

RH11-RH70

MASSBUS I/O & CTRLR
CZRHBE0

AH-9178E-MC

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IDENTIFICATION

PRODUCT CODE:	AC-9176E-MC
PRODUCT NAME:	CZRHBE0 MASSBUS I/O AND CONTROLLER DIAGNOSTIC
DATE CREATED:	1-JUN-79
MAINTAINER:	DIAGNOSTIC GROUP

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DIGITAL	PDP	UNIBUS	MASSBUS
DEC	DECUS	DECTAPE	

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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 ALLOWS YOU TO SPECIFY THE BASE
ADDRESS, VECTOR ADDRESS, AND HOW MANY REGISTERS YOU
ARE JUMPERED FOR. THE NUMBER OF REGISTERS JUMPERED
REFERS TO THE NUMBER OF DEVICE REGISTERS (OCTAL)
BEGINNING WITH RHCS1 UP TO BUT NOT INCLUDING RHBAE.
ONLY ONE RH AT A TIME CAN BE TESTED USING STARTING
ADDRESS 210.
3.0 PROGRAM DESCRIPTION
THIS PROGRAM WAS ASSEMBLED WITH MACY11 USING PDP-11 MAINDEC
SYSMAC PACKAGE (DZQAC-3).
IN TESTING ONE CONTROLLER, THE FIRST PASS TAKES ABOUT
5 SECONDS AND SUBSEQUENT PASSES TAKE ABOUT 10 MINUTES
IF ITERATIONS ARE NOT INHIBITED.
3.1 SWITCH OPTIONS
SWITCH USE

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

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8 LOOP ON TEST IN SWR<7:0>
1 TO BE USED IF DUAL PORT USED
0 INHIBITS THE PRINTING OF WATBIT

13,8,AND 0 INHIBIT WATBIT PRINTOUT

3.2 SYSMAC ROUTINES (USED)

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

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

4.0 TEST DESCRIPTIONS

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

TEST 2 - CLEAR TEST. THIS TEST CHECKS THAT ALL ERROR BITS
ARE CLEARED AFTER THE CLEAR BIT WAS LOADED INTO
RHCS2 REGISTER. THIS TEST IS ALSO ENTERED AT THE
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
PH SIMULATOR IS ATTACHED.

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

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

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

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

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

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

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- TEST 12 - RHWC BIT TEST. THIS TEST CHECKS THE WORD COUNT REGISTER TO SEE IF ALL BITS CAN BE SET AND CLEARED AND CHECKS THE REGISTER USING ALTERNATE BITS SET (52525) AND USING (125252) TO MAKE SURE IT WORKS WITH ALTERNATE PATTERN.
- TEST 13 - RHBAE BIT TEST. THIS TEST TESTS THE RHBAE 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 SETS IS TRE AND SC BITS SET IN RHCS1.
- TEST 24 - UPE, TRE, SC ERROR TEST (RH70). THIS TEST CHECKS THE UPE BIT IN RHCS2 TO SEE IF IT SETS AND WHEN IT SETS IS TRE AND SC BITS SET IN RHCS1.
- TEST 25 - NED BIT TEST. THIS TEST WILL CHECK THAT NED (NON-EXISTANT DRIVE) SETS TRE AND SC BITS IN RHCS1.

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- TEST 26 - MXF, TRE AND SC BIT TEST. THIS TEST WILL CHECK THAT MXF (MISSED TRANSFER ERROR) WILL SET TRE AND SC BITS.
- TEST 27 - PGE ERROR BIT TEST. THIS TEST FORCES PGE TO SET IN RHCS2 AND VERIFYS TRE AND SC IS SET IN RHCS1.
- TEST 30 - MXF, TRE AND SC BIT TEST (RH11 ONLY). THIS TEST SEES IF MXF CAN BE SET BY A MOVE INSTRUCTION AND THAT TRE AND SC ARE SET IN RHCS1. MXF CAN BE SET THIS WAY IN AN RH11 BIT CAN NOT BE SET THIS WAY IN AN RH70.
- TEST 31 - MCPE AND SC ERROR TEST. THIS TEST CHECKS THAT MCPE CAN BE SET IN RHCS1 AND THAT MCPE SETS SC IN RHCS1.
- TEST 32-52 - DOUBLE TESTS. THESE TESTS CHECK DBL IN RHCS3 WITH READ FWD AND REV, WRITE FWD AND REV AND WITH BAI SET IN RHCS2. OPERATION BEING PERFORMED WILL BE PRINTED OUT IN ERROR MESSAGE. RH70 ONLY.
- TEST 53 - WCE EW ERROR TEST. THIS TEST CHECKS THAT WCELO WILL SET IN RHCS3 AND THAT WCE SETS IN RHCS1. IT ALSO CHECKS THAT WCEHI DOES NOT SET WITH WCELO IN RHCS3.....RH70 ONLY.
- TEST 54 - WCE OW ERROR TEST (WCEHI). THIS TEST CHECKS THAT WCEHI SETS IN RHCS3 AND THAT WCE SETS IN RHCS1, IT ALSO TESTS THAT WCELO DOES NOT SET WITH WCEHI. (RH70 ONLY)
- TEST 55 - INTERRUPT ENABLE TEST. THIS TEST VERIFYS THAT IE WILL SET IN RHCS1 AND IT WILL CAUSE AN INTERRUPT WHEN RDY IS SET.
- TEST 56-75 - READ AND WRITE OPERATIONAL TESTS. THESE TESTS VERIFY ALL READ AND WRITE CODES WHETHER IT BE A READ REV. OR FWD OR A WRITE REV. OR FWD. DURING THESE TESTS THE TESTER TIMING IS MARGINED AND NO ERRORS SHOULD OCCUR.
- TEST 76 - THIS IS THE LARGE TRANSFER TEST, IT TESTS THE RH 70 OR 11 DOING A 671 WORD TRANSFER FOR ERRORS.
- TEST 77 - THIS IS NOT A TEST BUT IS THE ROUTINE THAT ALLOWS THE DIAGNOSTIC TO TEST 4 RH'S IF PRESENT.

ECO HISTORY

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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

```
.TITLE MASSBUS RH70 AND RH11 DIAGNOSTIC
;*COPYRIGHT (C) 1976
;*DIGITAL EQUIPMENT CORP.
;*MAYNARD, MASS. 01754
;*
;*PROGRAM BY WN D'ENTREMONT
;*
;*THIS PROGRAM WAS ASSEMBLED USING THE PDP-11 MAINDEC SYSMAC
;*PACKAGE (MAINDEC-11-DZQAC-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
PS= 177776           ;;PROCESSOR STATUS WORD
.EQUIV PS,PSW
STKLMT= 177774       ;;STACK LIMIT REGISTER
PIRQ= 177772         ;;PROGRAM INTERRUPT REQUEST REGISTER
DSWR= 177570         ;;HARDWARE SWITCH REGISTER
DDISP= 177570        ;;HARDWARE DISPLAY REGISTER

;*GENERAL PURPOSE REGISTER DEFINITIONS
R0= %0               ;;GENERAL REGISTER
R1= %1               ;;GENERAL REGISTER
R2= %2               ;;GENERAL REGISTER
R3= %3               ;;GENERAL REGISTER
R4= %4               ;;GENERAL REGISTER
```

000750

000011
000012
000015
000200
177776

177774
177772
177570
177570

000000
000001
000002
000003
000004


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385      000005      R5=    %5      ;;GENERAL REGISTER
386      000006      R6=    %6      ;;GENERAL REGISTER
387      000007      R7=    %7      ;;GENERAL REGISTER
388      000006      SP=    %6      ;;STACK POINTER
389      000007      PC=    %7      ;;PROGRAM COUNTER
390
391      ;*PRIORITY LEVEL DEFINITIONS
392      000000      PR0=    0      ;;PRIORITY LEVEL 0
393      000040      PR1=    40     ;;PRIORITY LEVEL 1
394      000100      PR2=   100     ;;PRIORITY LEVEL 2
395      000140      PR3=   140     ;;PRIORITY LEVEL 3
396      000200      PR4=   200     ;;PRIORITY LEVEL 4
397      000240      PR5=   240     ;;PRIORITY LEVEL 5
398      000300      PR6=   300     ;;PRIORITY LEVEL 6
399      000340      PR7=   340     ;;PRIORITY LEVEL 7
400
401      ;*'SWITCH REGISTER' SWITCH DEFINITIONS
402      100000      SW15= 100000
403      040000      SW14=  40000
404      020000      SW13=  20000
405      010000      SW12=  10000
406      004000      SW11=  4000
407      002000      SW10=  2000
408      001000      SW09=  1000
409      000400      SW08=   400
410      000200      SW07=   200
411      000100      SW06=   100
412      000040      SW05=   40
413      000020      SW04=   20
414      000010      SW03=   10
415      000004      SW02=    4
416      000002      SW01=    2
417      000001      SW00=    1
418      .EQUIV SW09,SW9
419      .EQUIV SW08,SW8
420      .EQUIV SW07,SW7
421      .EQUIV SW06,SW6
422      .EQUIV SW05,SW5
423      .EQUIV SW04,SW4
424      .EQUIV SW03,SW3
425      .EQUIV SW02,SW2
426      .EQUIV SW01,SW1
427      .EQUIV SW00,SW0
428
429      ;*DATA BIT DEFINITIONS (BIT00 TO BIT15)
430      100000      BIT15= 100000
431      040000      BIT14=  40000
432      020000      BIT13=  20000
433      010000      BIT12=  10000
434      004000      BIT11=  4000
435      002000      BIT10=  2000
436      001000      BIT09=  1000
437      000400      BIT08=   400
438      000200      BIT07=   200
439      000100      BIT06=   100
440      000040      BIT05=   40
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441 000020
442 000010
443 000004
444 000002
445 000001
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458 000004
459 000010
460 000014
461 000014
462 000014
463 000020
464 000024
465 000030
466 000034
467 000060
468 000064
469 000240
470
471
472 000000
473
474
475
476 000174
477 000174 000000
478 000176 000000
479
480 000200 000137 004176
481 000204
482 000204 000137 004144
483 000210
484 000210 000137 004152
485
486
487
488
489
490 000250
491
492
493
494 177572
495 177574
496 177576

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
JMP @#BEGIN3
;*****
.SBTTL MEMORY MANAGEMENT DEFINITIONS
;*KT11 VECTOR ADDRESS
MMVEC= 250
;*KT11 STATUS REGISTER ADDRESSES
SR0= 177572
SR1= 177574
SR2= 177576

497 172516
498
499
500
501 172300
502 172302
503 172304
504 172306
505 172310
506 172312
507 172314
508 172316
509
510
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512 172340
513 172342
514 172344
515 172346
516 172350
517 172352
518 172354
519 172356
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521
522
523
524
525
526 000214
527 000046
528 000046 046342
529 000052
530 000052 000000
531 000214

SR3= 172516

;*KERNEL 'I' PAGE DESCRIPTOR REGISTERS

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

;*KERNEL 'i' PAGE ADDRESS REGISTERS

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

::*****

.SBTTL ACT11 HOOKS

::*****

:HOOKS REQUIRED BY ACT11

\$SVPC=
.=46
\$ENDAD
.=52
.WORD 0
.= \$SVPC

;SAVE PC

::1)SET LOC.46 TO ADDRESS OF \$ENDAD IN .\$EOP

::2)SET LOC.52 TO ZERO

:: RESTORE PC

```
532 .SBTTL COMMON TAGS
533
534 ::*****
535 ::*THIS TABLE CONTAINS VARIOUS COMMON STORAGE LOCATIONS
536 ::*USED IN THE PROGRAM.
537
538 001100 . =1100
539 001100 $CMTAG: :: START OF COMMON TAGS
540 001100 000000 $PASS: .WORD 0 :: CONTAINS PASS COUNT
541 001102 000 $TSTNM: .BYTE 0 :: CONTAINS THE TEST NUMBER
542 001103 000 $ERFLG: .BYTE 0 :: CONTAINS ERROR FLAG
543 001104 000000 $ICNT: .WORD 0 :: CONTAINS SUBTEST ITERATION COUNT
544 001106 000000 $LPADR: .WORD 0 :: CONTAINS SCOPE LOOP ADDRESS
545 001110 000000 $LPERR: .WORD 0 :: CONTAINS SCOPE RETURN FOR ERRORS
546 001112 000000 $ERTTL: .WORD 0 :: CONTAINS TOTAL ERRORS DETECTED
547 001114 000 $ITEMB: .BYTE 0 :: CONTAINS ITEM CONTROL BYTE
548 001115 001 $ERMAX: .BYTE 1 :: CONTAINS MAX. ERRORS PER TEST
549 001116 000000 $ERRPC: .WORD 0 :: CONTAINS PC OF LAST ERROR INSTRUCTION
550 001120 000000 $GDADR: .WORD 0 :: CONTAINS ADDRESS OF 'GOOD' DATA
551 001122 000000 $BDADR: .WORD 0 :: CONTAINS ADDRESS OF 'BAD' DATA
552 001124 000000 $GDDAT: .WORD 0 :: CONTAINS 'GOOD' DATA
553 001126 000000 $BDDAT: .WORD 0 :: CONTAINS 'BAD' DATA
554 001130 000000 .WORD 0 :: RESERVED--NOT TO BE USED
555 001132 000000 .WORD 0
556 001134 000 $AUTOB: .BYTE 0 :: AUTOMATIC MODE INDICATOR
557 001135 000 $INTAG: .BYTE 0 :: INTERRUPT MODE INDICATOR
558 001136 000000 .WORD 0
559 001140 177570 SWR: .WORD DSWR :: ADDRESS OF SWITCH REGISTER
560 001142 177570 DISPLAY: .WORD DDISP :: ADDRESS OF DISPLAY REGISTER
561 001144 177560 $TKS: 177560 :: TTY KBD STATUS
562 001146 177562 $TKB: 177562 :: TTY KBD BUFFER
563 001150 177564 $TPS: 177564 :: TTY PRINTER STATUS REG. ADDRESS
564 001152 177566 $TPB: 177566 :: TTY PRINTER BUFFER REG. ADDRESS
565 001154 000 $NULL: .BYTE 0 :: CONTAINS NULL CHARACTER FOR FILLS
566 001155 002 $FILLS: .BYTE 2 :: CONTAINS # OF FILLER CHARACTERS REQUIRED
567 001156 012 $FILLC: .BYTE 12 :: INSERT FILL CHARS. AFTER A 'LINE FEED'
568 001157 000 $TPFLG: .BYTE 0 :: 'TERMINAL AVAILABLE' FLAG (BIT<07>=0=YES)
569 001160 000000 $REGAD: .WORD 0 :: CONTAINS THE ADDRESS FROM
570 :: WHICH ($REGO) WAS OBTAINED
571 001162 000000 $REG0: .WORD 0 :: CONTAINS (($REGAD)+0)
572 001164 000000 $REG1: .WORD 0 :: CONTAINS (($REGAD)+2)
573 001166 000000 $REG2: .WORD 0 :: CONTAINS (($REGAD)+4)
574 001170 000000 $REG3: .WORD 0 :: CONTAINS (($REGAD)+6)
575 001172 000000 $REG4: .WORD 0 :: CONTAINS (($REGAD)+10)
576 001174 000000 $REG5: .WORD 0 :: CONTAINS (($REGAD)+12)
577 001176 000000 $TMP0: .WORD 0 :: USER DEFINED
578 001200 000000 $TMP1: .WORD 0 :: USER DEFINED
579 001202 000000 $TMP2: .WORD 0 :: USER DEFINED
580 001204 000000 $TMP3: .WORD 0 :: USER DEFINED
581 001206 000000 $TMP4: .WORD 0 :: USER DEFINED
582 001210 000000 $TMP5: .WORD 0 :: USER DEFINED
583 001212 000000 $TIMES: 0 :: MAX. NUMBER OF ITERATIONS
584 001214 000000 $ESCAPE: 0 :: ESCAPE ON ERROR ADDRESS
585 001216 177607 000377 $BELL: .ASCIZ <207><377><377> :: CODE FOR BELL
586 001222 077 $QUES: .ASCII /?/ :: QUESTION MARK
587 001223 015 $CRLF: .ASCII <15> :: CARRIAGE RETURN
```

MASSBUS RH70 AND RH11 DIAGNOSTIC
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COMMON TAGS

