NO
        MOV          $LPERR, (SP)  ;;FUDGE RETURN FOR LOOPING
        TST          $ESCAPE      ;;CHECK FOR AN ESCAPE ADDRESS
        BEQ          5$          ;;BR IF NONE
        MOV          $ESCAPE, (SP) ;;FUDGE RETURN ADDRESS FOR ESCAPE

4$:
5$:      MOV          $ESCAPE, (SP)
        RTI          ;;RETURN
    
```

```

9063
9064
9065
9066
9067 074462 000000
9068 074464 000000
9069 074466 000000
9070 074470 000010
9071      074500
9072
9073
9074
9075
9076
9077
9078
9079
9080
9081 074500 005037 074462
9082 074504 012737 074470 074464
9083 074512 013737 074464 074466
9084 074520 012737 074550 000060
9085 074526 012737 000200 000062
9086 074534 005777 104406
9087 074540 012777 000100 104376
9088 074546 000207
9089
9090
9091
9092
9093
9094
9095
9096
9097 074550 117746 104372
9098 074554 042716 177600
9099 074560 021627 000003
9100 074564 001007
9101 074566 104401 075664
9102 074572 004737 074500
9103 074576 005726
9104 074600 000137 000200
9105 074604 021627 000007
9106 074610 001004
9107 074612 022737 000176 001140
9108 074620 001500
9109
9110 074622
9111 074622 022737 000010 074462
9112 074630 001004
9113 074632 104401 001216
9114 074636 005726
9115 074640 000451
9116 074642 021627 000023
9117 074646 001021
9118 074650 005077 104270

```

```

.SBTTL TTY INPUT ROUTINE
:*****
.ENABL LSB
$TKCNT: .WORD 0      ;;NUMBER OF ITEMS IN QUEUE
$TKQIN: .WORD 0      ;;INPUT POINTER
$TKQOUT: .WORD 0     ;;OUTPUT POINTER
$TKQSRV: .BLKB 8.    ;;TTY KEYBOARD QUEUE
$TKQEND=.

;*TK INITIALIZE ROUTINE
;*THIS ROUTINE WILL INITIALIZE THE TTY KEYBOARD INPUT QUEUE
;*SETUP THE INTERRUPT VECTOR AND TURN ON THE KEYBOARD INTERRUPT
:
:*CALL:
:*      JSR      PC,$TKINT
:*      RETURN
:
$TKINT: CLR      $TKCNT      ;;CLEAR COUNT OF ITEMS IN QUEUE
        MOV      #$TKQSRV,$TKQIN ;;MOVE THE STARTING ADDRESS OF THE
        MOV      $TKQIN,$TKQOUT ;;QUEUE INTO THE INPUT & OUTPUT POINTERS.
        MOV      #$TKQSRV,$TKQVEC ;;INITIALIZE THE KEYBOARD VECTOR
        MOV      #200,$TKQVEC+2 ;;'BR' LEVEL 4
        TST      @$TKB      ;;CLEAR DONE FLAG
        MOV      #100,$TKS    ;;ENABLE TTY KEYBOARD INTERRUPT
        RTS      PC        ;;RETURN TO CALLER

;*TK SERVICE ROUTINE
;*THIS ROUTINE WILL SERVICE THE TTY KEYBOARD INTERRUPT
;*BY READING THE CHARACTER FROM THE INPUT BUFFER AND PUTTING
;*IT IN THE QUEUE.
;*IF THE CHARACTER IS A 'CONTROL-C' (^C) $TKINT IS CALLED AND
;*UPON RETURN EXIT IS MADE TO THE 'CONTROL-C' RESTART ADDRESS (200)
:
$TKSRV: MOV      @TKB,-(SP)    ;;PICKUP THE CHARACTER
        BIC      #^C177,(SP)  ;;STRIP THE JUNK
        CMP      (SP),#3     ;;IS IT A CONTROL C?
        BNE     1$          ;;BRANCH IF NO
        TYPE     ,SCNTLC     ;;TYPE A CONTROL-C (^C)
        JSR     PC,$TKINT    ;;INIT THE KEYBOARD
        TST     (SP)+       ;;CLEAN UP STACK
        JMP     200         ;;CONTROL C RESTART
1$:     CMP      (SP),#7     ;;IS IT A CONTROL G?
        BNE     2$          ;;BRANCH IF NO
        CMP      #SWREG,SWR  ;;IS SOFT-SWR SELECTED?
        BEQ     6$          ;;GO TO SWR CHANGE
2$:
        CMP      #8.,$TKCNT  ;;IS THE QUEUE FULL?
        BNE     3$          ;;BRANCH IF NO
        TYPE     ,SBELL     ;;RING THE TTY BELL
        TST     (SP)+       ;;CLEAN CHARACTER OFF OF STACK
        BR      5$          ;;EXIT
3$:     CMP      (SP),#23    ;;IS IT A CONTROL-S?
        BNE     32$         ;;BRANCH IF NO
        CLR     @$TKS       ;;DISABLE TTY KEYBOARD INTERRUPTS

```