SEQ 0012

588 001224 000012
589

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

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001226

001226 055040

001230 067602
001232 071750
001234 072314

001236 055100

001240 067722
001242 071762
001244 072320

001246 055140

001250 070043
001252 071774
001254 072324

001256 055214

001260 070163
001262 072006
001264 072330

001266 055254

001270 070303
001272 072020
001274 072334

001276 055325

001300 070303
001302 072020
001304 072334

001306 055541

.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
    
```

646	001310	070303		DH5	
647	001312	072020		DT5	
648	001314	072334		DF5	
649			:ITEM 10		
650	001316	055607		EM10	:TRE BIT SET BUT NEM
651					:AND SC ARE NOT?
652	001320	070303		DH5	
653	001322	072020		DT5	
654	001324	072334		DF5	
655			:ITEM	11	
656	001326	055643		EM11	:SC BIT SET BY ATTN OR MCPE
657					:ERROR OR SC IS SHORTED
658					:SHOULD HAVE BEEN SET BY NEM AND TRE
659	001330	070410		DH11	
660	001332	072032		DT11	
661	001334	072340		DF11	
662			:ITEM	12	
663	001336	055704		EM12	:TRE BIT SET BY NEM BUT SC
664					:DID NOT SET, LOGIC BETWEEN
665					:TRE AND SC NOT WORKING
666	001340	070303		DH5	
667	001342	072020		DT5	
668	001344	072334		DF5	
669			:ITEM	13	
670					
671	001346	055724		EM13	:TRE BIT IS SET BUT SC
672					:READS AS CLEARED. SC
673					:LOGIC ASSOCIATED WITH TRE
674					:BIT IS NOT WORKING OR SC
675					:HAS AN OPEN GOING TO THE BUS
676	001350	070303		DH5	
677	001352	072020		DT5	
678	001354	072334		DF5	
679			:ITEM	14	
680					
681	001356	055773		EM14	:WCE BIT DID NOT SET, BIT 14 IN
682					:RHCS2
683					
684	001360	070303		DH5	
685	001362	072020		DT5	
686	001364	072334		DF5	
687			:ITEM	15	
688					
689	001366	056017		EM15	:WCE BIT DID NOT SET BUT
690					:TRE AND SC IN RHCS1 ARE
691					:SET.
692					
693	001370	070303		DH5	
694	001372	072020		DT5	
695	001374	072334		DF5	
696			:ITEM	16	
697					
698	001376	056043		EM16	:WCE AND SC ERROR BITS ARE
699					:SET TRE ERROR BIT SHOULD ALSO
700					:BE SET BUT IT READS AS CLEARED
701					:THERE MIGHT BE AN OPEN BETWEEN

702					;TRE AND THE BUS
703					
704	001400	070303		DH5	
705	001402	072020		DT5	
706	001404	072334		DF5	
707			:ITEM	17	
708	001406	056063		EM17	;WCE AND TRE ARE SET BUT
709					;SC BIT READS AS CLEARED
710					;LOGIC BETWEEN TRE AND SC
711					;DOES NOT SEEM TO BE WORKING
712					;BUT IT WORKED OK ON THE
713					;NON-EXISTENT MEMORY TEST
714					;WHICH PRECEDED THIS TEST
715					
716	001410	070303		DH5	
717	001412	072020		DT5	
718	001414	072334		DF5	
719					
720			:ITEM	20	
721	001416	056132		EM20	;UPE DID NOT SET IN RHCS2
722					
723	001420	070303		DH5	
724	001422	072020		DT5	
725	001424	072334		DF5	
726					
727			:ITEM	21	
728	001426	056163		EM21	;TRE AND SC BITS ARE SET
729					;EITHER UPE HAS AN OPEN GOING
730					;TO BUS OR TRE AND SC WAS
731					;SET BY ANOTHER ERROR
732					
733	001430	070303		DH5	
734	001432	072020		DT5	
735	001434	072334		DF5	
736					
737			:ITEM	22	
738	001436	056212		EM22	;TRE BIT IS SET, UPE AND SC
739					;SHOULD ALSO BE SET BUT THEY
740					;READ AS CLEARED
741					
742	001440	070303		DH5	
743	001442	072020		DT5	
744	001444	072334		DF5	
745					
746			:ITEM	23	
747	001446	056245		EM23	;UPE AND TRE ARE SET BUT
748					;SC DID NOT SET, LOGIC TO
749					;SET SC DOES NOT SEEM TO
750					;BE WORKING
751					
752	001450	070303		DH5	
753	001452	072020		DT5	
754	001454	072334		DF5	
755					
756			:ITEM	24	
757	001456	056264		EM24	;NED DID NOT SET IN RHCS2

758					
759	001460	070303		DH5	
760	001462	072020		DT5	
761	001464	072334		DF5	
762					
763			:ITEM	25	
764	001466	056315		EM25	
765					:TRE AND SC ARE SET
766					:BUT THEY SHOULD HAVE BEEN
767					:SET BY NED WHICH READS
768					:AS CLEARED
769	001470	070303		DH5	
770	001472	072020		DT5	
771	001474	072334		DF5	
772					
773			:ITEM	26	
774	001476	056347		EM26	
775					:TRE BIT SET BUT NED
776					:AND SC BITS READ AS
777					:CLEARED. NED SHOULD
778					:HAVE SET CAUSING TRE
779					:TO SET WHICH IN TURN
780					:SET SC. LOGIC NOT WORK
781					:ING CORRECTLY
782	001500	070303		DH5	
783	001502	072020		DT5	
784	001504	072334		DF5	
785					
786			:ITEM	27	
787	001506	056375		EM27	
788					:TRE BIT WAS NOT SET
789	001510	070303		DH5	
790	001512	072020		DT5	
791	001514	072334		DF5	
792					
793			:ITEM	30	
794	001516	056430		EM30	
795					:MXF BIT DID NOT SET
796					:IN RHCS2
797	001520	070303		DH5	
798	001522	072020		DT5	
799	001524	072334		DF5	
800					
801			:ITEM	31	
802	001526	056465		EM31	
803					:MXF BIT SHOULD BE SET
804					:IN RHCS2 BUT IT READS AS
805					:CLEARED. TRE AND SC ARE SET
806					:IN RHCS1.
807	001530	070303		DH5	
808	001532	072020		DT5	
809	001534	072334		DF5	
810					
811			:ITEM	32	
812	001536	056524		EM32	
813					:TRE BIT IS SET BUT MXF
					:AND SC READ AS CLEARED

814					
815	001540	070303	DH5		;MXF AND SC BITS ARE INCORRECT
816	001542	072020	DT5		
817	001544	072334	DF5		
818					
819				:ITEM	33
820	001546	056553	FM33		;TRE LOGIC ASSOCIATED WITH
821					;MXF IS NOT WORKING
822					;TRE READS AS CLEARED
823					;OR TRE HAS AN OPEN GOING
824					;TO THE BUS
825					
826	001550	070303	DH5		
827	001552	072020	DT5		
828	001554	072334	DF5		
829					
830				:ITEM	34
831	001556	056623	EM34		;TESTER IS NOT CONNECT
832					;TO THE MASSBUS DEVICE
833					;CODE SHOULD BE A 40
834	001560	070476	DH34		;PC TEST NO. DEVICE CODE
835					
836	001562	072042	DT34		;\$ERRPC,\$TSTNM,DT,0
837					
838	001564	072343	DF34		;0,0,0
839					
840				:ITEM	35
841	001566	056673	EM35		;BIT IN RHCS3 WILL NOT ET
842					
843					
844	001570	071631	DH171		
845	001572	072272	DT171		
846	001574	072340	DF11		
847					
848				:ITEM	36
849	001576	056725	EM36		
850					
851	001600	070556	DH36		;PC TEST NO. FAILING ADDRESS
852					
853	001602	072056	DT36		;\$ERRPC,\$TSTNM,RHCS1,0
854					
855	001604	072347	DF36		;0,0,0
856					
857				:ITEM	37
858	001606	056763	EM37		;DLT DID NOT SET IN RHCS2
859					
860	001610	070553	DH35		
861					
862	001612	072052	DT35		
863					
864	001614	072346	DF35		
865					
866				:ITEM	40
867	001616	057014	EM40		;DLT IS NOT SET IN RHCS2 BUT
868					;TRE AND SC READ AS SET.TRE
869					;AND SC MUST HAVE BEEN SET BY A DIFFERENT ERROR

870				
871	001620	070553	DH35	
872	001622	072052	DT35	
873	001624	072346	DF35	
874				
875			: ITEM 41	
876	001626	057154	EM41	: OUTPUT READY IN RHCS2
877				: DID NOT SET
878				
879	001630	070637	DH41	: PC TEST NO.
880				
881	001632	072066	DT41	: \$ERRPC, \$TSTNM, 0
882				
883	001634	072352	DF41	:
884				
885			: ITEM 42	
886				
887	001636	057257	EM42	: ALL BITS DID NOT LOAD INTO RHWC
888				: (177777)
889				
890	001640	000000	0	
891	001642	000000	0	
892	001644	000000	0	
893				
894			: ITEM 43	
895	001646	057330	EM43	: RHWC DID NOT LOAD ANY BITS (177777)
896	001650	000000	0	
897	001652	000000	0	
898	001654	000000	0	
899				
900			: ITEM 44	: RHWC
901	001656	057374	EM44	: SOME BITS CLEARED AFTER CLEAR
902				: WAS LOADED INTO RHCS2
903				
904	001660	000000	0	
905	001662	000000	0	
906	001664	000000	0	
907				
908			: ITEM 45	
909	001666	057466	EM45	: NON-EXISTANT MEMORY BIT
910				: SET IN RHCS2
911	001670	000000	0	
912	001672	000000	0	
913	001674	000000	0	
914				
915			: ITEM 46	
916	001676	057541	EM46	: RHBA DID NOT CLEAR AFTER CLR
917				: WAS LOADED INTO RHCS2
918	001700	000000	0	
919	001702	000000	0	
920	001704	000000	0	
921				
922			: ITEM 47	
923	001706	057622	EM47	: ALL BITS DID NOT LOAD INTO
924				: RHBA REGISTER (177776)
925	001710	000000	0	

926	001712	000000	0	
927	001714	000000	0	
928				
929			:ITEM 50	
930	001716	057673	EM50	:LOADING TRE AFER ITS SET DOES NOT
931				:CLEAR ERRORS
932	001720	000000	0	
933	001722	000000	0	
934	001724	000000	0	
935				
936			:ITEM 51	
937	001726	057752	EM51	:PGE DID NOT SET IN RHCS2
938	001730	000000	0	
939	001732	000000	0	
940	001734	000000	0	
941				
942			:ITEM 52	
943	001736	060003	EM52	:THE PROM WHILE ACCESSING A
944				:REGISTER WHICH YOUR TESTER \
945				:CANNOT SUPPLY INFORMATION FOR
946				:SAYS INFORMATION IS PRESENT
947				
948	001740	070663	DM52	:PC TEST NO. ADDRESS CONT
949				
950	001742	072074	DT52	:\$ERRPC,\$TSTNM,BAE,\$REGO
951				
952	001744	072354	DF52	:
953				
954			:ITEM 53	
955	001746	060156	EM53	:RHCS1
956	001750	000000	0	
957	001752	000000	0	
958	001754	000000	0	
959				
960			:ITEM 54	
961	001756	060164	EM54	:RHWC
962	001760	000000	0	
963	001762	000000	0	
964	001764	000000	0	
965				
966			:ITEM 55	
967	001766	060171	EM55	:RHBA
968	001770	000000	0	
969	001772	000000	0	
970	001774	000000	0	
971				
972			:ITEM 56	
973	001776	060176	EM56	:RHMR2
974	002000	000000	0	
975	002002	000000	0	
976	002004	000000	0	
977				
978			:ITEM 57	
979	002006	060204	EM57	:RHCS2
980	002010	000000	0	
981	002012	000000	0	

982	002014	000000		0	
983					
984			:ITEM	60	
985	002016	060212		EM60	:RHST
986	002020	000000		0	
987	002022	000000		0	
988	002024	000000		0	
989					
990			:ITEM	61	
991	002026	060217		EM61	:RHER
992	002030	000000		0	
993	002032	000000		0	
994	002034	000000		0	
995					
996			:ITEM	62	
997	002036	060224		EM62	:RHAS
998	002040	000000		0	
999	002042	000000		0	
1000	002044	000000		0	
1001					
1002			:ITEM	63	
1003	002046	060231		EM63	:RHTDB
1004	002050	000000		0	
1005	002052	000000		0	
1006	002054	000000		0	
1007					
1008			:ITEM	64	
1009	002056	060237		EM64	:RHDB
1010	002060	000000		0	
1011	002062	000000		0	
1012	002064	000000		0	
1013					
1014			:ITEM	65	
1015	002066	060244		EM65	:RHMR1
1016	002070	000000		0	
1017	002072	000000		0	
1018	002074	000000		0	
1019					
1020			:ITEM	66	
1021	002076	060252		EM66	:RHDT
1022	002100	000000		0	
1023	002102	000000		0	
1024	002104	000000		0	
1025					
1026			:ITEM	67	
1027	002106	060257		EM67	:RHBAE
1028	002110	000000		0	
1029	002112	000000		0	
1030	002114	000000		0	
1031					
1032			:ITEM	70	
1033	002116	060265		EM70	:RHCS3
1034	002120	000000		0	
1035	002122	000000		0	
1036	002124	000000		0	
1037					

1038			:ITEM 71	
1039	002126	060273	EM71	:DEVICE NO DOES NOT EQUAL :A 7 IN RHMR2 AFTER A CLEAR
1040				
1041				
1042	002130	071657	DH172	
1043				
1044	002132	072302	DT172	
1045				
1046	002134	072406	DF172	
1047				
1048			:ITEM 72	
1049	002136	060362	EM72	:RHCS1 HAS AN ERROR BIT :SET AFTER CLEAR OPERATION
1050				
1051				
1052	002140	071041	DH72	:PC TEST NO. CONTENTS OF REGISTER
1053				
1054	002142	072110	DT71	
1055				
1056	002144	072361	DF71	
1057				
1058			:ITEM 73	
1059	002146	060417	EM73	:ERROR BIT SET IN RHCS2 :AFTER A CLEAR OPERATION
1060				
1061				
1062	002150	071041	DH72	
1063				
1064	002152	072110	DT71	
1065	002154	072361	DF71	
1066				
1067			:ITEM 74	
1068	002156	060446	EM74	:ERROR BIT SET IN RHER, :TESTER ERROR REGISTER, AFTER :A CLEAR OPERATION
1069				
1070				
1071	002160	071041	DH72	
1072	002162	072110	DT71	
1073	002164	072361	DF71	
1074				
1075			:ITEM 75	
1076	002166	060474	EM75	:ERROR BIT SET IN RHST :AFTER A CLEAR OPERATION
1077				
1078				
1079	002170	071041	DH72	
1080	002172	072110	DT71	
1081	002174	072361	DF71	
1082			:ITEM 76	
1083	002176	060524	EM76	:RHBA INCREMENTED BUT DID NOT CARRY :OVER TO THE RHBAE REGISTER
1084				
1085	002200	071130	DH76	
1086	002202	072120	DT76	
1087	002204	072364	DF76	
1088			:ITEM 77	
1089	002206	060631	EM77	:READY DID NOT SET AND RHWC :DID NOT INCREMENTM DOING A WRITE OPERATION
1090				
1091	002210	067602	DH1	
1092	002212	071750	DT1	
1093	002214	072314	DF1	

1094			:ITEM	100		
1095	002216	060743		EM100		:RHBA DID NOT CLEAR AFTER CLR :WAS LOADED INTO RHCS2
1096						
1097	002220	067722		DH2		
1098	002222	071762		DT2		
1099	002224	072320		DF2		
1100			:ITEM	101		
1101	002226	061030		EM101		
1102	002230	067722		DH2		
1103	002232	071762		DT2		
1104	002234	072320		DF2		
1105			:ITEM	102		
1106	002236	061075		EM102		:READY DID NOT SET IN RHCS1
1107	002240	000000		C		
1108	002242	000000		0		
1109	002244	000000		0		
1110			:ITEM	103		
1111	002246	061126		EM103		:DOING A WRITE OPERATION RDY :DID NOT SET AND WC DID NOT INCREMENT :BUT INFO WAS WRITTEN TO TESTER
1112						
1113						
1114	002250	067602		DH1		
1115	002252	071750		DT1		
1116	002254	072314		DF1		
1117			:ITEM	104		
1118	002256	061304		EM104		:DOING A WRITE OPERATION RDY :DID NOT SET AND WC WAS NOT INCREMENTED :AND INFO WAS NOT WRITTEN TO TESTER :(WRITE OPERATION DID NOT WORK)
1119						
1120						
1121						
1122	002260	000000		0		
1123	002262	000000		0		
1124	002264	000000		0		
1125			:ITEM	105		
1126	002266	061475		EM105		:RHBAE IS MESSED UP IT SHOULD :EQUAL 40, IT DOES NOT = 37(OLD) :AND IT DOES NOT = 0
1127						
1128						
1129	002270	071166		DH105		
1130	002272	072132		DT105		
1131	002274	072370		DF105		
1132			:ITEM	106		
1133	002276	061542		EM106		:RHBAE DID NOT GET INCREMENTED
1134	002300	071166		DH105		
1135	002302	072132		DT105		
1136	002304	072370		DF105		
1137			:ITEM	107		
1138	002306	061570		EM107		:READ REV. OPERATIONS DID NOT :READ FROM TESTER TO STORAGE LOCATION :(RBUS)
1139	002310	000000		0		
1140	002312	000000		0		
1141	002314	000000		0		
1142			:ITEM	110		
1143	002316	061677		EM110	1	:RHBAE = 0 IT SHOULD = 40 :AFTER A ONE WORD WRITE
1144						
1145	002320	000000		0		
1146	002322	000000		0		
1147	002324	000000		0		
1148			:ITEM	111		
1149	002326	061771		EM111		:A17 DID NOT SET AFTER BA WAS INCREMENTED

1150	002330	071233		DH111	
1151	002332	072146		DT111	
1152	002334	072370		DF105	
1153			:ITEM	112	
1154	002336	062044		EM112	:BA DID NOT INCREMENT
1155	002340	071233		DH111	
1156	002342	072146		DT111	
1157	002344	072370		DF105	
1158			:ITEM	113	
1159	002346	062071		EM113	:RHBA INCREMENTED BUT IT DID :NOT CARRY TO A16 + A17 IN RHCS1
1160					
1161	002350	071233		DH111	
1162	002352	072146		DT111	
1163	002354	072370		DF105	
1164			:ITEM	114	
1165	002356	062166		EM114	:OUTPUT READY WAS NOT NEGATED :AFTER CLR WAS LOADED INTO RHCS2
1166					
1167	002360	000000		0	
1168	002362	000000		0	
1169	002364	000000		0	
1170			:ITEM	115	
1171	002366	062264		EM115	:ALL BITS DID NOT READ TO STORAGE :LOCATION (RBUF) DURING A READ REV. OPERATION
1172	002370	000000		0	
1173	002372	000000		0	
1174	002374	000000		0	
1175			:ITEM	116	
1176	002376	062376		EM116	:MDPE DID NOT SET IN RHCS2
1177	002400	000000		0	
1178	002402	000000		0	
1179	002404	000000		0	
1180			:ITEM	117	
1181	002406	062430		EM117	:INFO DID NOT WRITE TO TESTER :DOING A WRITE REV. OPERATION
1182					
1183	002410	071545		DH147	
1184	002412	072250		DT147	
1185	002414	072364		DF76	
1186			:ITEM	120	
1187	002416	062526		EM120	:TRE AND SC DO NOT SEEM TO HAVE :BEEN SET BY MDPE
1188					
1189	002420	070410		DH11	
1190	002422	072032		DT11	
1191	002424	072340		DF11	
1192			:ITEM	121	
1193	002426	062567		EM121	:TRE IS ONLY BIT SET ,MDPE AND :SC SHOULD ALSO BE SET
1194					
1195	002430	071300		DH121	
1196	002432	072162		DT121	
1197	002434	072364		DF76	
1198			:ITEM	122	
1199	002436	062652		EM122	:SC NOT SET AFTER MDPE AND TRE SET
1200	002440	071300		DH121	
1201	002442	072162		DT121	
1202	002444	072364		DF76	
1203			:ITEM	123	
1204	002446	062704		EM123	:TRE AND SC WERE SET EITHER BY :AN ERROR OTHER THAN PGE,OR PGE
1205					

1262	002566	063657	EM135	;WCE HI DID NOT SET IN RHCS3
1263	002570	071364	DH132	
1264	002572	072204	DT132	
1265	002574	072375	DF132	
1266			136	
1267	002576	063713	EM136	;WCE HI SET BUT WCF DID NOT SET IN RHCS2
1268	002600	071364	DH132	
1269	002602	072204	DT132	
1270	002604	072375	DF132	
1271			137	
1272	002606	063774	EM137	;WCE LO SET WITH WCE HI IN RHCS3
1273	002610	071364	DH132	
1274	002612	072204	DT132	
1275	002614	072375	DF132	
1276			140	

1277	002616	064075	EM140	;WRITE OPERATION DID NOT INC WC
1278	002620	000000	0	
1279	002622	000000	0	
1280	002624	000000	0	
1281			:ITEM 141	
1282	002626	064152	EM141	;BA WAS NOT INC AFTER A WRITE
1283	002630	000000	0	
1284	002632	000000	0	
1285	002634	000000	0	
1286			:ITEM 142	
1287	002636	064226	EM142	;INFO WAS NOT WRITTEN TO TESTER
1288	002640	071442	DH142	
1289	002642	072222	DT142	
1290	002644	072364	DF76	
1291			:ITEM 143	
1292	002646	064300	EM143	;READ OPERATION DID NOT INC WC
1293	002650	000000	0	
1294	002652	000000	0	
1295	002654	000000	0	
1296			:ITEM 144	
1297	002656	064354	EM144	;BA WAS NOT INC AFTER A READ
1298	002660	000000	0	
1299	002662	000000	0	
1300	002664	000000	0	
1301			:ITEM 145	
1302	002666	064442	EM145	;INFO DID NOT READ FROM TESTER
1303	002670	071442	DH142	
1304	002672	072222	DT142	
1305	002674	072364	DF76	
1306			:ITEM 146	
1307	002676	064507	EM146	;THIS IS FOR PRINTED CONTENTS ;OF THE RH REGISTERS
1308				
1309	002700	071500	DH146	
1310	002702	072234	DT146	
1311	002704	072370	DF105	
1312			:ITEM 147	
1313	002706	064560	EM147	;ALL BITS DID NOT GET TRANSFERED ;DURING A READ OPERATION
1314				
1315	002710	071545	DH147	
1316	002712	072250	DT147	
1317	002714	072364	DF76	
1318			:ITEM 150	
1319	002716	064651	EM150	;READ OPERATION DID NOT SEEM TO WORK
1320	002720	071545	DH147	
1321	002722	072250	DT147	
1322	002724	072364	DF76	
1323			:ITEM 151	
1324	002726	065003	EM151	;ALL BITS DID NOT WRITE TO TESTER
1325	002730	071545	DH147	
1326	002732	072250	DT147	
1327	002734	072364	DF76	
1328			:ITEM 152	
1329	002736	065105	EM152	;WRITE OPERATION DID NOT WRITE ;TO TESTER
1330				
1331	002740	071545	DH147	
1332	002742	072250	DT147	

1333	002744	072364		DF76	
1334			:ITEM	153	
1335	002746	065155		EM153	:DBL SET ON A 2 WORD TRANSFER
1336					:WITH BAI SET
1337	002750	000000		0	
1338	002752	000000		0	
1339	002754	000000		0	
1340			:ITEM	154	
1341	002756	065241		EM154	:DBL SET ON A 1 WORD READ FROM
1342					:AN EVEN ADDRESS
1343	002760	000000		0	
1344	002762	000000		0	
1345	002764	000000		0	
1346			:ITEM	155	
1347	002766	065332		EM155	:DBL SET ON A 2 WORD WRITE REV
1348					:WITH BAI SET
1349	002770	000000		0	
1350	002772	000000		0	
1351	002774	000000		0	
1352			:ITEM	156	
1353	002776	065420		EM156	:DBL SET ON A 2 WORD WRITE FROM
1354					:FROM AN ODD ADDRESS
1355	003000	000000		0	
1356	003002	000000		0	
1357	003004	000000		0	
1358			:ITEM	157	
1359	003006	065511		EM157	:DBL DID NOT SET ON A 2 WORD
1360					:WRITE REV FROM AN EVEN ADDRESS
1361	003010	000000		0	
1362	003012	000000		0	
1363	003014	000000		0	
1364			:ITEM	160	
1365	003016	065605		EM160	:DBL SET ON A 2 WORD WRITE REV
1366					:FROM AN ODD ADDRESS
1367	003020	000000		0	
1368	003022	000000		0	
1369	003024	000000		0	
1370			:ITEM	161	
1371	003026	065674		EM161	:DBL SET ON A 3 WORD WRITE REV
1372					:FROM AN ODD ADDRESS
1373	003030	000000		0	
1374	003032	000000		0	
1375	003034	000000		0	
1376			:ITEM	162	
1377	003036	065763		EM162	:DBL DID NOT SET ON A 2 WORD
1378	003040	000000		0	
1379	003042	000000		0	
1380	003044	000000		0	
1381			:ITEM	163	
1382	003046	066052		EM163	:DBL SET ON A 2 WORD READ
1383					:FROM AN ODD ADDRESS
1384	003050	000000		0	
1385	003052	000000		0	
1386	003054	000000		0	
1387			:ITEM	164	
1388	003056	066130		EM164	:DBL SET ON A 2 WORD READ REV

1445			:ITEM	176	
1446	003176	066743		EM176	:TRE IS SET DLT AND SC SHOULD ALSO BE SET
1447	003200	071300		DH121	
1448	003202	072162		DT121	
1449	003204	072364		DF76	
1450			:ITEM	177	
1451	003206	066776		EM177	:DLT AND TRE ARE SET ,SC READS AS CLEARED
1452	003210	071300		DH121	
1453	003212	072162		DT121	
1454	003214	072364		DF76	
1455			:ITEM	200	
1456	003216	067043		EM200	:HIBITE LOBYTE GATE FOR WC NG
1457	003220	070637		DH41	
1458	003222	072066		DT41	
1459	003224	072352		DF41	
1460			:ITEM	201	
1461	003226	067125		EM201	:HIBYTE LOBYTE GATE FOR DB NG
1462	003230	070637		DH41	
1463	003232	072066		DT41	
1464	003234	072352		DF41	
1465			:ITEM	202	
1466	003236	067207		EM202	:HIBYTE LOBYTE GATE FOR BA IS NG
1467	003240	070637		DH41	
1468	003242	072066		DT41	
1469	003244	072352		DF41	
1470			:ITEM	203	
1471	003246	067271		EM203	:RHBA HAS WRONG ADDRESS
1472	003250	070637		DH41	
1473	003252	072066		DT41	
1474	003254	072352		DF41	
1475			:ITEM	204	
1476	003256	067351		EM204	:TESTER DATA BUFFER HAS WRONG INFO
1477	003260	070637		DH41	
1478	003262	072066		DT41	
1479	003264	072352		DF41	
1480			:ITEM	205	
1481	003266	067436		EM205	:RH DID NOT INTERRUPT
1482	003270	070637		DH41	
1483	003272	072066		DT41	
1484	003274	072352		DF41	
1485			:ITEM	206	
1486	003276	067522		EM206	:RHWC SHOULD BE ZERO
1487	003300	070637		DH41	
1488	003302	072066		DT41	
1489	003304	072352		DF41	
1490			:ITEM	207	
1491	003306	067546		EM207	:TRANSFER WAS DONE ON PORT B
1492	003310	000000		0	
1493	003312	000000		0	
1494	003314	000000		0	
1495			:RH REGISTERS		
1496					
1497					
1498					
1499	003316	000774	RHVEC:774		:RH VECTOR ADDRESS
1500			:*****		

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

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

:CONTROL AND STATUS REGISTER 2 (RHCS2)

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

:CONTROL AND STATUS REGISTER 3 (RHCS3)

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

:DATA BUFFER REGISTER (RHDB)
: EACH BIT IS CALLED BY BIT NUMBER

:CONTROL AND STATUS 1 REGISTER. (#00)

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

1557	002000	PSEL= 2000	:PORT SELECT (BIT #10)
1558	004000	DVA= 4000	:DEVICE AVAILABLE (BIT #11)
1559	020000	MCPE= 20000	:MASSBUS PARITY ERROR (BIT #13)
1560	040000	TRE= 40000	:TRANSFER ERROR (BIT #14)
1561	000100	TREB= 100	:TRE BIT FOR A BYTE OPERATION
1562	100000	SC= 100000	:SPECIAL CONDITION (BIT #15)
1563			
1564		:STATUS REGISTER (RHST) (#01)	
1565			
1566	000200	DRY= 200	:DRIVE READY (BIT #7)
1567	000400	DPR= 400	:DRIVE PRESENT (BIT #8)
1568	010000	MOL= 10000	:MEDIUM ON-LINE (BIT #12)
1569	020000	PIP= 20000	:POSITIONING OPERATION IN PROGRESS (BIT #13)
1570	040000	ERR= 40000	:COMPOSIT ERROR. (BIT #14)
1571	100000	ATA= 100000	:ATTENTION ACTIVE (BIT #15)
1572			
1573		:ERROR REGISTER #01 (RHER) (#02)	
1574	000001	ILF= 1	:ILLEGAL FUNCTION (BIT #0)
1575	000004	RMR= 4	:REGISTER MODIFICATION REFUSED (BIT #2)
1576	000010	CPE= 10	:CONTROL PARITY ERROR (BIT #3)
1577	000020	DPE= 20	:DATA PARITY ERROR (BIT #4)
1578	000040	RMBEX= 40	:MASSBUS EXCEPTION WHEN SET CAUSES AN ABORT OF A DATA T
1579	000100	RFAIL= 100	:MASSBUS POWER FAIL (BIT #6)
1580	010000	DTE= 10000	:DRIVE TIMING ERROR (BIT #12)
1581	020000	OPI= 20000	:OPERATION INCOMPLETE (BIT #13)
1582			

1583				
1584				
1585	000001	DMD=	1	:DIAGINOSTIC MODE (BIT #0)
1586	000002	MCLK=	2	:MAINTAINCE CLOCK (BIT #1)
1587	000004	FERR=	4	:FORCE ERROR (BIT #2)
1588	000010	ICPA=	10	:INVERT CONTROL PARITY,CAUSES PARITY TO BE EVEN WHEN SET
1589	000020	IDPA=	20	:INVERT DATA PARITY,CAUSES DATA PARITY TOBE EVEN WHEN SE
1590	000040	DPCA=	40	:DISABLE PARITY CHECK,INHIBITS PARITY CHECK ON BOTH C AN
1591	000100	NEBL=	100	:NO END OF BLOCK,INHIBITS TESTER FROM GENERATING END OF
1592	000200	DTRM=	200	:WHEN SET DELAYS TRA FROM BEING ASSERTED FOR 500NS (BIT
1593	000400	DOCC=	400	:DISSABLE OCCUPY (BIT #8)
1594	001000	SLKM=	1000	:SYNC CLOCK MINIMUM WIDTH ,WHEN SET CHANGES SYNC CLOCK T
1595	002000	ISLK=	2000	:INVERT SYNC CLOCK,WHEN SET INVERTS SYNC CLOCK,NO EFFECT
1596	004000	ENPS=	4000	:ENABLE PATTERN SHIFT,WHEN SET CAUSES A 16 OR 18 BIT ROT
1597	010000	BMD18=	10000	:18 BIT MODE (BIT #12)
1598				
1599				
1600				
1601	000001	AT0=	1	:DEVICE 0 (BIT #0)
1602	000002	AT1=	2	:DEVICE 1 (BIT #1)
1603	000004	AT2=	4	:DEVICE 2 (BIT #2)
1604	000010	AT3=	10	:DEVICE 3 (BIT #3)
1605	000020	AT4=	20	:DEVICE 4 (BIT #4)
1606	000040	AT5=	40	:DEVICE 5 (BIT #5)
1607	000100	AT6=	100	:DEVICE 6 (BIT #6)
1608	000200	AT7=	200	:DEVICE 7 (BIT #7)
1609				
1610				
1611				
1612	000001	DN0=	1	:DRIVE NUBER BIT #0 (BIT #0)
1613	000002	DN1=	2	:DRIVE NUMBER BIT #1 (BIT #1)
1614	000004	DN2=	4	:DRIVE NUMBER BIT #2 (BIT #2)
1615	000010	SCLK=	10	:SYNC CLOCK RANGE BIT ,WHEN CLEAR SYNC CLOCK IS 0.4-2.6
1616				:WHEN SET 2.0-10.6 MICRO SECONDS (BIT #3)
1617	000020	GAP=	20	:GAP SIZE BIT,SETS GAP SIZE TO 5 MICROSECONDS WHEN CLEAR
1618	000040	BL0=	40	:BLOCK SIZE BIT 0 (BIT #5)
1619	000100	BL1=	100	:BLOCK SIZE BIT 1(BIT #6)
1620	000200	BL2=	200	:BLOCK SIZE BIT 2(BIT #7)
1621				
1622				
1623				
1624	003320	160100	ADD1:	:BASE ADDRESS RH #1
1625	003322	160200	ADD2:	:BASE ADDRESS RH #2
1626	003324	160300	ADD3:	:BASE ADDRESS RH #3
1627	003326	160400	ADD4:	:BASE ADDRESS RH #4
1628	003330	000000	RHCS1:	0 :CONTROL AND STATUS 1
1629	003332	000000	RHWC:	0 :WORD COUNT
1630	003334	000000	RHBA:	0 :BUS ADDRESS
1631	003336	000000	RHMR2:	0 :TRANSFER CONTROL REGISTER
1632	003340	000000	RHCS2:	0 :CONTROL AND STATUS 2
1633	003342	000000	RHST:	0 :TESTER STATUS
1634	003344	000000	RHER:	0 :ERROR REGISTER
1635	003346	000000	RHAS:	0 :ATTENTION SUMMARY REG
1636	003350	000000	RHTDB:	0 :TESTER DATA REGISTER
1637	003352	000000	RHDB:	0 :DATA BUFFER
1638	003354	000000	RHMR1:	0 :DIAGNOSTIC (MAINTENCE) REGISTER

1639	003356	000000	RHDT: 0	:DRIVE TYPE REGISTER
1640	003360	000000	RHBAE: 0	:BUS ADDRESS EXTENTION
1641	003362	000000	RHCS3: 0	:CONTROL AND STATUS 3
1642	003364	000000	RHCS1B: 0	:HIGH BYTE OF RHCS1 REG.
1643				
1644	003366	000000	DEVIC1: 0	:ADDRESS OF RH #1
1645	003370	000000	DEVIC2: 0	:ADDRESS OF RH #2
1646	003372	000000	DEVIC3: 0	:ADDRESS OF RH #3
1647	003374	000000	DEVIC4: 0	:ADDRESS OF RH #4
1648				
1649	003376	000000	DEVIC5: 0	:DEVICE COUNTER
1650	003400	000000		:USED TO CONSTRUCT REG. ADDRESSES
1651				
1652				
1653				
1654	003402	000000	OFF11: 0	:REG. CALCULATION LOCATION
1655		177740	LERADD= 177740	:LOW ERROR ADDRESS REG.
1656		177742	HERADD= 177742	:HIGH ERROR ADDRESS REG
1657		177744	MEMERR= 177744	:MEMORY SYSTEM ERROR REG
1658	003404	000000	REGEND: 0	:REGISTER ENDING ADDRESS
1659	003406	000000	VECADD: 0	:VECTOR ADDRESS
1660	003410	000000	RETAIN: 0	
1661				
1662				
1663				
1664				
1665				
1666	003412	000000	AS: 0	:ATTENTION SUMMARY
1667	003414	000000	BA: 0	:BUS ADDRESS
1668	003416	000000	BAE: 0	:BUS ADDRESS EXTENTION
1669	003420	000000	CS1: 0	:CONTROL AND STATUS 1
1670	003422	000000	CS2: 0	:CONTROL AND STATUS 2
1671	003424	000000	CS3: 0	:CONTROL AND STATUS 3
1672	003426	000000	DB: 0	:DATA BUFFER
1673	003430	000000	DR: 0	:DIAGNOSTIC REGISTER
1674	003432	000000	DS1: 0	:TESTER STATUS
1675	003434	000000	DT: 0	:DRIVE TYPE
1676	003436	000000	ER1: 0	:ERROR REGISTER
1677	003440	000000	TC: 0	:TRANSFER CONTROL
1678	003442	000000	TDR: 0	:TESTER DATA REGISTER
1679	003444	000000	WC: 0	:WORD COUNT
1680				
1681				
1682				
1683				
1684				
1685	052525		AB= 52525	:ALTERNATE BIT PATTERN
1686	125252		OAB= 125252	:OPPOSITE ALTERNATE BIT PATTERN
1687	000000		ZERO= 0	:CONSTANT ZERO
1688	000001		ONE= 1	:CONSTANT 1
1689	000002		TWO= 2	:CONSTANT 2
1690				
1691				
1692				
1693				
1694	000001		NOOP= 01	:NO OPERATION, RESETS GO BIT

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1695
1696      000051
1697      000052
1698      000053
1699      000054
1700      000055
1701      000056
1702      000057
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1706      000071
1707      000072
1708      000073
1709      000074
1710      000075
1711      000076
1712      000077
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1716      000061
1717      000062
1718      000063
1719      000064
1720      000065
1721      000066
1722      000067
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1726      000011
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1730      000031
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1737 003446 000000
1738 003450 000000
1739 003452 000000
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1745 003454 000000
1746 003456 000000
1747 003460 000000
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*****
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
LOOPCNT: 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 ERRCR HEADER
HEDDAD: 0     :USE TO FIND HEADER ERROR MESSAGE
*****
                :THESE ARE THE READ WRITE BUFFERS
*****
```