```

9119 074654 005726
9120 074656 105777 104262
9121 074662 100375
9122 074664 117746 104256
9123 074670 042716 177600
9124 074674 022627 000021
9125 074700 001366
9126 074702 012777 000100 104234
9127 074710 000002
9128 074712 005237 074462
9129 074716 021627 000140
9130 074722 002405
9131 074724 021627 000175
9132 074730 003002
9133 074732 042716 000040
9134 074736 112677 177522
9135 074742 005237 074464
9136 074746 023727 074464 074500
9137 074754 001003
9138 074756 012737 074470 074464
9139 074764 000002
9140
9141
9142
9143
9144
9145
9146 074766 022737 000176 001140
9147 074774 001124
9148 074776 105777 104142
9149 075002 100121
9150 075004 117746 104136
9151 075010 042716 177600
9152 075014 021627 000007
9153 075020 001300
9154
9155
9156
9157
9158
9159
9160 075022 123727 001134 000001
9161 075030 001674
9162 075032 005726
9163 075034 004737 074500
9164 075040 005077 104100
9165 075044 112737 000001 001135
9166
9167 075052 104401 075676
9168 075056 104401 075703
9169 075062 013746 000176
9170 075066 104402
9171 075070 104401 075714
9172 075074 005046
9173 075076 005046
9174 075100 105777 104040

31$: TST (SP)+ ;;CLEAN CHAR OFF STACK
TSTB @STKS ;;WAIT FOR A CHAR
BPL 31$ ;;LOOP UNTIL ITS THERE
MOVB @STKB,-(SP) ;;GET THE CHARACTER
BIC #^C177,(SP) ;;MAKE IT 7-BIT ASCII
CMP (SP)+,#21 ;;IS IT A CONTROL-Q?
BNE 31$ ;;BRANCH IF NO
MOV #100,@STKS ;;REENABLE TTY KEYBOARD INTERRUPTS
RTI ;;RETURN

32$: INC $TKCNT ;;COUNT THIS CHARACTER
CMP (SP),#140 ;;IS IT UPPER CASE?
BLT 4$ ;;BRANCH IF YES
CMP (SP),#175 ;;IS IT A SPECIAL CHAR?
BGT 4$ ;;BRANCH IF YES
BIC #40,(SP) ;;MAKE IT UPPER CASE
MOVB (SP)+,@STKQIN ;;AND PUT IT IN QUEUE
INC $TKQIN ;;UPDATE THE POINTER
CMP $TKQIN,$$TKQEND ;;GO OFF THE END?
BNE 5$ ;;BRANCH IF NO
MOV $$TKQSRT,$TKQIN ;;RESET THE POINTER
RTI ;;RETURN

5$:

*****
*SOFTWARE SWITCH REGISTER CHANGE ROUTINE.
*ROUTINE IS ENTERED FROM THE TRAP HANDLER, AND WILL
*SERVICE THE TEST FOR CHANGE IN SOFTWARE SWITCH REGISTER TRAP
*CALL WHEN OPERATING IN TTY INTERRUPT MODE.
$CKSWR: CMP #SWREG,SWR ;;IS THE SOFT-SWR SELECTED
BNE 15$ ;;EXIT IF NOT
TSTB @STKS ;;IS A CHAR WAITING?
BPL 15$ ;;IF NOT, EXIT
MOVB @STKB,-(SP) ;;YES
BIC #^C177,(SP) ;;MAKE IT 7-BIT ASCII
CMP (SP),#7 ;;IS IT A CONTROL-G?
BNE 2$ ;;IF NOT, PUT IT IN THE TTY QUEUE
;;AND EXIT

*****
*CONTROL IS PASSED TO THIS POINT FROM EITHER THE TTY INTERRUPT SERVICE
*ROUTINE OR FROM THE SOFTWARE SWITCH REGISTER TRAP CALL, AS A RESULT OF A
*CONTROL-G BEING TYPED, AND THE SOFTWARE SWITCH REGISTER BEING SELECTED.
6$: CMPB $AUTOB,#1 ;;ARE WE RUNNING IN AUTO-MODE?
BEQ 2$ ;;BRANCH IF YES
TST (SP)+ ;;CLEAR CONTROL-G OFF STACK
JSR PC,$TKINT ;;FLUSH THE TTY INPUT QUEUE
CLR @STKS ;;DISABLE TTY KEYBOARD INTERRUPTS
MOVB #1,$INTAG ;;SET INTERRUPT MODE INDICATOR

$GTSWR: TYPE , $CNTLG ;;ECHO THE CONTROL-G (^G)
TYPE , $MSWR ;;TYPE CURRENT CONTENTS
MOV SWREG,-(SP) ;;SAVE SWREG FOR TYPEOUT
TYPOC ;;GO TYPE--OCTAL ASCII(ALL DIGITS)
TYPE , $MNEW ;;PROMPT FOR NEW SWR
19$: CLR -(SP) ;;CLEAR COUNTER
CLR -(SP) ;;THE NEW SWR
7$: TSTB @STKS ;;CHAR THERE?

```



```

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

```

```

9231          : *          RETURN HERE          :: CHARACTER IS ON THE STACK
9232          : *          :                :: WITH PARITY BIT STRIPPED OFF
9233          : *          :                :
9234          : *          :                :
9235 075330 011646 $RDCHR: MOV      (SP),-(SP)  :: PUSH DOWN THE PC AND
9236 075332 016666      MOV      4(SP),2(SP)  :: THE PS
9237 075340 005066      CLR      4(SP)        :: GET READY FOR A CHARACTER
9238 075344 005046      CLR      -(SP)        :: PUT NEW PS ON STACK
9239 075346 012746      MOV      #64$,-(SP)   :: PUT NEW PC ON STACK
9240 075352 000002      RTI                    :: POP NEW PC AND PS
9241 075354          64$:
9242 075354 005737 074462 1$: TST      $TKCNT  :: WAIT ON A CHARACTER
9243 075360 001775      BEQ      1$
9244 075362 005337 074462      DEC      $TKCNT  :: DECREMENT THE COUNTER
9245 075366 117766 177074 000004      MOVB   @TKQOUT,4(SP)  :: GET ONE CHARACTER
9246 075374 005237 074466      INC      $TKQOUT  :: UPDATE THE POINTER
9247 075400 023727 074466 074500      CMP    $TKQOUT,#TKQEND  :: DID IT GO OFF OF THE END?
9248 075406 001003      BNE      2$          :: BRANCH IF NO
9249 075410 012737 074470 074466      MOV    #TKQSRT,$TKQOUT  :: RESET THE POINTER
9250 075416 000002      RTI                    :: RETURN
9251          : *****
9252          : *THIS ROUTINE WILL INPUT A STRING FROM THE TTY
9253          : *CALL:
9254          : *          RDLIN          :: INPUT A STRING FROM THE TTY
9255          : *          RETURN HERE  :: ADDRESS OF FIRST CHARACTER WILL BE ON THE STACK
9256          : *          :                :: TERMINATOR WILL BE A BYTE OF ALL 0'S
9257          : *          :                :
9258 075420 010346 $RDLIN: MOV      R3, -(SP)  :: SAVE R3
9259 075422 005046      CLR      -(SP)        :: CLEAR THE RUBOUT KEY
9260 075424 012703 075654 1$: MOV      #TTYIN,R3  :: GET ADDRESS
9261 075430 022703 075664 2$: CMP      #TTYIN+8.,R3  :: BUFFER FULL?
9262 075434 101456      BLOS     4$          :: BR IF YES
9263 075436 104410      RDCHR   :: GO READ ONE CHARACTER FROM THE TTY
9264 075440 112613      MOVB   (SP)+,(R3)  :: GET CHARACTER
9265 075442 122713 000177 10$: CMPB   #177,(R3)  :: IS IT A RUBOUT
9266 075446 001022      BNE      5$          :: BR IF NO
9267 075450 005716      TST     (SP)        :: IS THIS THE FIRST RUBOUT?
9268 075452 001007      BNE      6$          :: BR IF NO
9269 075454 112737 000134 075652      MOVB   #' \,9$  :: TYPE A BACK SLASH
9270 075462 104401 075652      TYPE   ,9$
9271 075466 012716 177777      MOV    #-1,(SP)  :: SET THE RUBOUT KEY
9272 075472 005303 6$: DEC      R3          :: BACKUP BY ONE
9273 075474 020327 075654      CMP    R3,#TTYIN  :: STACK EMPTY?
9274 075500 103434      BLO    4$          :: BR IF YES
9275 075502 111337 075652      MOVB   (R3),9$  :: SETUP TO TYPEOUT THE DELETED CHAR.
9276 075506 104401 075652      TYPE   ,9$
9277 075512 000746      BR     2$          :: GO TYPE