1751 004000 004000
1752 004000 000000
1753 004002 000000
1754 004100 004100
1755 004100 000000
1756 004102 000000
1757 004104 000000
1758 004106 000000
1759 004110 000000
1760 004112 000000
1761 004114 000000
1762 004116 000000
1763
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1766
1767
1768 004120 177777
1769 004122 000000
1770
1771 004124 000000
1772 004126 000000
1773 004130 000000
1774 004132 000000
1775 004134 000000
1776 004136 000000
1777 004140 000000
1778 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

```

1779
1780
1781 004144 005000
1782 004146 005100
1783 004150 000421
1784 004152 005000
1785 004154 005037 001174
1786 004160 005137 001174
1787 004164 000413
1788 004166 005000
1789 004170 005100
1790 004172 000137 004546
1791 004176 012737 000074 003404
1792 004204 012737 000774 003406
1793 004212 005000
1794
1795
1796 004214
1797
1798
1799 004214 012706 001100
1800 004220 005026
1801 004222 022706 001140
1802 004226 001374
1803 004230 012706 000750
1804
1805 004234 012737 072610 000020
1806 004242 012737 000340 000022
1807 004250 012737 074264 000030
1808 004256 012737 000340 000032
1809 004264 012737 075014 000034
1810 004272 012737 000340 000036
1811 004300 012737 073060 000024
1812 004306 012737 000340 000026
1813 004314 005037 001212
1814 004320 005037 001214
1815 004324 112737 000001 001115
1816 004332 012737 004332 001106
1817 004340 012737 004340 001110
1818
1819
1820 004346 013746 000004
1821 004352 012737 004406 000004
1822 004360 012737 177570 001140
1823 004366 012737 177570 001142
1824 004374 022777 177777 174536
1825 004402 001012
1826
1827 004404 000403
1828 004406 012716 004414
1829 004412 000002
1830 004414 012737 000176 001140
1831 004422 012737 000174 001142
1832 004430 012637 000004
1833
1834 004434 005700

;:*****
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 #SPWRDN,@#PWRVEC ;:POWER FAILURE VECTOR
      MOV #340,@#PWRVEC+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 #,$LPADR ;:INITIALIZE THE LOOP ADDRESS FOR SCOPE
      MOV #,$LPERR ;:SETUP THE ERROR LOOP ADDRESS
;:SIZE FOR A HARDWARE SWITCH REGISTER. IF NOT FOUND OR IT IS
;:EQUAL TO A '-1', SETUP FOR A SOFTWARE SWITCH REGISTER.
      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
      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
      TST R0 ;:WAS IT A RESTART

```

1835 004436 100443
1836 004440 104401 004446
1837 004444 000427
1838
1839 004524
1840 004524 104401 004532
1841 004530 000406
1842
1843 004546
1844 004546
1845
1846
1847
1848
1849
1850
1851
1852
1853
1854 004546 000004
1855 004550 012737 000001 001212
1856 004556 012737 047200 000114
1857 004564 012706 000750
1858 004570 012737 000340 000116
1859 004576 012737 046746 000004
1860 004604 012737 000340 000006
1861 004612 005700
1862 004614 001403
1863 004616 005000
1864 004620 000137 006552
1865 004624 005001
1866 004626 005737 001174
1867 004632 001402
1868 004634 000137 004644
1869 004640 000137 005066
1870 004644 005037 001174
1871 004650 104401 004656
1872 004654 000416
1873
1874 004712
1875 004712 104410
1876 004714 012637 003366
1877 004720 104401 004726
1878 004724 000415
1879
1880 004760
188 004760 104410
1882 004762 012637 003406
1883 004766 104401 004774
1884 004772 000426
1885
1886 005050
1887 005050 104410
1888 005052 012637 003404
1889 005056 006137 003404
1890 005062 000137 005402

```
BMI AROUND ;YES,SKIP TYPING
TYPE ,68$ ;;TYPE ASCIZ STRING
BR 67$ ;;GET OVER THE ASCIZ
;;68$: .ASCIZ <15><12>/RH 11 AND 70 I O AND CONTROLLER DIAGNOSTIC/
67$:
TYPE ,70$ ;;TYPE ASCIZ STRING
BR 69$ ;;GET OVER THE ASCIZ
;;70$: .ASCIZ <15><12>/CZRHB-D /
69$:
AROUND:
;*****
;*TEST 1 THIS IS THE RH ADDRESS DECODE TEST
; *THIS PROGRAM WILL ALLOW THE OPERATOR TO SAY
; *WHICH RH IS ON THE BUS AND WHAT ITS BASE
; *ADDRESS IS. THE RH IS THEN TESTED FOR A
; *RESPONSE AND CHECKED FOR A TESTER BEING
; *CONNECTED.
;*****
TST1: SCOPE
MOV #1,$TIMES ;;DO 1 ITERATION
MOV #PARITY,@#114
MOV #STACK,SP
MOV #340,@#116
MOV #TIEOUT,@#ERRVEC ;SET UP TIMEOUT
MOV #340,@#ERRVEC+2 ;SETUP PRIORITY
TST R0 ;SKIP TYPOUT ?
BEQ SKIPIN ;NO
CLR R0 ;CLEAR SKIP FLAG
JMP @#TST2 ;GET OUT OF TEST
SKIPIN: CLR R1 ;GET R1 READY
TST $REG5 ;IS IT AN ALTERNATE START
BEQ SLEUTH ;NO
JMP KONG ;YES DO ALTERNATE SETUP
SLEUTH: JMP AD1ERR ;DO REGULAR SETUP
KONG: CLR $REG5 ;RESET ALT. START FLAG
TYPE ,65$ ;;TYPE ASCIZ STRING
BR 64$ ;;GET OVER THE ASCIZ
;;65$: .ASCIZ <15><12>/TYPE BASE ADDRESS FOR RH /
64$:
RDOCT
MOV (SP)+,DEVIC1 ;GET BASE ADDRESS
TYPE ,67$ ;;TYPE ASCIZ STRING
BR 66$ ;;GET OVER THE ASCIZ
;;67$: .ASCIZ <15><12>/TYPE RH VECTOR ADDRESS /
66$:
RDOCT
MOV (SP)+,VECADD ;GET VECTOR ADDRESS
TYPE ,69$ ;;TYPE ASCIZ STRING
BR 68$ ;;GET OVER THE ASCIZ
;;69$: .ASCIZ <15><12>/HOW MANY REGISTERS ARE YOU JUMPERED FOR /
68$:
RDOCT
MOV (SP)+,REGEND ;GET NUMBER OF REG
ROL REGEND ;MULT BY 2
JMP G11 ;GO CREATE ADDRESSES
```

```

1891 005066 013737 003320 003366 AD1ERR: MOV ADD1,DEVIC1 ;SETUP DEVICE 1
1892 005074 012737 005166 000004 MOV #AD2ERR,ERRVEC ;FOR TIMEOUT
1893 005102 005777 176214 TST @ADD2 ;IS THERE A DEVICE
1894 005106 013737 003322 003370 MOV ADD2,DEVIC2 ;YES
1895 005114 012737 005206 000004 MOV #AD3ERR,ERRVEC ;FOR TIMEOUT
1896 005122 005777 176176 TST @ADD3 ;IS THERE A DEVICE
1897 005126 013737 003324 003372 MOV ADD3,DEVIC3 ;YES
1898 005134 012737 005226 000004 MOV #AD4ERR,ERRVEC ;FOR TIMEOUT
1899 005142 005777 176160 TST @ADD4 ;IS THERE A DEVICE
1900 005146 013737 003326 003374 MOV ADD4,DEVIC4 ;YES
1901 005154 012737 046746 000004 MOV #TIEOUT,ERRVEC ;REPLACE TIMEOUT
1902 005162 000137 006054 JMP RESTAR ;TEST DEVICES
1903 005166 005037 003370 AD2ERR: CLR DEVIC2 ;NO DEVICE 2
1904 005172 012737 046746 000004 MOV #TIEOUT,ERRVEC ;REPLACE TIMEOUT
1905 005200 022626 CMP (SP)+,(SP)+ ;CORRECT STACK
1906 005202 000137 006054 JMP RESTAR ;TEST DEVICES
1907 005206 005037 003372 AD3ERR: CLR DEVIC3 ;NO DEVICE 3
1908 005212 012737 046746 000004 MOV #TIEOUT,ERRVEC ;REPLACE TIMEOUT
1909 005220 022626 CMP (SP)+,(SP)+ ;CORRECT STACK
1910 005222 000137 006054 JMP RESTAR ;TEST DEVICES
1911 005226 005037 003374 AD4ERR: CLR DEVIC4 ;NO DEVICE 4
1912 005232 012737 046746 000004 MOV #TIEOUT,ERRVEC ;REPLACE TIMEOUT
1913 005240 022626 CMP (SP)+,(SP)+ ;CORRECT STACK
1914 005242 000137 006054 JMP RESTAR ;TEST DEVICES
1915 005246 005737 000042 GIGO: TST @#42 ;IS THERE A MONITOR
1916 005252 001402 BEQ GIG1 ;NO
1917 005254 000137 046152 JMP $EOP ;YES EXIT
1918 005260 022737 160100 003366 GIG1: CMP #160100,DEVIC1 ;ARE WE HERE AFTER 210
1919 005266 001402 BEQ SA200 ;NO, 200
1920 005270 000137 004644 JMP KONG ;GET NEW ADDRESS FOR 210
1921 005274 SA200:
1922 005274 104401 005302 TYPE ,65$ ;;TYPE ASCIZ STRING
1923 005300 000420 BR 64$ ;;GET OVER THE ASCIZ
1924 ;;65$: .ASCIZ <15><12>/TYPE BASE ADDRESS FOR RH #1 /
1925 64$:
1926 005342 104410 RDOCT
1927 005344 012637 003366 MOV (SP)+,DEVIC1 ;GET BASE ADDRESS FOR RH1
1928 005350 105737 001103 TSTB $ERFLG ;ARE WE HERE BECAUSE OF AN ADDRESS ERROR
1929 005354 001405 BEQ G01 ;NO,GET READY FOR NEXT ADDRESS
1930 005356 005737 003366 TST DEVIC1 ;IS IT A ZERO
1931 005362 001007 BNE G11 ;NO
1932 005364 000137 005260 JMP GIG1 ;NEED FIRST ADDRESS
1933 005370 005737 003366 G01: TST DEVIC1 ;DID HE CORRECT WITH A 0
1934 005374 001012 BNE GIG01 ;GET BASE FOR RH # 2
1935 005376 000137 005260 JMP GIG1 ;NEED ADDRESS
1936 005402 013737 003366 003400 G11: MOV DEVIC1,DEVIC5 ;GET READY TO CREATE REG. ADDRESS
1937 005410 012737 005246 003410 MOV #GIGO,RETAIN ;SAVE RETURN ADDRESS
1938 005416 000137 006146 JMP GIG04 ;CONSTRUCT REGISTER ADDRESSES
1939 005422 005737 000042 GIG01: TST @#42 ;IS THER A MONITOR
1940 005426 001402 BEQ GIG2 ;NO
1941 005430 000137 046152 JMP $EOP ;EXIT
1942 005434 GIG2:
1943 005434 104401 005442 TYPE ,65$ ;;TYPE ASCIZ STRING
1944 005440 000420 BR 64$ ;;GET OVER THE ASCIZ
1945 ;;65$: .ASCIZ <15><12>/TYPE BASE ADDRESS FOR RH #2 /
1946 64$:
005502

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1947 005502 104410 RDOCT ;GET VALUE
1948 005504 012637 003370 MOV (SP)+,DEVIC2 ;SAVE ADDRESS
1949 005510 105737 001103 TSTB $ERFLG ;ARE WE HERE BECAUSE OF ERROR
1950 005514 001405 BEQ G02 ;NO
1951 005516 005737 003370 TST DEVIC2 ;IS IT 0
1952 005522 001007 BNE G12 ;NO
1953 005524 000137 045374 JMP RESTAT ;SET UP FOR RH #1
1954 005530 005737 003370 G02: TST DEVIC2 ;IS IT 0
1955 005534 001012 BNE GIG02 ;NO,GET NEXT ADDRESS
1956 005536 000137 006054 JMP RESTAR ;CREATE ADDRESS FOR RH#1
1957 005542 013737 003370 003400 G12: MOV DEVIC2,DEVIC5 ;GET READY TO CREATE
1958 005550 012737 005422 003410 MOV #GIG01,RETAIN ;SAVE RETURN ADDRESS
1959 005556 000137 006146 JMP GIG04 ;CREATE REG. ADDRESSES
1960 005562 005737 000042 GIG02: TST @#42 ;IS THERE A MONITOR
1961 005566 001402 BEQ GIG3 ;NO
1962 005570 000137 046152 JMP $EOP ;EXIT
1963 005574 GIG3:
1964 005574 104401 005602 TYPE ,65$ ;;TYPE ASCIZ STRING
1965 005600 000420 BR 64$ ;;GET OVER THE ASCIZ
1966 ;;65$: .ASCIZ <15><12>/TYPE BASE ADDRESS FOR RH #3 /
1967 64$:
1968 005642 RDOCT
1969 005644 104410 MOV (SP)+,DEVIC3 ;SAVE ADDRESS
1970 005650 012637 003372 TSTB $ERFLG ;ARE WE HERE DO TO ERROR
1971 005654 001405 BEQ G03 ;NO
1972 005656 005737 003372 TST DEVIC3 ;IS IT 0
1973 005662 001007 BNE G13 ;NO
1974 005664 000137 045374 JMP RESTAT ;RESTART PASS
1975 005670 005737 003372 G03: TST DEVIC3 ;IS IT 0
1976 005674 001012 BNE GIG03 ;GET NEXT ADDRESS
1977 005676 000137 006054 JMP RESTAR ;CREATE RH#1 ADDRESSES
1978 005702 013737 003372 003400 G13: MOV DEVIC3,DEVIC5 ;SETUP TO CREATE ADDRESS
1979 005710 012737 005562 003410 MOV #GIG02,RETAIN ;SAVE RETURN ADDRESS
1980 005716 000137 006146 JMP GIG04 ;CREATE ADDRESSES
1981 005722 005737 000042 GIG03: TST @#42 ;IS THERE A MONITOR
1982 005726 001402 BEQ GIG4 ;NO
1983 005730 000137 046152 JMP $EOP ;EXIT
1984 005734 GIG4:
1985 005734 104401 005742 TYPE ,65$ ;;TYPE ASCIZ STRING
1986 005740 000420 BR 64$ ;;GET OVER THE ASCIZ
1987 ;;65$: .ASCIZ <15><12>/TYPE BASE ADDRESS FOR RH #4 /
1988 64$:
1989 006002 RDOCT
1990 006002 104410 MOV (SP)+,DEVIC4 ;SAVE ADDRESS
1991 006004 012637 003374 TSTB $ERFLG ;ARE WE HERE BECAUSE OF ERROR
1992 006010 105737 001103 BEQ G04 ;NO
1993 006014 001405 TST DEVIC4 ;IS IT 0
1994 006016 005737 003374 BNE G14 ;NO
1995 006022 001004 JMP RESTAT ;RESTART PASS
1996 006024 000137 045374 JMP RESTAR ;GO SET UP REG. ADDRESSES
1997 006030 000137 006054 G04: JMP RESTAR ;GO SET UP REG. ADDRESSES
1998 006034 013737 003374 003400 G14: MOV DEVIC4,DEVIC5 ;GET READY TO CREATE REG. ADDRESSES
1999 006042 012737 005722 003410 MOV #GIG03,RETAIN ;STORE RETURN ADDRESS
2000 006050 000137 006146 JMP GIG04 ;GO CREATE ADDRESSES
2001 006054 013737 003366 003400 RESTAR: MOV DEVIC1,DEVIC5 ;GET READY TO CREATE REG. ADDRESSES
2002 006062 012737 005246 003410 MOV #GIG0,RETAIN ;SAVE RETURN ADDRESS
2003 006070 104401 006076 TYPE ,65$ ;;TYPE ASCIZ STRING

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2003 006074 000421          BR      64$          ;;GET OVER THE ASCIZ
2004                      ;;65$: .ASCIZ <15><12>/TESTING RH #1 AT BASE ADDRESS /
2005 006140          64$:
2006 006140 013746 003366    MOV     DEVIC1,-(SP)    ;;SAVE DEVIC1 FOR TYPEOUT
2007 006144 104402          TYPOC          ;;GO TYPE--OCTAL ASCII(ALL DIGITS)
2008 006146 013737 003400 003402 GIG04: MOV     DEVIC5,@#OFF11    ;SETUP FOR ADDRESSES
2009 006154 012702 003330          MOV     #RHCS1,R2      ;SET UP WHERE TO PUT THEM
2010 006160 013722 003402 4$:   MOV     @#OFF11,(R2)+    ;SETUP ADDRESS
2011 006164 062737 000002 003402 ADD     #TWO,@#OFF11    ;SETUP NEXT ADDRESS
2012 006172 022702 003360          CMP     #RHBAE,R2      ;ARE ALL ADDRESSES SET UP
2013 006176 001401          BEQ     3$            ;IS INFORMATION CORRECT?
2014 006200 000767          BR      4$            ;NO SETUP NEW ADDRESS
2015 006202 013737 003400 003402 3$:   MOV     DEVIC5,@#OFF11
2016 006210 063737 003404 003402 ADD     REGEND,@#OFF11
2017 006216 013737 003402 003360 MOV     @#OFF11,RHBAE    ;WITH CORRECT ADDRESS
2018 006224 062737 000002 003402 ADD     #2,@#OFF11      ;SETUP RHCS3 ADDRESS
2019 006232 013737 003402 003362 MOV     @#OFF11,RHCS3    ;WITH CORRECT ADDRESS
2020 006240 013737 003330 003364 MOV     RHCS1,RHCS1B     ;SETUP RHCS1B WITH
2021 006246 005237 003364          INC     RHCS1B         ;HIGH BYTE ADDRESS OF RHCS1
2022 006252 013746 000004          TSTADD: MOV    @#ERRVEC,-(SP) ;SAVE TIOUT VALUE
2023 006256 012737 006336 000004 MOV    #ADDERR,@#ERRVEC ;SETUP NEW TIOUT VALUE
2024 006264 012777 000007 175046 MOV    #7,@RHCS2        ;SETUP UNIT NO.
2025 006272 005777 175032          TST    @RHCS1         ;WILL RH RESPOND
2026 006276 022777 000040 175052 CMP    #40,@RHDT       ;IS A TESTER THERE
2027 006304 001403          BEQ    1$            ;YES,CONTINUE
2028 006306 104034          ERROR   34           ;TESTER IS NOT CONNECTED
2029 006310 000137 006340          JMP    ADDERR+2       ;BAD ADDRESS
2030 006314 122777 000007 175014 1$:   CMPB   #7,@RHMR2      ;IS THERE ALSO A 7 FOR UNIT NO.
2031 006322 001403          BEQ    2$            ;YES,CONTINUE
2032 006324 104071          ERROR   71           ;BAD ADDRESS
2033 006326 000137 006340          JMP    ADDERR+2
2034 006332 005726          2$:   TST    (SP)+         ;CORRECT STACK
2035 006334 000406          BR     RHTEST        ;YES AN RH IS THERE
2036 006336 022626          ADDERR: CMP    (SP)+,(SP)+ ;CORRECT STACK
2037 006340 012637 000004          MOV    (SP)+,@#ERRVEC ;REPLACE OLD TIOUT VALUE
2038 006344 104036          ERROR   36           ;RH DID NOT RESPOND
2039 006346 000177 175036          JMP    @RETAIN        ;GET CORRECT BASE ADDRESS
2040 006352 012637 000004          RHTEST: MOV   (SP)+,@#ERRVEC ;REPLACE TIEOUT VALUE
2041 006356 005701          TST    R1            ;IS IT A 70
2042 006360 001433          BEQ    RH70TT        ;YES,LETS MAKE SURE
2043 006362 013746 000004          MOV    @#ERRVEC,-(SP) ;SAVE TIME OUT VALUE
2044 006366 012737 006540 000004 MOV    #RH11,@#ERRVEC  ;CHECK FOR AN RH11
2045 006374 012777 000117 174760 MOV    #IPCK0!IPCK1!IPCK2!IPCK3!IE3,@RHCS3 ;SET ALL BITS IN RHCS3
2046
2047 006402 012637 000004          MOV    (SP)+,@#ERRVEC ;REPLACE TIMEOUT
2048 006406          RH11BA:
2049 006406 104401 006414          TYPE   ,65$          ;;TYPE ASCIZ STRING
2050 006412 000413          BR     64$          ;;GET OVER THE ASCIZ
2051                      ;;65$: .ASCIZ <15><12>/TESTING FOR AN RH70/
2052                      64$:
2053 006442 005001          CLR    R1            ;SET UP RH70 FLAG
2054 006444 000137 006546          JMP    RH11+6        ;EXIT
2055 006450 013746 000004          RH70TT: MOV   @#ERRVEC,-(SP) ;SAVE LOCATION 4
2056 006454 012737 006474 000004 MOV    #FAKE70,@#ERRVEC ;REPLACE ADDRESS
2057 006462 012777 000117 174672 MOV    #IPCK0!IPCK1!IPCK2!IPCK3!IE3,@RHCS3 ;SET ALL BITS
2058

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2059 006470 000137 006542
2060 006474 022626
2061 006476 012637 000004
2062 006502 005001
2063 006504 005101
2064 006506 104401 006514
2065 006512 000411
2066
2067 006536
2068 006536 000403
2069 006540 022626
2070 006542 012637 000004
2071 006546 004737 050210
2072
2073
2074
2075
2076
2077
2078
2079 006552 000004
2080 006554 012737 000001 001212
2081 006562 005037 001210
2082 006566 005137 001210
2083
2084
2085
2086
2087
2088 006572 012777 000040 174540
2089 006600 012777 000007 174532
2090 006606 122777 000007 174522
2091 006614 001107
2092
2093
2094
2095
2096
2097 006616 005701
2098 006620 100417
2099 006622 005737 004122
2100 006626 001406
2101 006630 033777 004130 174524
2102 006636 001410
2103 006640 000137 007174
2104 006644 032777 174000 174510
2105
2106 006652 001412
2107 006654 000137 007174
2108 006660 005737 004122
2109 006664 001405
2110 006666 033777 004124 174434
2111 006674 001070
2112 006676 000404
2113 006700 032777 160000 174422
2114 006706 001063
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                JMP      RH11+2                ;EXIT TEST
FAKE70:        CMP      (SP)+,(SP)+          ;CORRECT STACK
                MOV      (SP)+,@#ERRVEC      ;CORRECT TIMEOUT
RH70BA:        CLR      R1                    ;GET FLAG READY
                COM      R1                    ;SET FOR RH11
                TYPE     ,65$                 ;;TYPE ASCIZ STRING
                BR       64$                   ;;GET OVER THE ASCIZ
;;65$:         .ASCIZ  <15><12>/TESTING AN RH11/
64$:
                BR       ERR1
RH11:          CMP      (SP)+,(SP)+          ;CORRECT STACK POINTER
                MOV      (SP)+,@#ERRVEC      ;REPLACE TIMEOUT VALUE
ERR1:          JSR      R7,ERRTST
;*****
;*TEST 2      CLEAR TEST
                ;*THIS TEST CHECKS THAT ALL
                ;*ERROR BITS ARE CLEARED AFTER
                ;*THE CLEAR BIT WAS LOADED INTO
                ;*RHCS2 REGISTER.....
;*****
TST2:          SCOPE
                MOV      #1,$TIMES           ;;DO 1 ITERATION
                CLR      $TMP5               ;GET READY TO
                COM      $TMP5               ;SET UP FOR JSR ROUTINE
;*****
                ;*THIS TEST IS ALSO ENTERED AT THE LABEL CLEAR
                ;*AT THE END OF ALL THE ERROR BIT TESTS TO SEE
                ;*THAT A CLEAR WILL CLEAR THE ERROR BIT SET
;*****
CLEAR:         MOV      #CLR,@RHCS2          ;TELL IT TO CLEAR
                MOV      #7,@RHCS2          ;SETJP UNIT NO.
                CMPB     #7,@RHMR2          ;HAS DEVICE BEEN SET TO 7
                BNE      1$                  ;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$:           BIT      #WCELO!WCEHI!DPELO!DPEHI!APE,@RHCS3
                BEQ      5$                  ;TEST ERROR BITS
                JMP      13$                 ;NO ERROR BITS SET
                TST      BEFORE              ;GO REPORT ERROR BITS
                BEQ      5$                  ;ARE WE HERE FOR SHORTS
                BIT      $CS1,@RHCS1        ;YES SEE IF THERE ARE ANY
                BNE      2$                  ;NONE FOUND
                BR       16$                 ;GO CHECK THE NEXT ONE
15$:           BIT      #TRE!SC.MCPE,@RHCS1  ;ANY ERROR BITS SET IN CS1
                BNE      2$                  ;YES,FIND THEM
```