9278 075514 005716 5$: TST     (SP)        :: GO READ ANOTHER CHAR.
9279 075516 001406      BEQ    7$          :: RUBOUT KEY SET?
9280 075520 112737 000134 075652      MOVB   #' \,9$  :: BR IF NO
9281 075526 104401 075652      TYPE   ,9$
9282 075532 005016      CLR    (SP)        :: CLEAR THE RUBOUT KEY
9283 075534 122713 000025 7$: CMPB   #25,(R3)  :: IS CHARACTER A CTRL U?
9284 075540 001003      BNE    8$          :: BR IF NO
9285 075542 104401 075671      TYPE   ,CNTLU  :: TYPE A CONTROL 'U'
9286 075546 000726      BR     1$          :: GO START OVER

```

9287	075550	122713	000022	8\$:	CMPB	#22,(R3)	:: IS CHARACTER A '^R'?
9288	075554	001011			BNE	3\$	:: BRANCH IF NO
9289	075556	105013			CLRB	(R3)	:: CLEAR THE CHARACTER
9290	075560	104401	001223		TYPE	,\$CRLF	:: TYPE A 'CR' & 'LF'
9291	075564	104401	075654		TYPE	,\$TTYIN	:: TYPE THE INPUT STRING
9292	075570	000717			BR	2\$	:: GO PICKUP ANOTHER CHACTER
9293	075572	104401	001222	4\$:	TYPE	,\$QUES	:: TYPE A '?'
9294	075576	000712			BR	1\$	:: CLEAR THE BUFFER AND LOOP
9295	075600	111337	075652	3\$:	MOVB	(R3),9\$	:: ECHO THE CHARACTER
9296	075604	104401	075652		TYPE	,\$9\$	
9297	075610	122723	000015		CMPB	#15,(R3)+	:: CHECK FOR RETURN
9298	075614	001305			BNE	2\$	:: LOOP IF NOT RETURN
9299	075616	105063	177777		CLRB	-1(R3)	:: CLEAR RETURN (THE 15)
9300	075622	104401	001224		TYPE	,\$LF	:: TYPE A LINE FEED
9301	075626	005726			TST	(SP)+	:: CLEAN RUBOUT KEY FROM THE STACK
9302	075630	012603			MOV	(SP)+,R3	:: RESTORE R3
9303	075632	011646			MOV	(SP),-(SP)	:: ADJUST THE STACK AND PUT ADDRESS OF THE
9304	075634	016666	000004 000002		MOV	4(SP),2(SP)	:: FIRST ASCII CHARACTER ON IT
9305	075642	012766	075654 000004		MOV	,\$TTYIN,4(SP)	
9306	075650	000002			RTI		:: RETURN
9307	075652	000		9\$:	.BYTE	0	:: STORAGE FOR ASCII CHAR. TO TYPE
9308	075653	000			.BYTE	0	:: TERMINATOR
9309	075654	000010		\$TTYIN:	.BLKB	8.	:: RESERVE 8 BYTES FOR TTY INPUT
9310	075664	041536	005015 000	\$CNTLC:	.ASCIZ	/^C/<15><12>	:: CONTROL 'C'
9311	075671	136	006525 000012	\$CNTLU:	.ASCIZ	/^U/<15><12>	:: CONTROL 'U'
9312	075676	043536	005015 000	\$CNTLG:	.ASCIZ	/^G/<15><12>	:: CONTROL 'G'
9313	075703	015	051412 051127	\$MSWR:	.ASCIZ	<15><12>/SWR = /	
9314	075710	036440	000040				
9315	075714	020040	042516 020127	\$MNEW:	.ASCIZ	/ NEW = /	
9316	075722	020075	000				
9317	075726				.EVEN		

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9326  
9327  
9328 075726 011646  
9329 075730 016666 000004 000002  
9330 075736 010046  
9331 075740 010146  
9332 075742 010246  
9333 075744 104411  
9334 075746 012600  
9335 075750 005001  
9336 075752 005002  
9337 075754 112046  
9338 075756 001412  
9339 075760 006301  
9340 075762 006102  
9341 075764 006301  
9342 075766 006102  
9343 075770 006301  
9344 075772 006102  
9345 075774 042716 177770  
9346 076000 062601  
9347 076002 000764  
9348 076004 005726  
9349 076006 010166 000012  
9350 076012 010237 076026  
9351 076016 012602  
9352 076020 012601  
9353 076022 012600  
9354 076024 000002  
9355 076026 000000

.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  
::\* RETURN HERE  
::\*

:::READ AN OCTAL NUMBER  
>:::LOW ORDER BITS ARE ON TOP OF THE STACK  
>:::HIGH ORDER BITS ARE IN \$HIOCT

\$RDOCT: MOV (SP),-(SP)  
MOV 4(SP),2(SP)  
MOV R0,-(SP)  
MOV R1,-(SP)  
MOV R2,-(SP)