2115	006710	005737	004122	16\$:	TST	BEFORE	:ARE WE HERE FOR SHORTS
2116	006714	001405			BEQ	6\$:NO
2117	006716	033777	004126 174414		BIT	\$CS2,@RHCS2	:ANY SHORTS
2118	006724	001065			BNE	3\$:YES
2119	006726	000404			BR	17\$:NO,CONTINUE
2120	006730	032777	177400 174402	6\$:	BIT	#MPE!MXF!PGE!NEM.NED!UPE!WCE!DLT,@RHCS2	:ARE ANY ERROR BITS SET IN CS2
2121							:YES,FIND THEM
2122	006736	001060			BNE	3\$:ARE WE HERE FOR SHORTS
2123	006740	005737	004122	17\$:	TST	BEFORE	:NO
2124	006744	001405			BEQ	7\$:ANY SHORTS ?
2125	006746	033777	004132 174366		BIT	\$ST,@RHST	:YES
2126	006754	001076			BNE	9\$:CONTINUE
2127	006756	000404			BR	18\$:ARE ANY ERROR BITS SET IN ER1
2128	006760	032777	140000 174354	7\$:	BIT	#ERR.ATA,@RHST	:YES,GO FIND THEM
2129	006766	001071			BNE	9\$:ARE WE HERE FOR SHORTS
2130	006770	005737	004122	18\$:	TST	BEFORE	:NO
2131	006774	001405			BEQ	8\$:YES,SEE IF THER ARE ANY
2132	006776	033777	004134 174340		BIT	\$ER,@RHER	:WE FOUND SOME
2133	007004	001046			BNE	4\$:CONTINUE
2134	007006	000404			BR	19\$:ANY ERRORS IN RHER REG.
2135	007010	032777	030175 174326	8\$:	BIT	#ILF!RMR!CPE.DPE.RMBEX!RFAIL!DTE!OPI,@RHER	:YES,GO FIND THEM
2136							:IS IT BEING USED AS A SUBROUTINE
2137	007016	001041			BNE	4\$:YES
2138	007020	005737	001210	19\$:	TST	\$TMP5	:SETUP SUB ROUTINE FLAG
2139	007024	001501			BEQ	LEAVE	:WAS THERE ANY ERRORS
2140	007026	005037	001210		CLR	\$TMP5	:DEVICE NO. ERROR
2141	007032	000477			BR	ERR2	:GET CONTENTS
2142	007034	004737	050034	1\$:	JSR	R7,FOUND	:DEVICE NO. NOT =7
2143	007040	017737	174274 004100		MOV	@RHCS2,RBUF	:FIND BIT NOT SET
2144	007046	104071			ERROR	71	:TEST REST OF ERROR BITS
2145	007050	004737	046362		,SR	R7,WATBIT	:RHCS1 IN ERROR
2146	007054	000660			BR	12\$:GET CONTENTS
2147	007056	004737	047714	2\$:	JSR	R7,FINDIT	:ERROR BIT SET IN CS1
2148	007062	017737	174242 004100		MOV	@RHCS1,RBUF	:WHAT BIT IS SET
2149	007070	104072			ERROR	72	:TEST REST OF REGISTERS
2150	007072	004737	046362		JSR	R7,WATBIT	:ERROR IN RHCS2
2151	007076	000704			BR	16\$:GET CONTENTS
2152	007100	004737	047740	3\$:	JSR	R7,LOOKFO	:BIT SET IN CS2
2153	007104	017737	174230 004100		MOV	@RHCS2,RBUF	:TELL WHAT BIT
2154	007112	104073			ERROR	73	:CONTINUE TEST
2155	007114	004737	046362		JSR	R7,WATBIT	:RHER HAS A BIT SET
2156	007120	000707			BR	17\$:GET CONTENTS
2157	007122	004737	047764	4\$:	JSR	R7,LOOKED	:ER1 HAS AN ERROR BIT SET
2158	007126	017737	174212 004100		MOV	@RHER,RBUF	:TELL WHAT BIT
2159	007134	104074			ERROR	74	:IS IT BEING USED AS A SUBROUTINE
2160	007136	004737	046362		JSR	R7,WATBIT	:YES
2161	007142	005737	001210		TST	\$TMP5	:WAS THERE ANY ERRORS
2162	007146	001430			BEQ	LEAVE	:RHST HAS AN ERROR BIT SET
2163	007150	000430			BR	ERR2	:GET CONTENTS
2164	007152	004737	050010	9\$:	JSR	R7,FIND	:ERROR IN RHST
2165	007156	017737	174160 004100		MOV	@RHST,RBUF	:TELL WHAT BIT
2166	007164	104075			ERROR	75	:CONTINUE TEST
2167	007166	004737	046362		JSR	R7,WATBIT	:CLEAR UNWANTED BITS
2168	007172	000676			BR	18\$:GET REG. CONTENTS
2169	007174	004737	050060	13\$:	JSR	R7,CS3ERR	
2170	007200	017737	174156 004100		MOV	@RHCS3,RBUF	

```
2171 007206 104176          ERROR 176          :RHCS3 HAS AN ERROR BIT SET
2172 007210 004737 046362    JSR R7,WATBIT      :TELL WHAT BITS
2173 007214 000137 006660    JMP 15$           :CONT CHECK
2174 007220 000137 006616    JMP 12$           :START JSR WHYFO
2175 007224 000137 007220    WHYFO: JMP -4      :FIND ERROR BITS SET
2176 007230 000207          LEAVE: RTS R7      :GO BACK TO PROGRAM THAT SENT YOU HERE
2177 007232 004737 050210    ERR2: JSR R7,ERRTST
2178
2179
2180
2181
2182
2183 007236 000004          :*****
2184 007240 012777 000040 174072 :*TEST 3 THIS TEST SEES IF THE TESTER IS CONNECTED
2185 007246 012777 000007 174064 :*THIS TEST SEES IF THE DEVICE CODE IS
2186 007254 017737 174076 001172 :*A 40 TO SAY AN RH SIMULATOR IS ATTACHED
2187 007262 022737 000040 001172 :*****
2188 007270 001401          TST3: SCOPE
2189 007272 104034          MOV #CLR,@RHCS2   :CLEAR TESTER
2190 007274 004737 050210    MOV #7,@RHCS2     :UNIT SEVEN
2191
2192
2193
2194
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2196
2197
2198 007300 000004          MOV @RHDT,$REG4   :GET DRIVE TYPE
2199 007302 012737 000001 001212  CMP #40,$REG4     :IS IT THE TESTER
2200 007310 012777 177777 174014  BEQ ERR4          :WAS THERE AN ERROR
2201 007316 022777 177777 174006  ERROR 34         :TESTER NOT CONNECTED
2202 007324 001056          ERR4: JSR R7,ERRTST
2203
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2227	007506	013737	003444	001200		MOV	WC,\$TMP1		:SETUP FOR WATBIT
2228	007514	004737	046362			JSR	R7,WATBIT		:FIND THE BIT(S)
2229	007520	000137	007326			JMP	@#HERE		:SEE IF BITS SET CLEAR
2230	007524	013737	177777	001162	1\$:	MOV	-1,\$REGO		:SETUP FOR ERROR
2231	007532	017737	173574	003444		MOV	@RHWC,WC		:GET BAD DATA
2232	007540	104043				ERROR	43		:WC DID NOT LOAD ANY BITS
2233	007542	000137	007576			JMP	@#DOIT		:GO TO NEXT REG. TEST
2234	007546	012737	177777	001162	WCERR2:	MOV	#-1,\$REGO		:SETUP GOOD DATA
2235	007554	017737	173552	003444		MOV	@R+WC,WC		:GET BAD DATA
2236	007562	013737	003444	001200		MOV	WC,\$TMP1		:SETUP FOR WATBIT
2237	007570	104044				ERROR	44		:SOME BITS CLEARED IN WC
2238	007572	004737	046362			JSR	R7,WATBIT		:FIND THE BITS THAT CLEARED
2239	007576	004737	006572		DOIT:	JSR	F7,CLEER		:CLEAR ERRORS
2240	007602	004737	050210			JSR	-7,ERRTST		

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2248 007606 000004
2249 007610 012777 177776 173516
2250 007616 022777 177776 173510
2251 007624 001066
2252 007626 012777 000040 173504
2253 007634 017737 173470 003420
2254 007642 017737 173464 003444
2255 007650 017737 173460 003414
2256 007656 005701
2257 007660 001406
2258 007662 005037 003416
2259 007666 005037 003424
2260 007672 000137 007712
2261 007676 017737 173456 003416
2262 007704 017737 173452 003424
2263 007712 017737 173422 003422
2264 007720 017737 173416 003432
2265 007726 017737 173412 003436
2266 007734 017737 173410 003442
2267 007742 017737 173370 003440
2268 007750 005777 173360
2269 007754 001421
2270 007756 005037 001162
2271 007762 017737 173346 001200
2272 007770 104045
2273 007772 004737 046362
2274 007776 000137 010020
2275 010002 012737 177776 001162
2276 010010 017737 173320 001200
2277 010016 104046
2278 010020
2279 010020 004737 006572
2280 010024 004737 050210
2281
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2286 010030 000004
2287 010032 005701
2288 010034 100510
2289 010036 012777 000077 173314
2290 010044 022777 000077 173306
2291 010052 001066
2292 010054 012777 000040 173256
2293 010062 017737 173242 003420
2294 010070 017737 173236 003444
2295 010076 017737 173232 003414
2296 010104 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,W0        ;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    $REGO           ;CREATE GOOD DATA  
      MOV    @RHBA,$STMP1     ;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,$STMP1     ;SETUP FOR WATBIT  
      ERROR  46              ;BITS DID NOT SET IN RHBA  
TOIT:  JSR    R7,CLEER        ;CLEAR ERRORS  
      JSR    R7,ERRTST  
*****  
: *TEST 6          RHBAE CLEAR TEST  
: *THIS TEST CHECKS THAT WHEN A CLEAR IS GENERATED  
: *THE BUS ADDRESS EXTENSION REGISTER IS CLEARED  
*****  
TST6:  SCOPE  
      TST    R1              ;IS IT A 70 OR AN 11  
      BMI    TST7            ;;SKIP OVER TEST FOR RH11  
WATFOR: MOV    #77,@RHBAE     ;SET ALL BITS IN RHBAE  
      CMP    #77,@RHBAE     ;ARE THEY ALL SET  
      BNE    1$              ;ALL THE BITS DID NOT SET  
      MOV    #CLR,@RHCS2     ;TELL IT TO CLEAR  
      MOV    @RHCS1,CS1      ;SAVE RHCS1  
      MOV    @RHWC,W0        ;SAVE WORD COUNT  
      MOV    @RHBA,BA        ;SAVE BUS ADDRESS  
      TST    R1              ;IS IT AN RH11
```

```
2297 010106 001406 BEQ 87$ :NO IT'S A 70
2298 010110 005037 003416 CLR BAE :CLEAR BAE
2299 010114 005037 003424 CLR CS3 :CLEAR CS3
2300 010120 000137 010140 JMP 86$ :CONTINUE
2301 010124 017737 173230 003416 87$: MOV @RHB AE,BAE :SAVE BUS ADDRESS EXTENSION
2302 010132 017737 173224 003424 MOV @RHCS3,CS3 :SAVE RHCS3
2303 010140 017737 173174 003422 86$: MOV @RHCS2,CS2 :SAVE CS2
2304 010146 017737 173170 003432 MOV @RHST,DS1 :SAVE TESTER STATUS
2305 010154 017737 173164 003436 MOV @RHER,ER1 :SAVE ERROR REGISTER
2306 010162 017737 173162 003442 MOV @RHTDB,TDR :SAVE TESTER DATA REG.
2307 010170 017737 173142 003440 MOV @RMR2,TC :SAVE MR2 TESTER REG.
2308 010176 005777 173156 TST @RHB AE :IS IT ZERO
2309 010202 001421 BEQ WATFIV :TEST IS GOOD
2310 010204 005037 001162 CLR $REGO :CREATE GOOD DATA
2311 010210 017737 173144 001200 MOV @RHB AE,$TMP1 :SETUP FOR WATBIT
2312 010216 104100 ERROR 100 :RHB AE DID NOT CLEAR
2313 010220 004737 046362 JSR R7,WATBIT :FIND BITS STILL SET
2314 010224 000137 010246 JMP @WATFIV :GO TO NEXT REG. TEST
2315 010230 012737 000077 001162 1$: MOV #77,$REGO :SETUP GOOD DATA
2316 010236 017737 173116 001200 MOV @RHB AE,$TMP1 :SETUP FOR WATBIT
2317 010244 104101 ERROR 101 :BITS DID NOT SET IN RHB AE
2318 010246 WATFIV:
2319 010246 004737 006572 JSR R7,CLEER :CLEAR ERRORS
2320 010252 004737 050210 JSR R7,ERRTST
2321 *****
2322 :*TEST 7 RHDB CLEAR TEST
2323 :*THIS TEST CHECKS THAT WHEN A CLEAR IS GENERATED
2324 :*OUTPUT READY IS NEGATED
2325 *****
2326 010256 000004 IST7: SCOPE
2327 010260 012777 177777 173064 MOV #-1,@RHDB :SET ALL BITS IN RHDB
2328 010266 005037 003446 CLR BITCNT :CLEAR BIT COUNTER
2329 010272 032777 000200 173040 18$: BIT #OR,@RHCS2 :IS OR SET
2330 010300 001015 BNE DBMG :BIT IS SET
2331 010302 005237 003446 INC BITCNT :COUNT UP
2332 010306 001371 BNE 18$ :NOT FINISHED COUNTING
2333 010310 005037 003446 CLR BITCNT :GET READY TO DO IT AGAIN
2334 010314 032777 000200 173016 19$: BIT #OR,@RHCS2 :IS IT SET YET?
2335 010322 001004 BNE DBMG :YES
2336 010324 005237 003446 INC BITCNT :COUNT UP
2337 010330 001401 BEQ DBMG :BIT IS NOT GOING TO SET
2338 010332 000770 BR 19$
2339 010334 DBMG:
2340 010334 017737 172770 003420 MOV @RHCS1,CS1 :SAVE RHCS1
2341 010342 017737 172764 003444 MOV @RHWC,WC :SAVE WORD COUNT
2342 010350 017737 172760 003414 MOV @RHBA,BA :SAVE BUS ADDRESS
2343 010356 005701 TST R1 :IS IT AN RH11
2344 010360 001406 BEQ 87$ :NO IT'S A 70
2345 010362 005037 003416 CLR BAE :CLEAR BAE
2346 010366 005037 003424 CLR CS3 :CLEAR CS3
2347 010372 000137 010412 JMP 86$ :CONTINUE
2348 010376 017737 172756 003416 87$: MOV @RHB AE,BAE :SAVE BUS ADDRESS EXTENSION
2349 010404 017737 172752 003424 MOV @RHCS3,CS3 :SAVE RHCS3
2350 010412 017737 172722 003422 86$: MOV @RHCS2,CS2 :SAVE CS2
2351 010420 017737 172716 003432 MOV @RHST,DS1 :SAVE TESTER STATUS
2352 010426 017737 172712 003436 MOV @RHER,ER1 :SAVE ERROR REGISTER
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2353 010434 017737 172710 003442      MOV      @RHADB,TDR      ;SAVE TESTER DATA REG.
2354 010442 017737 172670 003440      MOV      @RHMR2,TC      ;SAVE MR2 TESTER REG.
2355 010450 032777 000200 172662      BIT      #OR,@RHCS2     ;IS OUTPUT READY SET
2356 010456 001001                BNE      HURTS          ;YES,CONTINUE TEST
2357 010460 104041                ERROR    41            ;OUTPUT READY DID NOT SET
2358 010462 022777 177777 172662 HURTS:  CMP      #-1,@RHDB     ;DID INFO GET LOADED TO DB
2359 010470 005037 003446                CLR      BITCNT        ;CLEAR BIT COUNTER
2360 010474 032777 000200 172636 18$:  BIT      #OR,@RHCS2     ;IS OR SET
2361 010502 001015                BNE      DBMSG          ;BIT IS SET
2362 010504 005237 003446                INC      BITCNT        ;COUNT UP
2363 010510 001371                BNE      18$           ;NOT FINISHED COUNTING
2364 010512 005037 003446                CLR      BITCNT        ;GET READY TO DO IT AGAIN
2365 010516 032777 000200 172614 19$:  BIT      #OR,@RHCS2     ;IS IT SET YET?
2366 010524 001004                BNE      DBMSG          ;YES
2367 010526 005237 003446                INC      BITCNT        ;COUNT UP
2368 010532 001401                BEQ     DBMSG          ;BIT IS NOT GOING TO SET
2369 010534 000770                BR       19$
2370 010536                DBMSG:
2371 010536 012777 000040 172574      MOV      #CLR,@RHCS2    ;TELL IT TO CLEAR
2372 010544 005037 003446                CLR      BITCNT        ;CLEAR THE COUNTER
2373 010550 032777 000200 172562 18$:  BIT      #OR,@RHCS2     ;DID OUTPUT READY CLEAR
2374 010556 001403                BEQ     SNAFOO          ;YES GET OUT OF LOOP
2375 010560 005237 003446                INC      BITCNT        ;INCREMENT COUNT LOOP
2376 010564 001371                BNE      18$           ;CONTINUE LOOP IF NO CARRY
2377 010566 032777 000200 172544 SNAFOO: BIT      #OR,@RHCS2     ;IS OUTPUT READY CLEARED
2378 010574 001403                BEQ     1$             ;YES,EXIT TEST
2379 010576 104114                ERROR    114          ;OUTPUT READY NOT CLEARED
2380                                ;BY SETTING CLR IN RHCS2
2381 010600 004737 007224                JSR     R7,WHYFO       ;ANY ERROR BITS SET
2382 010604 004737 006572 1$:  JSR     R7,CLEER       ;CLEAR ERRORS
2383 010610 004737 050210                JSR     R7,ERRTST
2384                                ;*****
2385                                ;*TEST 10      PROM REGISTER DECODE TEST
2386                                ;*THIS TEST CHECKS THAT THE PROM
2387                                ;*CAN ACCESS ALL REGISTERS
2388                                ;*****
2389 010614 000004                TST10: SCOPE
2390 010616 023727 003366 160100      CMP      DEVIC1,#160100 ;CHECK FOR WHAT REG END
2391 010624 001000                BNE      1$            ;WE ARE OK
2392 010626 013704 003356 1$:  MOV      RHDT,R4        ;SETUP TO TEST RH11
2393 010632 005724                TST     (R4)+          ;CORRECT ADDRESS
2394 010634 023704 003360      CMP      RHBAE,R4      ;ARE ALL REGISTERS CHECKED
2395 010640 001526                BEQ     ERR3           ;WERE THERE ANY ERRORS
2396 010642 005724 2$:  TST     (R4)+          ;TEST REGISTER
2397 010644 001004                BNE      3$           ;SOME INFORMATION WAS FOUND
2398 010646 023704 003360      CMP      RHBAE,R4      ;ARE ALL REGISTERS CHECKED
2399 010652 001521                BEQ     ERR3           ;WAS THERE ANY ERRORS
2400 010654 000772                BR       2$           ;TEST NOT COMPLETED
2401 010656 005744 3$:  TST     -(R4)          ;CORRECT ADDRESS
2402 010660 010437 003416      MOV      R4,BAE        ;SAVE ADDRESS
2403 010664 011437 001162      MOV      (R4),$REGO    ;GET CONTENTS
2404 010670 017737 172452 003412      MOV      @RHAS,AS      ;GET ATTENTION SUMMARY
2405 010676 104052                ERROR    52            ;FALSE INFO IN FAKE REGISTER
2406 010700 005003                CLR     R3             ;GET OFFSET READY
2407 010702 013737 003330 003420      MOV      RHCS1,CS1     ;GET ADDRESS TO START CHECKING
2408 010710 027737 172504 001162 29$:  CMP      @CS1,$REGO    ;HAS A REGISTER BEEN FOUND THAT COMPARES
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2409 010716 001412          BEQ      28$          ;YES,PRINT IT OUT
2410 010720 023737 003356 003420 30$:  CMP      RHD1,CS1    ;IS IT LAST REG IN RH11
2411 010726 001473          BEQ      ERR3        ;WAS THERE ANY ERRORS
2412 010730 062737 000002 003420      ADD      #TWO,CS1    ;NO,CORRECT FOR NEXT CHECK
2413 010736 062703 000004      ADD      #4,R3       ;CORRECT OFFSET
2414 010742 000762          BR       29$         ;CONTINUE TEST
2415 010744 032737 020000 177570 28$:  BIT      #SW13,@#177570 ;SKIP ERROR PRINTOUT
2416 010752 001024          BNE     55$         ;SKIP MESSAGE
2417 010754 104401 010762      TYPE    ,65$        ;:TYPE ASCIZ STRING
2418 010760 000421          BR       64$        ;:GET OVER THE ASCIZ
2419          ;:65$: .ASCIZ <15><12>/REGISTER CONTENTS COMPARES TO:/
2420          64$:
2421 011024 000163 011030      55$:  JMP      27$(R3)     ;PRINT REGISTER
2422 011030 104053          27$:  ERROR   53        ;RHCS1
2423 011032 000732          BR      30$         ;CONTINUE TEST
2424 011034 104054          ERROR   54        ;RHWC
2425 011036 000730          BR      30$         ;CONTINUE TEST
2426 011040 104055          ERROR   55        ;RHBA
2427 011042 000726          BR      30$         ;CONTINUE TEST
2428 011044 104056          ERROR   56        ;RHMR2
2429 011046 000724          BR      30$         ;CONTINUE TEST
2430 011050 104057          ERROR   57        ;RHCS2
2431 011052 000722          BR      30$         ;CONTINUE TEST
2432 011054 104060          ERROR   60        ;RHST
2433 011056 000720          BR      30$         ;CONTINUE TEST
2434 011060 104061          ERROR   61        ;RHER
2435 011062 000716          BR      30$         ;CONTINUE TEST
2436 011064 104062          ERROR   62        ;RHAS
2437 011066 000714          BR      30$         ;CONTINUE TEST
2438 011070 104063          ERROR   63        ;RHTD3
2439 011072 000712          BR      30$         ;CONTINUE TEST
2440 011074 104064          ERROR   64        ;RHDB
2441 011076 000710          BR      30$         ;CONTINUE TEST
2442 011100 104065          ERROR   65        ;RHMR1
2443 011102 000706          BR      30$         ;CONTINUE TEST
2444 011104 104066          ERROR   66        ;RHDT
2445 011106 000704          BR      30$         ;CONTINUE TEST
2446 011110 104067          ERROR   67        ;RHBAE
2447 011112 000702          BR      30$         ;CONTINUE TEST
2448 011114 104070          ERROR   70        ;RHCS3
2449 011116 004737 050210      ERR3:  JSR      R7,ERRTST
2450 011122 004737 006572          JSR      R7,CLEER   ;CLEAR ERRORS
2451
2452          ;:*****
2453          ;*TEST 11      RHCS3 TEST
2454          ;*THIS TEST CHECKS THE READ/WRITE BITS
2455          ;*IN THE RHCS3 REGISTER CAN BE CLEARED AND SET.
2456          ;:*****
2457 011126 000004          TST11: SCOPE
2458 011130 012777 000040 172202      MOV      #CLR,@RHCS2 ;CLEAR TESTER
2459 011136 012777 000007 172174      MOV      #7,@RHCS2  ;SETUP UNIT SEVEN
2460 011144 005701          TST      R1          ;IS IT AN RH70
2461 011146 001122          BNE     TST12        ;:THIS IS A RH11
2462 011150 012737 000004 003450      MOV      #4,LOOPCNT ;SETUP LOOP COUT OF FOUR
2463 011156 012737 000001 001162      MOV      #1,$REGO   ;SETUP BIT TO BE TESTED
2464 011164 013777 001162 172170      1$:  MOV      $RFG0,@RHCS3 ;SET THE BIT
```