:::PROVIDE SPACE FOR THE  
>:::INPUT NUMBER  
>:::PUSH R0 ON STACK  
>:::PUSH R1 ON STACK  
>:::PUSH R2 ON STACK

1\$: RDLIN

:::READ AN ASCII LINE

MOV (SP)+,R0  
CLR R1  
CLR R2

:::GET ADDRESS OF 1ST CHARACTER  
>:::CLEAR DATA WORD

2\$: MOVB (R0)+,-(SP)

:::PICKUP THIS CHARACTER

BEQ 3\$  
ASL R1  
ROL R2  
ASL R1  
ROL R2  
ASL R1  
ROL R2

:::IF ZERO GET OUT  
>:::\*2  
>::\*4  
>::\*8

BIC #^C7,(SP)  
ADD (SP)+,R1  
BR 2\$

:::STRIP THE ASCII JUNK  
>:::ADD IN THIS DIGIT  
>:::LOOP

3\$: TST (SP)+  
MOV R1,12(SP)  
MOV R2,\$HIOCT

:::CLEAN TERMINATOR FROM STACK  
>:::SAVE THE RESULT

MOV (SP)+,R2  
MOV (SP)+,R1  
MOV (SP)+,R0  
RTI

:::POP STACK INTO R2  
>:::POP STACK INTO R1  
>:::POP STACK INTO R0  
>:::RETURN

\$HIOCT: .WORD 0

:::HIGH ORDER BITS GO HERE

9356  
9357  
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9363  
9364 076030 010046  
9365 076032 016600 000002  
9366 076036 005740  
9367 076040 111000  
9368 076042 006300  
9369 076044 016000 076064  
9370 076050 000200  
9371  
9372  
9373  
9374  
9375 076052 011646  
9376 076054 016666 000004 000002  
9377 076062 000002  
9378  
9379  
9380  
9381  
9382  
9383  
9384  
9385  
9386 076064 076052  
9387 076066 073274  
9388 076070 073540  
9389 076072 073514  
9390 076074 073554  
9391 076076 073742  
9392  
9393 076100 075056  
9394  
9395 076102 074766  
9396 076104 075330  
9397 076106 075420  
9398 076110 075726  
9399 000001

.SBTTL TRAP DECODER

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

\$TRAP: MOV R0,-(SP) ;;SAVE R0  
MOV 2(SP),R0 ;;GET TRAP ADDRESS  
TST -(R0) ;;BACKUP BY 2  
MOVB (R0),R0 ;;GET RIGHT BYTE OF TRAP  
ASL R0 ;;POSITION FOR INDEXING  
MOV \$TRPAD(R0),R0 ;;INDEX TO TABLE  
RTS R0 ;;GO TO ROUTINE

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

\$TRAP2: MOV (SP),-(SP) ;;MOVE THE PC DOWN  
MOV 4(SP),2(SP) ;;MOVE THE PSW DOWN  
RTI ;;RESTORE THE PSW

.SBTTL TRAP TABLE

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

ROUTINE  
-----  
\$TRPAD: .WORD \$TRAP2  
\$TYPE ;;CALL=TYPE TRAP+1(104401) TTY TYPEOUT ROUTINE  
\$TYPOC ;;CALL=TYPOC TRAP+2(104402) TYPE OCTAL NUMBER (WITH LEADING ZEROS)  
\$TYPOS ;;CALL=TYPOS TRAP+3(104403) TYPE OCTAL NUMBER (NO LEADING ZEROS)  
\$TYPON ;;CALL=TYPON TRAP+4(104404) TYPE OCTAL NUMBER (AS PER LAST CALL)  
\$TYPDS ;;CALL=TYPDS TRAP+5(104405) TYPE DECIMAL NUMBER (WITH SIGN)  
\$GTSWR ;;CALL=GTSWR TRAP+6(104406) GET SOFT-SWR SETTING  
\$CKSWR ;;CALL=CKSWR TRAP+7(104407) TEST FOR CHANGE IN SOFT-SWR  
\$RDCHR ;;CALL=RDCHR TRAP+10(104410) TTY TYPEIN CHARACTER ROUTINE  
\$RDLIN ;;CALL=RDLIN TRAP+11(104411) TTY TYPEIN STRING ROUTINE  
\$RDOCT ;;CALL=RDOCT TRAP+12(104412) READ AN OCTAL NUMBER FROM TTY

.END













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

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





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





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

RBUF	004100	1768#	2166*	2171*	2176*	2181*	2188*	2193*	3344	3750	5271	5272*	5310	5312
		5412	5413*	5451	5453	5553	5554*	5592	5594	5694	5695*	5733	5735	5835
		5836*	5874	5976	5977*	6015	6117	6118*	6156	6258	6259*	6297	6727*	6728*
		6729	6735*	6736	6744*	6745	6751*	6752	6758*	6759	8533	8552	8558	
RBUF 1	004102	1769#												
RBUF 2	004104	1770#												
RBUF 3	004106	1771#												
RBUF 4	004110	1772#												
RBUF 5	004112	1773#												
RBUF 6	004114	1774#												
RBUF 7	004116	1775#												
RDCHR =	104410	9263	9396#											
RDLIN =	104411	9333	9397#											
RDOCT =	104412	1898	1904	1910	1949	1970	1991	2012	9398#					
RDY =	000200	1567#	2776	2781	2802	2926	2931	2952	3010	3015	3101	3106	3114	3131
		3206	3211	3223	3228	3234	3243	3248	3256	3273	3349	3354	3361	3378
		3451	3468	3546	3551	3558	3575	3651	3656	3663	3680	3754	3759	3766
		3783	3855	3860	3867	3884	3968	3985	4055	4060	4081	4120	4125	4146
		4169	4174	4195	4219	4224	4245	4269	4274	4295	4324	4329	4350	4377
		4382	4403	4430	4435	4456	4483	4488	4509	4536	4541	4562	4589	4594
		4615	4642	4647	4668	4695	4700	4721	4748	4753	4774	4801	4806	4827
		4854	4859	4880	4907	4912	4933	4960	4965	4986	5018	5023	5044	5053
		5058	5079	5115	5120	5141	5155	5160	5181	5220	5225	5246	5279	5284
		5306	5355	5360	5382	5420	5425	5447	5496	5501	5523	5561	5566	5588
		5637	5642	5664	5702	5707	5729	5778	5783	5805	5843	5848	5870	5919
		5924	5946	5984	5989	6011	6060	6065	6087	6125	6130	6152	6201	6206
		6228	6266	6271	6293	6342	6347	6369	6419	6424	6430	6452	6769	6774
		6780	6790											
RDYSET	013622	2803	2806#											
READY	034226	5209	5211#											
READ0 =	000071	1719#	3099	3345	4322	4693	4746	4905	5277	5484				
READ1 =	000072	1720#												
READ2 =	000073	1721#	5418	5766										
READ3 =	000074	1722#												
READ4 =	000075	1723#	5559	6048										
READ5 =	000076	1724#												
READ6 =	000077	1725#	3114	3256	3361	3451	3558	3663	3766	3867	3968	4799	4852	4958
		5700	6330	6790										
REGEND	003404	1671#	1804*	1911*	1912*	2039	6569							
RESTAR	006110	1925	1929	1933	1937	1979	2000	2019	2023#					
RESTAT	045430	1976	1997	2018	6503	6517#	6529	6540	6551					
RESVEC =	000010	472#												
RETAIN	003410	1673#	1960*	1981*	2002*	2021*	2024*	2062	6515*	6526*	6531*	6542*	6553*	
RETURN	046754	6665	6674	6677#										
RFAIL =	000100	1592#	2158	3151	3803	3904								
RHAS	003346	1648#	2427											
RHBA	003334	1643#	2229	2272*	2273	2278	2291	2294	2299	2318	2365	2503	2538	2565
		2589	2638	2671*	2672	2673	2678	2699*	2700	2701	2706	2722*	2723	2724
		2730	2745	2746*	2748	2752*	2754	2789	2845	2884	2923*	2939	3001*	3023
		3050	3068	3090*	3093*	3118	3202*	3239*	3260	3344*	3365	3455	3543*	3562
		3648*	3667	3750*	3770	3848*	3871	3972	4068	4115*	4133	4166*	4182	4216*
		4232	4266*	4282	4319*	4337	4372*	4390	4425*	4443	4478*	4496	4531*	4549
		4584*	4602	4637*	4655	4690*	4708	4743*	4761	4796*	4814	4849*	4867	4902*
		4920	4955*	4973	5011*	5031	5049*	5066	5111*	5128	5151*	5168	5207*	5233
		5271*	5292	5342*	5368	5388	5412*	5433	5483*	5509	5529	5553*	5574	5624*
		5650	5670	5694*	5715	5765*	5791	5811	5835*	5856	5906*	5932	5952	5976*

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







TST33	025004	4113	4162#																
TST34	025262	4164	4212#																
TST35	025540	4214	4262#																
TST36	026016	4264	4315#																
TST37	026310	4317	4368#																
TST4	007334	2221#																	
TST40	026602	4370	4421#																
TST41	027074	4423	4474#																
TST42	027366	4476	4527#																
TST43	027660	4529	4580#																
TST44	030152	4582	4633#																
TST45	030444	4635	4686#																