2521	011516	017737	171636	003416	87\$:	MOV	@RHBAE,BAE	:	SAVE BUS ADDRESS EXTENSION
2522	011524	017737	171632	003424		MOV	@RHCS3,CS3	:	SAVE RHCS3
2523	011532	017737	171602	003422	86\$:	MOV	@RHCS2,CS2	:	SAVE CS2
2524	011540	017737	171576	003432		MOV	@RHST,DS1	:	SAVE TESTER STATUS
2525	011546	017737	171572	003436		MOV	@RHER,ER1	:	SAVE ERROR REGISTER
2526	011554	017737	171570	003442		MOV	@RHTDB,TDR	:	SAVE TESTER DATA REG.
2527	011562	017737	171550	003440		MOV	@RHMR2,TC	:	SAVE MR2 TESTER REG.
2528	011570	104001				ERROR	1	:	BIT WAS NOT SET IN RHWC REG
2529	011572	005737	001162		1\$:	TST	\$REGO	:	WAS IT BIT 15 THAT WAS LAST TESTED
2530	011576	100403				BMI	RHWCA	:	YES,GO TO NEXT PART OF TEST
2531	011600	006137	001162			ROL	\$REGO	:	NO,THEN TEST NEXT BIT
2532	011604	000707				BR	RHWCT	:	DO BIT TEST AGAIN
2533	011606	012737	052525	001162	RHWCA:	MOV	#AB,\$REGO	:	SET UP ALTERNATE BIT PATTERN
2534	011614	013777	001162	171510		MOV	\$REGO,@RHWC	:	SET ALTERNATE BITS
2535	011622	017737	171504	003444		MOV	@RHWC,WC	:	SAVE RHWC CONTENTS
2536	011630	023777	001162	171474		CMP	\$REGO,@RHWC	:	ARE THEY ALL SET?
2537	011636	001457				BEQ	1\$:	YES,CONTINUE TEST
2538	011640	013737	003444	001200		MOV	WC,\$TMP1	:	SETUP FOR WATBIT PROG.
2539	011646	004737	046362			JSR	R7,WATBIT	:	GO TO WATBIT PROGRAM
2540	011652	017737	171452	003420		MOV	@RHCS1,CS1	:	SAVE RHCS1
2541	011660	017737	171446	003444		MOV	@RHWC,WC	:	SAVE WORD COUNT
2542	011666	017737	171442	003414		MOV	@RHBA,BA	:	SAVE BUS ADDRESS
2543	011674	005701				TST	R1	:	IS IT AN RH11
2544	011676	001406				BEQ	87\$:	NO IT'S A 70
2545	011700	005037	003416			CLR	BAE	:	CLEAR BAE
2546	011704	005037	003424			CLR	CS3	:	CLEAR CS3
2547	011710	000137	011730			JMP	86\$:	CONTINUE
2548	011714	017737	171440	003416	87\$:	MOV	@RHBAE,BAE	:	SAVE BUS ADDRESS EXTENSION
2549	011722	017737	171434	003424		MOV	@RHCS3,CS3	:	SAVE RHCS3
2550	011730	017737	171404	003422	86\$:	MOV	@RHCS2,CS2	:	SAVE CS2
2551	011736	017737	171400	003432		MOV	@RHST,DS1	:	SAVE TESTER STATUS
2552	011744	017737	171374	003436		MOV	@RHER,ER1	:	SAVE ERROR REGISTER
2553	011752	017737	171372	003442		MOV	@RHTDB,TDR	:	SAVE TESTER DATA REG.
2554	011760	017737	171352	003440		MOV	@RHMR2,TC	:	SAVE MR2 TESTER REG.
2555	011766	104001				ERROR	1	:	TEST FAILED
2556	011770	012737	125252	001162		MOV	#OAB,\$REGO	:	SET UP ALTERNATE OPPISITE BITS
2557	011776	013777	001162	171326	1\$:	MOV	\$REGO,@RHWC	:	SET OPPISITE ALTERNATE BITS
2558	012004	017737	171322	003444		MOV	@RHWC,WC	:	SAVE CONTENTS OF RHWC
2559	012012	023777	001162	171312		CMP	\$REGO,@RHWC	:	ARE CORRECT BITS SET?
2560	012020	001454				BEQ	ERR6	:	WAS THERE AN ERROR
2561	012022	013737	003444	001200		MOV	WC,\$TMP1	:	SETUP FOR WATBIT PROG.
2562	012030	004737	046362			JSR	R7,WATBIT	:	GO TO WATBIT PROGRAM
2563	012034				GOOF:			:	
2564	012034	017737	171270	003420		MOV	@RHCS1,CS1	:	SAVE RHCS1
2565	012042	017737	171264	003444		MOV	@RHWC,WC	:	SAVE WORD COUNT
2566	012050	017737	171260	003414		MOV	@RHBA,BA	:	SAVE BUS ADDRESS
2567	012056	005701				TST	R1	:	IS IT AN RH11
2568	012060	001406				BEQ	87\$:	NO IT'S A 70
2569	012062	005037	003416			CLR	BAE	:	CLEAR BAE
2570	012066	005037	003424			CLR	CS3	:	CLEAR CS3
2571	012072	000137	012112			JMP	86\$:	CONTINUE
2572	012076	017737	171256	003416	87\$:	MOV	@RHBAE,BAE	:	SAVE BUS ADDRESS EXTENSION
2573	012104	017737	171252	003424		MOV	@RHCS3,CS3	:	SAVE RHCS3
2574	012112	017737	171222	003422	86\$:	MOV	@RHCS2,CS2	:	SAVE CS2
2575	012120	017737	171216	003432		MOV	@RHST,DS1	:	SAVE TESTER STATUS
2576	012126	017737	171212	003436		MOV	@RHER,ER1	:	SAVE ERROR REGISTER

2577	012134	017737	171210	003442	MOV	@RHTDB,TDR	:SAVE TESTER DATA REG.
2578	012142	017737	171170	003440	MOV	@RHMR2,TC	:SAVE MR2 TESTER REG.
2579	012150	104001			ERROR	1	:OPPISITE BIT TEST FAILED
2580	012152	013737	003332	004142	ERR6: MOV	RHWC,\$RHWC	:GET READY TO TEST BYTES
2581	012160	012777	000000	171144	MOV	#ZERO,@RHWC	:CLEAR WC FIRST
2582	012166	113777	004120	171746	MOVB	MINUS,@\$RHWC	:CHECK LOBYTE
2583	012174	022777	000377	171130	CMP	#377,@RHWC	:ANY EXTRA BITS
2584	012202	001401			BEQ	HIBYTE	:OK SO FAR
2585	012204	104200			ERROR	200	:HIBYTE GATE NOT WORKING PROPERLY
2586	012206	005237	004142		HIBYTE: INC	\$RHWC	:GET READY FOR NEXT BYTE
2587	012212	012777	000000	171112	MOV	#ZERO,@RHWC	:CLEAR WC
2588	012220	113777	004121	171714	MOVB	MINUS+1,@\$RHWC	:CHECK THE HI BYTE
2589	012226	022777	177400	171076	CMP	#177400,@RHWC	:IS IT OK
2590	012234	001401			BEQ	ALRIGT	:ITS OK
2591	012236	104200			ERROR	200	:LOBYTE GATE NOT WORKING PROPERLY
2592	012240	004737	050210		ALRIGT: JSR	R7,ERRTST	
2593	012244	012777	000000	171060	MOV	#ZERO,@RHWC	:CLEAR WORD COUNT
2594	012252	004737	006572		JSR	R7,CLEER	:CLEAR ERRORS

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2603 012256 000004
2604 012260 005701
2605 012262 001104
2606 012264 012737 000001 001162
2607 012272 013777 001162 171060
2608 012300 017737 171054 003416
2609 012306 023777 001162 171044
2610 012314 001454
2611 012316 013737 003416 001200
2612 012324 004737 046362
2613 012330 017737 170774 003420
2614 012336 017737 170770 003444
2615 012344 017737 170764 003414
2616 012352 005701
2617 012354 001406
2618 012356 005037 003416
2619 012362 005037 003424
2620 012366 000137 012406
2621 012372 017737 170762 003416 87\$:
2622 012400 017737 170756 003424
2623 012406 017737 170726 003422 86\$:
2624 012414 017737 170722 003432
2625 012422 017737 170716 003436
2626 012430 017737 170714 003442
2627 012436 017737 170674 003440
2628 012444 104002
2629 012446 022737 000040 001162 1\$:
2630 012454 001403
2631 012456 006137 001162
2632 012462 000703

```
*****  
*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  
*****  
TST13: SCOPE  
TST R1 ;IS RH AN RH70  
BNE TST14 ;:NO PASS OVER TEST  
BAETST: MOV #1,$REGO ;SET UP BIT TEST  
MOV $REGO,@RHBAE ;SET BIT IN RHBAE REGISTER  
MOV @RHBAE,BAE ;SAVE CONTENTS OF RHBAE REGISTER  
CMP $REGO,@RHBAE ;IS IT SET?  
BEQ 1$ ;YES CONTINUE TEST  
MOV BAE,$TMP1 ;SETUP FOR WATBIT PROG.  
JSR R7,WATBIT ;GO TO WATBIT PROGRAM  
MOV @RHCS1,CS1 ;SAVE RHCS1  
MOV @RHWC,WC ;SAVE WORD COUNT  
MOV @RHBA,BA ;SAVE BUS ADDRESS  
TST R1 ;IS IT AN RH11  
BEQ 87$ ;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 2 ;BIT DID NOT 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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2633 012464 004737 006572
2634 012470 004737 050210
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2641
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2645 012474 000004
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2647 012476 012737 000002 001162
2648 012504 013777 001162 170622
2649 012512 017737 170616 003414
2650 012520 023777 001162 170606
2651 012526 001454
2652 012530 013737 003414 001200
2653 012536 017737 170566 003420
2654 012544 017737 170562 003444
2655 012552 017737 170556 003414
2656 012560 005701
2657 012562 001406
2658 012564 005037 003416
2659 012570 005037 003424
2660 012574 000137 012614
2661 012600 017737 170554 003416
2662 012606 017737 170550 003424
2663 012614 017737 170520 003422
2664 012622 017737 170514 003432
2665 012630 017737 170510 003436
2666 012636 017737 170506 003442
2667 012644 017737 170466 003440
2668 012652 104003
2669 012654 004737 046362
2670 012660 005737 001162
2671 012664 100403
2672 012666 006137 001162
2673 012672 000704
2674 012674 012737 052525 001162
2675 012702 042737 000001 001162
2676 012710 013777 001162 170416
2677 012716 017737 170412 003414
2678 012724 023777 001162 170402
2679 012732 001454
2680 012734 013737 003414 001200
2681 012742 017737 170362 003420
2682 012750 017737 170356 003444
2683 012756 017737 170352 003414
2684 012764 005701
2685 012766 001406
2686 012770 005037 003416
2687 012774 005037 003424
2688 013000 000137 013020

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

2689	013004	017737	170350	003416	87\$:	MOV	@RHBAE,BAE	:SAVE BUS ADDRESS EXTENSION
2690	013012	017737	170344	003424		MOV	@RHCS3,CS3	:SAVE RHCS3
2691	013020	017737	170314	003422	86\$:	MOV	@RHCS2,CS2	:SAVE CS2
2692	013026	017737	170310	003432		MOV	@RHST,DS1	:SAVE TESTER STATUS
2693	013034	017737	170304	003436		MOV	@RHER,ER1	:SAVE ERROR REGISTER
2694	013042	017737	170302	003442		MOV	@RHTDB,TDR	:SAVE TESTER DATA REG.
2695	013050	017737	170262	003440		MOV	@RHMR2,TC	:SAVE MR2 TESTER REG.
2696	013056	104003				ERROR	3	:NO,CORRECT BITS ARE NOT SET
2697	013060	004737	046362			JSR	R7,WATBIT	:GO TO WATBIT PROGRAM
2698	013064	012737	125252	001162	1\$:	MOV	#OAB,\$REGO	:SET UP OPPOSITE ALTERNATE BIT TEST
2699	013072	013777	001162	170234		MOV	\$REGO,@RHBA	:SET BITS IN RHBA REGISTER
2700	013100	017737	170230	003414		MOV	@RHBA,BA	:SAVE CONTENTS OF BA REGISTER
2701	013106	023777	001162	170220		CMP	\$REGO,@RHBA	:ARE CORRECT BITS SET
2702	013114	001454				BEQ	ERR10	:WAS THERE AN ERROR
2703	013116	013737	003414	001200		MOV	BA,\$TMP1	:SETUP FOR WATBIT PROG.
2704	013124				GOOFED:			
2705	013124	017737	170200	003420		MOV	@RHCS1,CS1	:SAVE RHCS1
2706	013132	017737	170174	003444		MOV	@RHWC,WC	:SAVE WORD COUNT
2707	013140	017737	170170	003414		MOV	@RHBA,BA	:SAVE BUS ADDRESS
2708	013146	005701				TST	R1	:IS IT AN RH11
2709	013150	001406				BEQ	87\$:NO IT'S A 70
2710	013152	005037	003416			CLR	BAE	:CLEAR BAE
2711	013156	005037	003424			CLR	CS3	:CLEAR CS3
2712	013162	000137	013202			JMP	86\$:CONTINUE
2713	013166	017737	170166	003416	87\$:	MOV	@RHBAE,BAE	:SAVE BUS ADDRESS EXTENSION
2714	013174	017737	170162	003424		MOV	@RHCS3,CS3	:SAVE RHCS3
2715	013202	017737	170132	003422	86\$:	MOV	@RHCS2,CS2	:SAVE CS2
2716	013210	017737	170126	003432		MOV	@RHST,DS1	:SAVE TESTER STATUS
2717	013216	017737	170122	003436		MOV	@RHER,ER1	:SAVE ERROR REGISTER
2718	013224	017737	170120	003442		MOV	@RHTDB,TDR	:SAVE TESTER DATA REG.
2719	013232	017737	170100	003440		MOV	@RHMR2,TC	:SAVE MR2 TESTER REG.
2720	013240	104003				ERROR	3	:NO,CORRECT BITS ARE NOT SET
2721	013242	004737	046362			JSR	R7,WATBIT	:GO TO WATBIT PROGRAM
2722	013246	013737	003334	004136	ERR10:	MOV	RHBA,\$RHBA	:GET READY TO TEST BYTES
2723	013254	012777	000000	170052		MOV	#ZERO,@RHBA	:ZERO THE BUS ADDRESS
2724	013262	113777	004120	170646		MOVB	MINUS,@\$RHBA	:MOVE THE BYTE
2725	013270	022777	000376	170036		CMP	#376,@RHBA	:DID IT GET THERE ALRIGHT
2726	013276	001401				BEQ	99\$:YES,CHECK NEXT BYTE
2727	013300	104202				ERROR	202	:HIGH BYTE DOES NOT SEEM TO BE WORKING
2728	013302	005237	004136		99\$:	INC	\$RHBA	:GET READY FOR NEXT BYTE
2729	013306	012777	000000	170020		MOV	#ZERO,@RHBA	:ZERO THE BUS ADDRESS
2730	013314	113777	004121	170614		MOVB	MINUS+1,@\$RHBA	:MOVE TO UPPER BYTE
2731	013322	022777	177400	170004		CMP	#177400,@RHBA	:DID IT GET THERE ALRIGHT
2732	013330	001401				BEQ	98\$:YES,EXIT TEST
2733	013332	104202				ERROR	202	:LOBYTE IS NOT WORKING PROPERLY
2734	013334	004737	006572		98\$:	JSR	R7,CLEER	:CLAER ERPORS
2735	013340	004737	050210			JSR	R7,ERR10	
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2746 013344 000004
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2749 013346 005037 003450 CLR LOOCNT ;CLEAR LOOP COUNT
2750 013352 012737 000001 001162 MOV #ONE,$REGO ;SET UP BIT TEST
2751 013360 013777 001162 167764 DBTST: MOV $REGO,@RHDB ;SET BIT IN RHDB REGISTER
2752 013366 005037 003446 CLR BITCNT ;CLEAR BIT COUNTER
2753 013372 032777 000200 167730 18$: BIT #RDY,@RHCS1 ;IS RDY SET
2754 013400 001015 BNE ABLE ;BIT IS SET
2755 013402 005237 003446 INC BITCNT ;COUNT UP
2756 013406 001371 BNE 18$ ;NOT FINISHED COUNTING
2757 013410 005037 003446 CLR BITCNT ;GET READY TO DO IT AGAIN
2758 013414 032777 000200 167706 19$: BIT #RDY,@RHCS1 ;IS IT SET YET?
2759 013422 001004 BNE ABLE ;YES
2760 013424 005237 003446 INC BITCNT ;COUNT UP
2761 013430 001401 BEQ ABLE ;BIT IS NOT GOING TO SET
2762 013432 000770 BR 19$
2763 013434 ABLE:
2764 013434 017737 167670 003420 MOV @RHCS1,CS1 ;SAVE RHCS1
2765 013442 017737 167664 003444 MOV @RHWC,WC ;SAVE WORD COUNT
2766 013450 017737 167660 003414 MOV @RHEA,BA ;SAVE BUS ADDRESS
2767 013456 005701 TST R1 ;IS IT AN RH11
2768 013460 001406 BEQ 87$ ;NO IT'S A 70
2769 013462 005037 003416 CLR BAE ;CLEAR BAE
2770 013466 005037 003424 CLR CS3 ;CLEAR CS3
2771 013472 000137 013512 MP 86$ ;CONTINUE
2772 013476 017737 167656 003416 87$: MOV @RHBAE,BAE ;SAVE BUS ADDRESS EXTENSION
2773 013504 017737 167652 003424 MOV @RHCS3,CS3 ;SAVE RHCS3
2774 013512 017737 167622 003422 86$: MOV @RHCS2,CS2 ;SAVE CS2
2775 013520 017737 167616 003432 MOV @RHST,DSI ;SAVE TESTER STATUS
2776 013526 017737 167612 003436 MOV @RHER,ER1 ;SAVE ERROR REGISTER
2777 013534 017737 167610 003442 MOV RHTDB,TDR ;SAVE TESTER DATA REG.
2778 013542 017737 167570 003440 MOV @RHMR2,TC ;SAVE MR2 TESTER REG.
2779 013550 032777 000200 167552 BIT #RDY,@RHCS1 ;IS READY SET
2780 013556 001003 BNE RDYSET ;SKIP ERROR
2781 013560 104102 ERROR 102 ;READY DID NOT SET
2782 013562 004737 007224 JSR R7,WHYFO ;ANY ERRORS SET
2783 013566 032777 000200 167544 RDYSET: BIT #OR,@RHCS2 ;IS OR SET?
2784 013574 001004 BNE ORSET ;YES,IT'S SET
2785 013576 017737 167550 003426 MOV @RHDB,DB ;SAVE CONTENTS OF RHDB REGISTER
2786 013604 104041 ERROR 41 ;OUTPUT READY DID NOT SET
2787 013606 017737 167540 003426 ORSET: MOV @RHDB,DB ;SAVE CONTENTS OF REGISTER
2788 013614 023737 001162 003426 CMP $REGO,DB ;IS CORRECT BIT SET?
2789 013622 001406 BEQ 1$ ;YES,CONTINUE TEST
2790 013624 013737 003426 001200 MOV DB,$TMP1 ;SETUP FOR WATBIT PROG.
2791 013632 104004 ERROR 4 ;NO,CORRECT BIT IS NOT SET
2792 013634 004737 046362 JSR R7,WATBIT ;GO TO WATBIT PROGRAM
```

2793	013640	005737	001162		1\$:	TST	\$REGO		:WAS BIT 15 THE LAST BIT TESTED
2794	013644	100415				BMI	DBTSTA		:YES, GO TO ALTERNATE BIT PATTERN TEST
2795	013646	022737	000001	003450		CMP	#ONE, LOOCNT		:IS IT FIRST TIME
2796	013654	001404				BEQ	2\$:NO, IT'S SECOND
2797	013656	005237	003450			INC	LOOCNT		:YES,
2798	013662	000137	013360			JMP	DBTST		:CONTINUE TEST
2799	013666	005037	003450		2\$:	CLR	LOOCNT		:CLEAR LOOP COUNT
2800	013672	006137	001162			ROL	\$REGO		:NO, SET UP TO TEST NEXT BIT
2801	013676	000630				BR	DBTST		:GO AND TEST BIT
2802	013700	022737	000001	003450	DBTSTA:	CMP	#ONE, LOOCNT		:IS IT FIRST TIME
2803	013706	001404				BEQ	1\$:NO
2804	013710	005237	003450			INC	LOOCNT		:INCREMENT LOOP COUNTER
2805	013714	000137	013360			JMP	DBTST		:DO AGAIN
2806	013720	012737	052525	001162	1\$:	MOV	#AB, \$REGO		:SET UP BIT PATTERN TEST
2807	013726	013777	001162	167416		MOV	\$REGO, @RHDB		:SET BITS IN REGISTER
2808	013734	005037	003446			CLR	BITCNT		:CLEAR BIT COUNTER
2809	013740	032777	000200	167372	18\$:	BIT	#OR, @RHCS2		:IS OR SET
2810	013746	001015				BNE	DBOUT		:BIT IS SET
2811	013750	005237	003446			INC	BITCNT		:COUNT UP
2812	013754	001371				BNE	18\$:NOT FINISHED COUNTING
2813	013756	005037	003446			CLR	BITCNT		:GET READY TO DO IT AGAIN
2814	013762	032777	000200	167350	19\$:	BIT	#OR, @RHCS2		:IS IT SET YET?
2815	013770	001004				BNE	DBOUT		:YES
2816	013772	005237	003446			INC	BITCNT		:COUNT UP
2817	013776	001401				BEQ	DBOUT		:BIT IS NOT GOING TO SET
2818	014000	000770				BR	19\$		
2819	014002				DBOUT:				
2820	014002	017737	167322	003420		MOV	@RHCS1, CS1		:SAVE RHCS1
2821	014010	017737	167316	003444		MOV	@RHWC, WC		:SAVE WORD COUNT
2822	014016	017737	167312	003414		MOV	@RHBA, BA		:SAVE BUS ADDRESS
2823	014024	005701				TST	R1		:IS IT AN RH11
2824	014026	001406				BEQ	87\$:NO IT'S A 70
2825	014030	005037	003416			CLR	BAE		:CLEAR BAE
2826	014034	005037	003424			CLR	CS3		:CLEAR CS3
2827	014040	000137	014060			JMP	86\$:CONTINUE
2828	014044	017737	167310	003416	87\$:	MOV	@RHBAE, BAE		:SAVE BUS ADDRESS EXTENSION
2829	014052	017737	167304	003424		MOV	@RHCS3, CS3		:SAVE RHCS3
2830	014060	017737	167254	003422	86\$:	MOV	@RHCS2, CS2		:SAVE CS2
2831	014066	017737	167250	003432		MOV	@RHST, DS1		:SAVE TESTER STATUS
2832	014074	017737	167244	003436		MOV	@RHER, ER1		:SAVE ERROR REGISTER
2833	014102	017737	167242	003442		MOV	@RHTDB, TDR		:SAVE TESTER DATA REG.
2834	014110	017737	167222	003440		MOV	@RHMR2, TC		:SAVE MR2 TESTER REG.
2835	014116	032777	000200	167214		BIT	#OR, @RHCS2		:IS OUTPUT READY ?
2836	014124	001001				BNE	2\$:YES CONTINUE TEST
2837	014126	104041				ERROR	41		:OUTPUT READY DID NOT SET
2838	014130	023777	001162	167214	2\$:	CMP	\$REGO, @RHDB		:ARE CORRECT BITS SET?
2839	014136	001411				BEQ	1\$:YES, CONTINUE TESTS
2840	014140	017737	167206	003426		MOV	@RHDB, DB		:SAVE CONTENTS OF REGISTER
2841	014146	013737	003426	001200		MOV	DB, \$TMP1		:SETUP FOR WATBIT TEST
2842	014154	104004				ERROR	4		:NO, CORRECT BITS ARE NOT SET
2843	014156	004737	046362			JSR	R7, WATBIT		:GO TO WATBIT PROGRAM
2844	014162	012737	125252	001162	1\$:	MOV	#OAB, \$REGO		:SET UP OPPOSITE ALTERNATE BIT PATTERN TEST
2845	014170	013777	001162	167154		MOV	\$REGO, @RHDB		:SET BITS IN REGISTER
2846	014176	005037	003446			CLR	BITCNT		:CLEAR BIT COUNTER
2847	014202	032777	000200	167130	18\$:	BIT	#OR, @RHCS2		:IS OR SET
2848	014210	001015				BNE	OABTSI		:BIT IS SET


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2849 014212 005237 003446      INC      BITCNT      :COUNT UP
2850 014216 001371      BNE      18$        :NOT FINISHED COUNTING
2851 014220 005037 003446      CLR      BITCNT      :GET READY TO DO IT AGAIN
2852 014224 032777 000200 167106 19$:  BIT      #CR,@RHCS2  :IS IT SET YET?
2853 014232 001004      BNE      OABTST     :YES
2854 014234 005237 003446      INC      BITCNT      :COUNT UP
2855 014240 001401      BEQ      OABTST     :BIT IS NOT GOING TO SET
2856 014242 000770      RR
2857 014244      OABTST:
2858 014244      MYSTIC:
2859 014244 017737 167060 003420      MOV      @RHCS1,CS1  :SAVE RHCS1
2860 014252 017737 167054 003444      MOV      @RHWC,WC    :SAVE WORD COUNT
2861 014260 017737 167050 003414      MOV      @RHBA,BA    :SAVE BUS ADDRESS
2862 014266 005701      TST      R1         :IS IT AN RH11
2863 014270 001406      BEQ      87$        :NO IT'S A 70
2864 014272 005037 003416      CLR      BAE        :CLEAR BAE
2865 014276 005037 003424      CLP      CS3        :CLEAR CS
2866 014302 000137 014322      JMP      86$        :CONTINUE
2867 014306 017737 167046 003416 87$:  MOV      @RHBAE,BAE  :SAVE BUS ADDRESS EXTENSION
2868 014314 017737 167042 003424      MOV      @RHCS3,CS3  :SAVE RHCS3
2869 014322 017737 167012 003422 86$:  MOV      @RHCS2,CS2  :SAVE CS2
2870 014330 017737 167006 003432      MOV      @RHST,DS1   :SAVE TESTER STATUS
2871 014336 017737 167002 003436      MOV      @RHER,ER1   :SAVE ERROR REGISTER
2872 014344 017737 167000 003442      MOV      @RHTDB,TDR  :SAVE TESTER DATA REG.
2873 014352 017737 166760 003440      MOV      @RHM2,TC    :SAVE MR2 TESTER REG.
2874 014360 032777 000200 166752      BIT      #OR,@RHCS2  :IS OUTPUT READY SET
2875 014366 001001      BNE      2$        :YES
2876 014370 104041      ERROR    41        :OUTPUT READY DID NOT SET
2877 014372 017737 166754 003426 2$:  MOV      @PHDB,DB    :SAVE CONTENTS OF REGISTER
2878 014400 023737 001162 003426      CMP      $REG0,DB    :ARE CORRECT BITS SET?
2879 014406 001406      BEQ      ERR11     :WAS THERE AN ERROR
2880 014410 013737 003426 001200      MOV      DB,$TMP1   :SETUP FOR WATBIT PROG.
2881 014416 104004      ERROR    4         :CORRECT BITS ARE NOT SET
2882 014420 004737 046362      JSR      R7,WATBIT  :GO TO WATBIT PROGRAM
2883 014424 004737 006572      JSR      R7,CLEER   :CLEAR ERRORS
2884 014430 004737 050210      JSR
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2894 014434 000004      TST16: SCOPE
2895 014436 012777 177777 166666      MOV      #-1,@RHWC  :SETUP FOR 1 WORD
2896 014444 012777 000007 166666      MOV      #7,@RHCS2  :SETUP UNIT 7
2897 014452 005701      TST      R1         :IS IT AN RH11
2898 014454 100403      BMI     1$        :YES
2899 014456 012777 000000 166674      MOV      #ZERO,@RHBAE :SETUP BUS ADDRESS EXTENSION
2900 014464 012777 001204 166642 1$:  MOV      #$TMP3,@RHBA :SETUP BUS ADDRESS
2901 014472 012777 000061 166630      MOV      #WRITE0,@RHCS1
2902 014500 005037 003446      CLR      BITCNT     :CLEAR BIT COUNTER
2903 014504 032777 000200 166616 18$:  BIT      #RDY,@RHCS1 :IS RDY SET
2904 014512 001015      BNE      6$        :BIT IS SET

```

```

:*****
:*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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2961 015004 004737 007224
2962 015010 004737 006572
2963 015014 004737 050210
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2972 015020 000004
2973 015022 012737 000001 001212
2974
2975 015030 005701
2976 015032 100403
2977 015034 012777 000037 166316
2978 015042 012777 177776 166264
2979 015050 012777 177777 166254
2980 015056 005701
2981 015060 001404
2982 015062 012777 000461 166240
2983 015070 000403
2984 015072 112777 000061 166230
2985 015100
2986 015100 005037 003446
2987 015104 032777 000200 166216
2988 015112 001015
2989 015114 005237 003446
2990 015120 001371
2991 015122 005037 003446
2992 015126 032777 000200 166174
2993 015134 001004
2994 015136 005237 003446
2995 015142 001401
2996 015144 000770
2997 015146
2998 015146 017737 166156 003420
2999 015154 017737 166152 003444
3000 015162 017737 166146 003414
3001 015170 005701
3002 015172 001406
3003 015174 005037 003416
3004 015200 005037 003424
3005 015204 000137 015224
3006 015210 017737 166144 003416
3007 015216 017737 166140 003424
3008 015224 017737 166110 003422
3009 015232 017737 166104 003432
3010 015240 017737 166100 003436
3011 015246 017737 166076 003442
3012 015254 017737 166056 003440
3013 015262 005701
3014 015264 001406
3015 015266 032777 001000 166034
3016 015274 001022

```

```

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

*****
:*TEST 17      RHBA OPERATIONAL TEST
:*THIS TEST CHECKS THAT THE BUS ADDRESS REGISTER
:*WILL CARRY THROUGH TO THE HIGHEST BI
:*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$:    MOVB    #WRITE0,@RHCS1 ;TELL IT TO WRITE
35$:

      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
2$:     BR      19$

      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
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

```

```
3017 015276 000137 015410          JMP      5$          :CONT. FOR RH11
3018 015302 022777 000040 166050 12$:  CMP      #40,@RHBAE :DID BAE INC
3019 015310 001414          BEQ      4$          :BAE INCREMENTED
3020 015312 022777 000037 166040  CMP      #37,@RHBAE :IS BAE OLD VALUE
3021 015320 001420          BEQ      3$          :BAE DID NOT INCREMENT
3022 015322 005777 166032  TST      @RHBAE     :IS BAE ZERO
3023 015326 001425          BEQ      9$          :BAE IS ZERO
3024 015330 104105          ERROR    105        :BAE GOT MESSED UP DOING A WRITE
3025 015332 004737 007224  JSR      R7,WHYFO   :DID AN ERROR OTHER THAN NEM CAUSIT
3026 015336 000137 015426  JMP      10$
3027 015342 005777 165766 4$:  TST      @RHBA     :DID BA INCREMENT ?
3028 015346 001443          BEQ      8$          :YES, EXIT TEST
3029 015350 104112          ERROR    112        :BA DID NOT INCREMENT
3030 015352 004737 007224  JSR      R7,WHYFO   :WAS AN ERROR BIT SET
3031 015356 000137 015456  JMP      8$          :EXIT TEST
3032 015362 104106 3$:  ERROR    106        :BAE DID NOT INCREMENT
3033 015364 004737 007224  JSR      R7,WHYFO   :WAS AN ERROR BIT SET
3034 015370 000137 015456  JMP      8$          :EXIT TEST
3035 015374 104107 6$:  ERROR    107        :BAE INCREMENTED OK BUT A17 +
3036          :A16 DID NOT INC PROPERLY IN RHCS1
3037 015376 000137 015456  JMP      8$          :EXIT TEST
3038 015402 104110 9$:  ERROR    110        :RHBAE IS ZERO
3039 015404 000137 015456  JMP      8$          :BIT 5 IN BAE SHOULD BE SET
3040 015410 033777 000400 165712 5$:  BIT      A16,@RHCS1 :IS A 16 SET
3041 015416 001003          BNE      10$        :YES, BA DID NOT INCREMENT
3042 015420 104111          ERROR    111        :A17 DID NOT SET WHEN BA WAS
3043          :INC
3044 015422 000137 015456  JMP      8$          :EXIT TEST
3045 015426 005777 165702 10$:  TST      @RHBA     :DOES BA =0
3046 015432 001403          BEQ      11$        :YES, BA INCREMENTED
3047 015434 104112          ERROR    112        :BA DID NOT INCREMENT
3048 015436 000137 015456  JMP      8$          :EXIT TEST
3049 015442 005701 11$:  TST      R1         :IS IT A 70 OR 11
3050 015444 100403          BMI      13$        :GO TO CORRECT ERROR
3051 015446 104076          ERROR    76         :BA INCREMENTED BUT DID NOT
3052          :CARRY TO BAE
3053 015450 000137 015456  JMP      8$          :GET OUT OF TEST
3054 015454 104113 13$:  ERROR    113        :BA INCREMENTED BUT IT DID NOT
3055          :CARRY OVER TO A17 + A16
3056 015456 004737 006572 8$:  JSR      R7,CLEER   :CLEAR ERRORS
3057 015462 004737 050210  JSR      R7,ERRTST :WAS THERE ANY ERRORS
3058
3059
3060          :*****
3061          :*TEST 20      NEM,TRF,SC BIT TEST
3062          :*THIS TEST WILL CHECK THAT NON EXISTING MEMORY
3063          :*WILL SET THE TRE AND SC BIT IN RHCS1 REGISTER
3064          :*****
3064 015466 000004  TST20:  SCOPE
3065 015470 005701  TST      R1
3066 015472 001404  BEQ      40$
3067 015474 013777 003362 165632  MOV      RHCS3,@RHBA
3068 015502 000403  BR       41$
3069
3070 015504 012777 177702 165622 40$:  MOV      #177702,@RHBA :SET UP BUS ADDRESS
3071 015512 005701 41$:  TST      R1         :IS IT AN RH70
3072 015514 100403  BMI     9$          :NO SKIP RH11 PORTION
```

3073	015516	012777	000077	165634		MOV	#77,@RHBAE	:SET UP BAE REGISTER
3074	015524	012777	177777	165600	9\$:	MOV	#-1,@RHWC	:SET WORD COUNT TO ONE WORD
3075	015532	012777	000007	165600		MOV	#7,@RHCS2	:SET UNIT NUMBER
3076	015540	012777	001471	165562		MOV	#A16!A17!READ0,@RHCS1	:TELL IT TO READ
3077	015546	005037	003446			CLR	BITCNT	:CLEAR BIT COUNTER
3078	015552	032777	000200	165550	18\$:	BIT	#RDY,@RHCS1	:IS RDY SET
3079	015560	001015				BNE	DELTA	:BIT IS SET
3080	015562	005237	003446			INC	BITCNT	:COUNT UP
3081	015566	001371				BNE	18\$:NOT FINISHED COUNTING
3082	015570	005037	003446			CLR	BITCNT	:GET READY TO DO IT AGAIN
3083	015574	032777	000200	165526	19\$:	BIT	#RDY,@RHCS1	:IS IT SET YET?
3084	015602	001004				BNE	DELTA	:YES
3085	015604	005237	003446			INC	BITCNT	:COUNT UP
3086	015610	001401				BEQ	DELTA	:BIT IS NOT GOING TO SET
3087	015612	000770				BR	19\$	
3088	015614						DELTA:	
3089	015614	017737	165520	003422		MOV	@RHCS2,CS2	:SAVE CONTENTS OF RHCS2
3090	015622	017737	165502	001162		MOV	@RHCS1,\$REGO	:SET UP NEEDED BITS ONLY
3091	015630	042737	027777	001162		BIC	#GO!IE!RDY!A16!A17!PSEL	:DVA!MCPE!READ6,\$REGO
3092								:CLEAR BITS NOT NEEDED
3093	015636	017737	165466	003420		MOV	@RHCS1,CS1	:SAVE RHCS1
3094	015644	017737	165462	003444		MOV	@RHWC,WC	:SAVE WORD COUNT
3095	015652	017737	165456	003414		MOV	@RHBA,BA	:SAVE BUS ADDRESS
3096	015660	005701				TST	R1	:IS IT AN RH11
3097	015662	001406				BEQ	87\$:NO IT'S A 70
3098	015664	005037	003416			CLR	BAE	:CLEAR BAE
3099	015670	005037	003424			CLR	CS3	:CLEAR CS3
3100	015674	000137	015714			JMP	86\$:CONTINUE
3101	015700	017737	165454	003416	87\$:	MOV	@RHBAE,BAE	:SAVE BUS ADDRESS EXTENSION
3102	015706	017737	165450	003424		MOV	@RHCS3,CS3	:SAVE RHCS3
3103	015714	017737	165420	003422	86\$:	MOV	@RHCS2,CS2	:SAVE CS2
3104	015722	017737	165414	003432		MOV	@RHST,DS1	:SAVE TESTER STATUS
3105	015730	017737	165410	003436		MOV	@RHER,ER1	:SAVE ERROR REGISTER
3106	015736	017737	165406	003442		MOV	@RHTDB,TDR	:SAVE TESTER DATA REG.
3107	015744	017737	165366	003440		MOV	@RMR2,TC	:SAVE MR2 TESTER REG.
3108	015752	032777	000200	165350		BIT	#RDY,@RHCS1	:IS READY SET
3109	015760	001003				BNE	99\$:YES CONTINUE TEST
3110	015762	104102				ERROR	102	:READY NOT SET
3111	015764	004737	007224			JSR	R7,WHYFO	:ANY ERRORS SET
3112	015770	032777	004000	165342	99\$:	BIT	#NEM,@RHCS2	:IS NEM SET
3113	015776	001016				BNE	1\$:YES CHECK TRE AND SC
3114	016000	022737	140000	001162		CMP	#SC!TRE,\$REGO	:IS THE SC AND TRE BITS SET
3115	016006	001460				BEQ	2\$:YES NEM IS IN ERROR
3116	016010	032737	040000	001162		BIT	#TRE,\$REGO	:IS JUST THE TRE BIT SET
3117	016016	001060				BNE	3\$:TRE BIT MUST BE IN ERROR
3118	016020	032737	100000	001162		BIT	#SC,\$REGO	:IS JUST THE SC BIT SET
3119	016026	001060				BNE	4\$:SC BIT SET ERRONIOUSLY
3120	016030	104005				ERROR	5	:NEM NOT SET IN RHCS2
3121	016032	000467				BR	8\$:SET UP TO TEST AGAIN
3122	016034	022737	140000	001162	1\$:	CMP	#SC.TRE,\$REGO	:IS SC AND TRE SET
3123	016042	001030				BNE	22\$:FIND THE ERROR
3124	016044	012737	020000	004124		MOV	#MCPE,\$CS1	:TEST FOR SHORTS
3125	016052	012737	173400	004126		MOV	#MPE!MXF!PGE!NED!UPE!WCE.DLT,\$CS2	
3126	016060	012737	174000	004130		MOV	#WCELO!WCEHI.DPELO.DPEHI!APE,\$CS3	
3127	016066	012737	000000	004132		MOV	#0,\$ST	
3128	016074	012737	030175	004134		MOV	#ILF!RMR!CPE!DPE!RMBEX!RFAIL!DTE!OPI,\$ER	