TST46	030736	4688	4739#																
TST47	031230	4741	4792#																
TST5	007642	2271#																	
TST50	031522	4794	4845#																
TST51	032014	4847	4898#																
TST52	032306	4900	4951#																
TST53	032600	4953	5004#																
TST54	033372	5105#																	
TST55	034176	5205#																	
TST56	034532	5268#																	
TST57	035074	5334#																	
TST6	010064	2309#																	
TST60	035526	5409#																	
TST61	036070	5475#																	
TST62	036522	5550#																	
TST63	037064	5616#																	
TST64	037516	5691#																	
TST65	040060	5757#																	
TST66	040512	5832#																	
TST67	041054	5898#																	
TST7	010312	2311	2349#																
TST70	041506	5973#																	
TST71	042050	6039#																	
TST72	042502	6114#																	
TST73	043044	6180#																	
TST74	043476	6255#																	
TST75	044040	6321#																	
TST76	044472	6394#																	
TST77	045172	6491#																	
TWANG	033350	5088	5092#																
TWANGY	033362	5090	5093	5095#															
TWO =	000002	1702#	2034	2435	2670	6566	6701	6728											
TYPDS =	104405	6608	6615	6681	6685	9391#													
TYPE =	104401	1859	1863	1894	1900	1906	1945	1966	1987	2008	2025	2072	2087	2440					
		6504	6508	6520	6532	6543	6554	6602	6609	6616	6651	6666	6677	6692					
		6696	6704	6719	6723	6731	6740	6747	6754	6834	6835	6851	6857	8750					
		8793	8889	8964	8981	8998	9000	9003	9005	9009	9016	9041	9049	9101					
		9113	9167	9168	9171	9182	9192	9203	9222	9270	9276	9281	9285	9290					
		9291	9293	9296	9300	9387#													
TYPOC =	104402	2030	6513	6525	6537	6548	6559	6703	6710	6730	6737	6746	6753	6760					
		6856	8989	9013	9170	9388#													
TYPON =	104404	9390#																	
TYPOS =	104403	9389#																	
UPE =	020000	1539#	2143	3148	3290	3395	3449	3472	3521	3579	3628	3697	3800	3901					

	4002	4090	6810											
UPETRE 017436	3350	3355	3357	3359#										
US1 = 0000C1	1526#	6795												
US2 = 000002	1527#	6795												
US4 = 000004	1528#	6795												
VECADD 003406	1672#	1805*	1905*	5211*	6406*									
VOUS 033064	5045	5048#												
WATBIT 046416	2168	2173	2178	2183	2190	2195	2251	2261	2296	2336	2517	2535	2562	
	2585	2635	2692	2720	2744	2815	2866	2905	6635#					
WATFIV 010302	2332	2337	2341#											
WATFOR 010072	2312#													
WC 003444	1692#	2228*	2248*	2250	2254*	2258*	2259	2277*	2317*	2364*	2502*	2534	2537*	
	2558*	2561	2564*	2581*	2584	2588*	2637*	2677*	2705*	2729*	2788*	2844*	2883*	
	2938*	3022*	3117*	3259*	3364*	3454*	3561*	3666*	3769*	3870*	3971*	4067*	4132*	
	4181*	4231*	4281*	4336*	4389*	4442*	4495*	4548*	4601*	4654*	4707*	4760*	4813*	
	4866*	4919*	4972*	5030*	5065*	5127*	5167*	5232*	5291*	5367*	5432*	5508*	5573*	
	5649*	5714*	5790*	5855*	5931*	5996*	6072*	6137*	6213*	6278*	6354*	6436*	8513	
	8537	8539	8550											
WCE = 040000	1540#	2143	3148	3277	3326	3395	3485	3592	3697	3800	3901	4002	4090	
	5092	5194	6810											
WCEERR 033764	5156	5161	5163	5165#										
WCEHI = 010000	1552#	2127	3149	3396	3593	3698	5089	5185						
WCELO = 004000	1551#	2127	3149	3396	3593	3698	5083	5191						
WCEOWT 033510	5116	5121	5123	5125#										
WCERR1 007516	2225	2245#												
WCERR2 007602	2243	2257#												
WCETRE 016644	3244	3249	3251	3253#										
WCETST 016434	3207	3212	3214	3216#										
WCTST 016530	3224	3229	3231	3233#										
WHYFO 007260	2198#	2404	2805	2962	2984	3048	3053	3056	3134	3153	3163	3167	3172	
	3176	3237	3276	3295	3305	3309	3314	3318	3381	3400	3410	3414	3419	
	3423	3471	3490	3500	3504	3509	3513	3578	3597	3607	3611	3616	3620	
	3683	3702	3712	3716	3721	3725	3786	3805	3815	3819	3824	3828	3887	
	3906	3916	3920	3925	3929	3988	4007	4017	4021	4026	4030	4084	4092	
	4101	4149	4153	4198	4202	4248	4252	4298	4302	4353	4357	4406	4410	
	4459	4463	4512	4516	4565	4569	4618	4622	4671	4675	4724	4728	4777	
	4781	4830	4834	4883	4887	4936	4940	4989	4993	5047	5082	5086	5144	
	5184	5188	5309	5319	5394	5450	5460	5535	5591	5601	5676	5732	5742	
	5817	5873	5883	5958	6014	6024	6099	6155	6165	6240	6296	6306	6381	
	6482													
WRCH0 = 000051	1709#	3241	5051	5153										
WRCH1 = 000052	1710#													
WRCH2 = 000053	1711#													
WRCH3 = 000054	1712#													
WRCH4 = 000055	1713#													
WRCH5 = 000056	1714#													
WRCH6 = 000057	1715#													
WRITE0= 000061	1729#	2924	3005	3007	3204	3544	3649	3752	3852	3853	4118	4167	4217	
	4267	4375	4481	5016	5113	5214	5343	5841	6416	6767				
WRITE1= 000062	1730#													
WRITE2= 000063	1731#	5625	5982											
WRITE3= 000064	1732#													
WRITE4= 000065	1733#	5907	6123											
WRITE5= 000066	1734#													
WRITE6= 000067	1735#	4428	4534	4587	4640	6189	6264							
ZERO = 000000	1700#	2604	2610	2616	2746	2752	2922	3201	3343	3542	3643	3646	3696	









\$TRP = 000013	9379#	9388#	9389#	9390#	9391#	9392#	9393	9394#	9395	9396#	9397#	9398#	9399#
\$TRPAD 076064	9369	9386#											
\$TSTNM 001102	554#	6575*	6576*	6592*	6823	6849	8658	8685	8707*	8712	8716	9038	9063
\$TTYIN 075654	9260	9261	9273	9291	9305	9309#							
\$TYPBN= ***** U	9392												
\$TYPDS 073742	8918#	9391											
\$TYPE 073274	8776#	9379	9387										
\$TYPEC 073444	8797	8804	8811	8816#	8817	9208							
\$TYPEX 073512	8822	8824	8827#										
\$TYPOC 073540	8859#	9388											
\$TYPON 073554	8858	8861#	9390										
\$TYPOS 073514	8854#	9389											
\$XTSTR 072656	8672#												
\$SGET4= 000000	6620#												
\$OF ILL 073737	8855*	8859*	8869	8904#									
\$40CAT= ***** U	8669	9048											
. = 076112	485#	489#	494#	496#	539	540#	542#	544#	551#	602	1764#	1767#	1815
	1829	1830	1862#	1866#	1909#	1948#	1969#	1990#	2011#	2028#	2198	2443#	6523#
	6535#	6546#	6557#	6605#	6628	6629#	6654#	6669#	6743#	6860#	8512#	8715	8716
	8732	8754	8829	8972#	9019#	9063	9066	9070#	9071	9072	9309#	9310	9317#





.\$APT8	1#		
.\$APTH	1#		
.\$APTY	1#		
.\$ASTA	1#		
.\$CATC	1#	351#	483
.\$CMTA	1#	351#	545
.\$DB2D	1#		
.\$DB20	1#		
.\$DIV	1#		
.\$EOP	1#	351#	6581
.\$ERRO	1#	351#	9020
.\$ERRT	1#	351#	8973
.\$MULT	1#		
.\$POWE	1#	351#	8716
.\$RAND	1#		
.\$RDDE	1#		
.\$RDOC	1#	351#	9318
.\$READ	1#	351#	9063
.\$R2AZ	1#		
.\$SAVE	1#		
.\$SB2D	1#		
.\$SB20	1#		
.\$SCOP	1#	351#	8653
.\$SIZE	1#		
.\$SUPR	1#		
.\$TRAP	1#	351#	9356
.\$TYPB	1#		
.\$TYPD	1#	351#	8906
.\$TYPE	1#	351#	8759
.\$TYPO	1#	351#	8829
.\$4OCA	1#		
.1170	1#		

. ABS. 076112 000

ERRORS DETECTED: 0

CZRHBF.BIN,CZRHBF.LST/CRF/SOL/NL:TOC=CZRHBF.SML,CZRHBF.P11  
RUN-TIME: 73 104 10 SECONDS  
RUN-TIME RATIO: 433/189=2.2  
CORE USED: 36K (71 PAGES)