```
3129 016102 012737 177777 004122      MOV    #-1,BEFORE      ;TELL WHYFO ITS FOR SHORTS
3130 016110 004737 007224                JSR    R7,WHYFO        ;TEST FOR SHORTS
3131 016114 005037 004122                CLR    BEFORE         ;WE HAVE CHECKED FOR SHORTS
3132 016120 000137 016212                JMP    8$             ;LEAVE THE TEST
3133 016124 032737 040000 001162 22$:   BIT    #TRE,$REG0     ;THEN IS THE TRE BIT SET
3134 016132 001022                BNE    6$             ;SC BIT DID NOT SEE TRE BIT
3135 016134 032737 100000 001162        BIT    #SC $REG0     ;IS THE SC BIT SET
3136 016142 001022                BNE    7$             ;TRE HAS AN OPEN GOING TO BUS
3137 016144 104006                ERROR  6             ;TRE SET LOGIC NOT WORKING
3138 016146 000421                BR     8$            ;SET UP TO TEST AGAIN
3139 016150 104007                ERROR  7             ;NEM HAS OPEN IN LINE GOING TO BUS
3140 016152 004737 007224                JSR    R7,WHYFO      ;SEE IF ANY OTHER ERROR BIT IS
3141                                ;SET OTHER THAN NEM
3142 016156 000415                BR     8$            ;SET UP TO TEST AGAIN
3143 016160 104010                ERROR  10            ;SOMTHING WRONG WITH TRE BIT
3144 016162 004737 007224                JSR    R7,WHYFO      ;SEE IF AN ERROR BIT IS SET
3145                                ;OR BOTH NEM IN RHCS2 AND SC IN
3146                                ;RHCS1 HAS AN OPEN BETWEEN IT AND THE BUS
3147 016166 000411                BR     8$            ;SET UP TO TEST AGAIN
3148 016170 104011                ERROR  11            ;SC BIT WAS SET BY EITHER ATTN OR
3149 016172 004737 007224                JSR    R7,WHYFO      ;FIND WHAT ERROR BIT IS SET
3150                                ;MCPE ERROR OR SC IS SHORTED TO +5 VOLTS
3151 016176 000405                BR     8$            ;SETUP TO TEST AGAIN
3152 016200 104012                ERROR  12            ;TRE WAS SET BY OTHER THAN NEM
3153 016202 004737 007224                JSR    R7,WHYFO      ;FIND ERROR BIT THAT SET TRE
3154 016206 000401                BR     8$            ;SETUP TO TEST AGAIN
3155 016210 104013                ERROR  13            ;TRE HAS AN OPEN GOING TO THE BUS
3156 016212 032737 041400 177570 8$:   BIT    #SW14!SW9!SW8,@#177570 ;ANY LOOPING BEEING DONE
3157 016220 001003                BNE    21$           ;YES,LOAD TRE NO MATTER WHAT
3158 016222 105737 001103                TSTB   $ERFLG        ;WAS THERE AN ERROR
3159 016226 001010                BNE    9$            ;SKIP TRE CHECK
3160 016230 112777 000100 165126 21$:   MOVB   #TREB,@RHCS1B ;LOAD TRE
3161 016236 032777 004000 165074        BIT    #NEM,@RHCS2  ;DID ERROR CLEAR
3162 016244 001401                BEQ    9$            ;YES EXIT TEST
3163 016246 104050                ERROR  50            ;LOADING TRE DID NOT CLEAR ERROR
3164 016250 004737 006572 9$:       JSR    R7,CLEER      ;SEE IF ERRORS ARE CLEARED
3165 016254 004737 050210                JSR    R7,ERRTST
```

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3173 016260 000004
3174 016262 012777 177777 165042
3175 016270 012777 000007 165042
3176 016276 005701
3177 016300 001003
3178 016302 012777 000000 165050
3179 016310 012777 001172 165016 9$:
3180 016316 012737 052525 001172
3181 016324 012777 000061 164776
3182 016332 005037 003446
3183 016336 032777 000200 164764 18$:
3184 016344 001015
```

```
*****
:*TEST 21 WCE,TRE,SC BIT TEST
:*THIS TEST WILL CHECK THAT TRF AND SC SET
:*WHEN A WRITE CHECK ERROR OCCURS (WCE)
*****
TST21: SCOPE
MOV    #-1,@RHWC      ;ONE WORD TRANSFER
MOV    #7,@RHCS2     ;TO UNIT ONE
TST    R1             ;IS IT AN RH70
BNE    9$             ;NO
MOV    #ZERO,@RHBAE  ;SETUP RHBAE REGISTER
MOV    #$REG4,@RHBA ;SETUP BUS ADDRESS
MOV    #AB,$REG4     ;CREATE INFORMATION
MOV    #WRITE0,@RHCS1 ;TELL IT TO WRITE
CLR    BITCNT        ;CLEAR BIT COUNTER
BIT    #RDY,@RHCS1  ;IS RDY SET
BNE    WCETST        ;BIT IS SET
```

3185	016346	005237	003446			INC	BITCNT		:COUNT UP
3186	016352	001371				BNE	18\$:NOT FINISHED COUNTING
3187	016354	005037	003446			CLR	BITCNT		:GET READY TO DO IT AGAIN
3188	016360	032777	000200	164742	19\$:	BIT	#RDY,@RHCS1		:IS IT SET YET?
3189	016366	001004				BNE	WCETST		:YES
3190	016370	005237	003446			INC	BITCNT		:COUNT UP
3191	016374	001401				BEQ	WCETST		:BIT IS NOT GOING TO SET
3192	016376	000770				BR	19\$		
3193	016400						WCETST:		
3194	016400	052777	000040	164732		BIS	#40,@RHCS2		:DO A CONTROLER CLEAR
3195	016406	005037	003446			CLR	BITCNT		:SET UP FOR DELAY
3196	016412	005237	003446		17\$:	INC	BITCNT	:COUNT UP	
3197	016416	001375				BNE	17\$		
3198	016420	012777	000007	164712		MOV	#7,@RHCS2		:SELECT UNIT #
3199	016426	005037	003446			CLR	BITCNT		:CLEAR BIT COUNTER
3200	016432	032777	000200	164670	18\$:	BIT	#RDY,@RHCS1		:IS RDY SET
3201	016440	001015				BNE	WCTST		:BIT IS SET
3202	016442	005237	003446			INC	BITCNT		:COUNT UP
3203	016446	001371				BNE	18\$:NOT FINISHED COUNTING
3204	016450	005037	003446			CLR	BITCNT		:GET READY TO DO IT AGAIN
3205	016454	032777	000200	164646	19\$:	BIT	#RDY,@RHCS1		:IS IT SET YET?
3206	016462	001004				BNE	WCTST		:YES
3207	016464	005237	003446			INC	BITCNT		:COUNT UP
3208	016470	001401				BEQ	WCTST		:BIT IS NOT GOING TO SET
3209	016472	000770				BR	19\$		
3210	016474						WCTST:		
3211	016474	032777	000200	164626		BIT	#RDY,@RHCS1		:IS READY SET
3212	016502	001003				BNE	20\$:YES
3213	016504	104102				ERROR	102		:READY NOT SET
3214	016506	004737	007224			JSR	R7,WHYFO		:ANY ERRORS SET
3215	016512	012777	177777	164612	20\$:	MOV	#-1,@RHWC		:RESET WORD COUNT
3216	016520	012777	001172	164606		MOV	#\$REG4,@RHBA		:RESET BUS ADDRESS
3217	016526	012737	125252	001172		MOV	#OAB,\$REG4		:CREATE WRITE CHECK ERROR
3218	016534	012777	000051	164566		MOV	#WRCHO,@RHCS1		:MAKE THE ERROR
3219	016542	005037	003446			CLR	BITCNT		:CLEAR BIT COUNTER
3220	016546	032777	000200	164554	18\$:	BIT	#RDY,@RHCS1		:IS RDY SET
3221	016554	001015				BNE	WCETRE		:BIT IS SET
3222	016556	005237	003446			INC	BITCNT		:COUNT UP
3223	016562	001371				BNE	18\$:NOT FINISHED COUNTING
3224	016564	005037	003446			CLR	BITCNT		:GET READY TO DO IT AGAIN
3225	016570	032777	000200	164532	19\$:	BIT	#RDY,@RHCS1		:IS IT SET YET?
3226	016576	001004				BNE	WCETRE		:YES
3227	016600	005237	003446			INC	BITCNT		:COUNT UP
3228	016604	001401				BEQ	WCETRE		:BIT IS NOT GOING TO SET
3229	016606	000770				BR	19\$		
3230	016610						WCETRE:		
3231	016610	017737	164524	003422		MOV	@RHCS2,CS2		:SAVE CONTENTS
3232	016616	017737	164506	001162		MOV	@RHCS1,\$REG0		:SET UP NEEDED BITS ONLY
3233	016624	042737	027777	001162		BIC	#GO!IE!RDY.A16!A17!PSEL!DVA!MCPE!READ6,\$REG0		:CLEAR BITS NOT NEEDED
3234									
3235	016632	017737	164472	003420		MOV	@RHCS1,CS1		:SAVE RHCS1
3236	016640	017737	164466	003444		MOV	@RHWC,WC		:SAVE WORD COUNT
3237	016646	017737	164462	003414		MOV	@RHBA,BA		:SAVE BUS ADDRESS
3238	016654	005701				TST	R1		:IS IT AN RH11
3239	016656	001406				BEQ	87\$:NO IT'S A 70
3240	016660	005037	003416			CLR	BAE		:CLEAR BAE

3241	016664	005037	003424			CLR	CS3	:CLEAR CS3
3242	016670	000137	016710			JMP	86\$:CONTINUE
3243	016674	017737	164460	003416	87\$:	MOV	@RHBAE,BAE	:SAVE BUS ADDRESS EXTENSION
3244	016702	017737	164454	003424		MOV	@RHCS3,CS3	:SAVE RHCS3
3245	016710	017737	164424	003422	86\$:	MOV	@RHCS2,CS2	:SAVE CS2
3246	016716	017737	164420	003432		MOV	@RHST,DS1	:SAVE TESTER STATUS
3247	016724	017737	164414	003436		MOV	@RHER,ER1	:SAVE ERROR REGISTER
3248	016732	017737	164412	003442		MOV	@RHTDB,TDR	:SAVE TESTER DATA REG.
3249	016740	017737	164372	003440		MOV	@RHMR2,TC	:SAVE MR2 TESTER REG.
3250	016746	032777	000200	164354		BIT	#RDY,@RHCS1	:IS READY SET
3251	016754	001003				BNE	99\$:YES CONTINUE TEST
3252	016756	104102				ERROR	102	:READY NOT SET
3253	016760	004737	007224			JSR	R7,WHYFO	:ANY ERRORS SET
3254	016764	032777	040000	164346	99\$:	BIT	#WCE,@RHCS2	:IS WCE SET
3255	016772	001016				BNE	1\$:YES CHECK TRE AND SC
3256	016774	022737	140000	001162		CMP	#SC!TRE,\$REGO	:IS THE SC AND TRE BITS SET
3257	017002	001460				BEQ	2\$:YES WCE IS IN ERROR
3258	017004	032737	040000	001162		BIT	#TRE,\$REGO	:IS JUST THE TRE BIT SET
3259	017012	001060				BNE	3\$:TRE BIT MUST BE IN ERROR
3260	017014	032737	100000	001162		BIT	#SC,\$REGO	:IS JUST THE SC BIT SET
3261	017022	001060				BNE	4\$:SC BIT SET ERRONIOUSLY
3262	017024	104014				ERROR	14	:WCE NOT SET IN RHCS2
3263	017026	000467				BR	8\$:SET UP TO TEST AGAIN
3264	017030	022737	140000	001162	1\$:	CMP	#SC!TRE,\$REGO	:IS SC AND TRE SET
3265	017036	001030				BNE	22\$:FIND THE ERROR
3266	017040	012737	020000	004124		MOV	#MCPE,\$CS1	:TEST FOR SHORTS
3267	017046	012737	137400	004126		MOV	#MPE!MXF!PGE.NEM!NED!UPE!DLT,\$CS2	
3268	017054	012737	160000	004130		MOV	#DPELO!DPEHI.APE,\$CS3	
3269	017062	013737	004132	004132		MOV	\$ST,\$ST	
3270	017070	013737	004134	004134		MOV	\$ER,\$ER	
3271	017076	012737	177777	004122		MOV	#-1,BEFORE	:TELL WHYFO ITS FOR SHORTS
3272	017104	004737	007224			JSR	R7,WHYFO	:TEST FOR SHORTS
3273	017110	005037	004122			CLR	BEFORE	:WE HAVE CHECKED FOR SHORTS
3274	017114	000137	017206			JMP	8\$:LEAVE THE TEST
3275	017120	032737	040000	001162	22\$:	BIT	#TRE,\$REGO	:THEN IS THE TRE BIT SET
3276	017126	001022				BNE	6\$:SC BIT DID NOT SEE TRE BIT
3277	017130	032737	100000	001162		BIT	#SC,\$REGO	:IS THE SC BIT SET
3278	017136	001022				BNE	7\$:TRE HAS AN OPEN GOING TO BUS
3279	017140	104006				ERROR	6	:TRE SET LOGIC NOT WORKING
3280	017142	000421				BR	8\$:SET UP TO TEST AGAIN
3281	017144	104015			2\$:	ERROR	15	:WCE HAS OPEN IN LINE GOING TO BUS
3282	017146	004737	007224			JSR	R7,WHYFO	:SEE IF ANY OTHER ERROR BIT IS
3283								:SET OTHER THAN WCE
3284	017152	000415				BR	8\$:SET UP TO TEST AGAIN
3285	017154	104016			3\$:	ERROR	16	:SOMTHING WRONG WITH TRE BIT
3286	017156	004737	007224			JSR	R7,WHYFO	:SEE IF AN ERROR BIT IS SET
3287								:OR BOTH WCE IN RHCS2 AND SC IN
3288								:RHCS1 HAS AN OPEN BETWEEN IT AND THE BUS
3289	017162	000411				BR	8\$:SET UP TO TEST AGAIN
3290	017164	104011			4\$:	ERROR	11	:SC BIT WAS SET BY EITHER ATTN OR
3291	017166	004737	007224			JSR	R7,WHYFO	:FIND WHAT ERROR BIT IS SET
3292								:MCPE ERROR OR SC IS SHORTED TO +5 VOLTS
3293	017172	000405				BR	8\$:SETUP TO TEST AGAIN
3294	017174	104017			6\$:	ERROR	17	:TRE WAS SET BY OTHER THAN WCE
3295	017176	004737	007224			JSR	R7,WHYFO	:FIND ERROR BIT THAT SET TRE
3296	017202	000401				BR	8\$:SETUP TO TEST AGAIN

3409	020024	001401				BEQ	9\$:YES EXIT TEST
3410	020026	104050				ERROR	50		:LOADING TRE DID NOT CLEAR ERROR
3411	020030	004737	006572		9\$:	JSR	R7,CLEER		:SEE IF ERRORS ARE CLEARED
3412	020034	004737	050210			JSR	R7,ERRST		
3413									
3414									
3415									
3416									
3417									
3418									
3419									
3420	020040	000004							
3421									
3422	020042	012777	000007	163270		MOV	#7,@RHCS2		:SET UP UNIT 7
3423	020050	005701				TST	R1		:IS IT AN RH11
3424	020052	100402				BMI	FITIT		:IT'S AN RH11,DO THE TEST
3425	020054	000137	020524			JMP	FIT		:IT'S AN RH70, EXIT TEST
3426	020060	012777	020007	163252	FITIT:	MOV	#UPE!7,@RHCS2		:SET PARITY ERROR IN RH11'S CS2 REG
3427	020066	017737	163236	001162		MOV	@RHCS1,\$REGO		:SET UP NEEDED BITS ONLY
3428	020074	042737	027777	001162		BIC	#GO!IE!RDY.A16!A17!PSEL!	DVA!MCPE!READ6,\$REGO	:CLEAR BITS NOT NEEDED
3429									:SAVE RHCS1
3430	020102	017737	163222	003420		MOV	@RHCS1,CS1		:SAVE WORD COUNT
3431	020110	017737	163216	003444		MOV	@RHWC,WC		:SAVE BUS ADDRESS
3432	020116	017737	163212	003414		MOV	@RHBA,BA		:IS IT AN RH11
3433	020124	005701				TST	R1		:NO IT'S A 70
3434	020126	001406				BEQ	87\$:CLEAR BAE
3435	020130	005037	003416			CLR	BAE		:CLEAR CS3
3436	020134	005037	003424			CLR	CS3		:CONTINUE
3437	020140	000137	020160			JMP	86\$:SAVE BUS ADDRESS EXTENSION
3438	020144	017737	163210	003416	87\$:	MOV	@RHBAE,BAE		:SAVE RHCS3
3439	020152	017737	163204	003424		MOV	@RHCS3,CS3		:SAVE CS2
3440	020160	017737	163154	003422	86\$:	MOV	@RHCS2,CS2		:SAVE TESTER STATUS
3441	020166	017737	163150	003432		MOV	@RHST,DS1		:SAVE ERROR REGISTER
3442	020174	017737	163144	003436		MOV	@RHER,ER1		:SAVE TESTER DATA REG.
3443	020202	017737	163142	003442		MOV	@RHTDB,TDR		:SAVE MR? TESTER REG.
3444	020210	017737	163122	003440		MOV	@RMR2,TC		:IS READY SET
3445	020216	032777	000200	163104		BIT	#RDY,@RHCS1		:YES CONTINUE TEST
3446	020224	001003				BNE	99\$:READY NOT SET
3447	020226	104102				ERROR	102		:ANY ERRORS SET
3448	020230	004737	007224			JSR	R7,WHYFO		:IS UPE SET
3449	020234	032777	020000	163076	99\$:	BIT	#UPE,@RHCS2		:YES CHECK TRE AND SC
3450	020242	001016				BNE	1\$:IS THE SC AND TRE BITS SET
3451	020244	022737	140000	001162		CMP	#SC!TRE,\$REGO		:YES UPE IS IN ERROR
3452	020252	001460				BEQ	2\$:IS JUST THE TRE BIT SET
3453	020254	032737	040000	001162		BIT	#TRE,\$REGO		:TRE BIT MUST BE IN ERROR
3454	020262	001060				BNE	3\$:IS JUST THE SC BIT SET
3455	020264	032737	100000	001162		BIT	#SC,\$REGO		:SC BIT SET ERRONIOUSLY
3456	020272	001060				BNE	4\$:UPE NOT SET IN RHCS2
3457	020274	104020				ERROR	20		:SET UP TO TEST AGAIN
3458	020276	000467				BR	8\$:IS SC AND TRE SET
3459	020300	022737	140000	001162	1\$:	CMP	#SC!TRE,\$REGO		:FIND THE ERROR
3460	020306	001030				BNE	22\$:TEST FOR SHORTS
3461	020310	013737	004124	004124		MOV	\$CS1,\$CS1		
3462	020316	012737	157400	004126		MOV	#MPE.MXF!PGE.NEM!NED.WCE!DLT,\$CS2		
3463	020324	013737	004130	004130		MOV	\$CS3,\$CS3		
3464	020332	013737	004132	004132		MOV	\$ST,\$ST		

3465	020340	013737	004134	004134		MOV	\$ER,\$ER		
3466	020346	012737	177777	004122		MOV	#-1,BEFORE		;TELL WHYFO ITS FOR SHORTS
3467	020354	004737	007224			JSR	R7,WHYFO		;TEST FOR SHORTS
3468	020360	005037	004122			CLR	BEFORE		;WE HAVE CHECKED FOR SHORTS
3469	020364	000137	020456			JMP	8\$;LEAVE THE TEST
3470	020370	032737	040000	001162	22\$:	BIT	#TRE,\$REGO		;THEN IS THE TRE BIT SET
3471	020376	001022				BNE	6\$;SC BIT DID NOT SEE TRE BIT
3472	020400	032737	100000	001162		BIT	#SC,\$REGO		;IS THE SC BIT SET
3473	020406	001022				BNE	7\$;TRE HAS AN OPEN GOING TO BUS
3474	020410	104006				ERROR	6		;TRE SET LOGIC NOT WORKING
3475	020412	000421				BR	8\$;SET UP TO TEST AGAIN
3476	020414	104021			2\$:	ERROR	21		;UPE HAS OPEN IN LINE GOING TO BUS
3477	020416	004737	007224			JSR	R7,WHYFO		;SEE IF ANY OTHER ERROR BIT IS
3478									;SET OTHER THAN UPE
3479	020422	000415				BR	8\$;SET UP TO TEST AGAIN
3480	020424	104023			3\$:	ERROR	23		;SOMTHING WRONG WITH TRE BIT
3481	020426	004737	007224			JSR	R7,WHYFO		;SEE IF AN ERORR BIT IS SET
3482									;OR BOTH UPE IN RHCS2 AND SC IN
3483									;RHCS1 HAS AN OPEN BETWEEN IT AND THE BUS
3484	020432	000411				BR	8\$;SET UP TO TEST AGAIN
3485	020434	104011			4\$:	ERROR	11		;SC BIT WAS SET BY EITHER ATTN OR
3486	020436	004737	007224			JSR	R7,WHYFO		;FIND WHAT ERROR BIT IS SET
3487									;MCPE ERROR OR SC IS SHORTED TO +5 VOLTS
3488	020442	000405				BR	8\$;SETUP TO TEST AGAIN
3489	020444	104022			6\$:	ERROR	22		;TRE WAS SET BY OTHER THAN UPE
3490	020446	004737	007224			JSR	R7,WHYFO		;FIND ERROR BIT THAT SET TRE
3491	020452	000401				BR	8\$;SETUP TO TEST AGAIN
3492	020454	104013			7\$:	ERROR	13		;TRE HAS AN OPEN GOING TO THE BUS
3493	020456	032737	041400	177570	8\$:	BIT	#SW14!SW9.SW8,@#177570		;ANY LOOPING BEEING DONE
3494	020464	001003				BNE	21\$;YES,LOAD TRE NO MATTER WHAT
3495	020466	105737	001103			TSTB	\$ERFLG		;WAS THERE AN ERROR
3496	020472	001010				BNE	9\$;SKIP TRE CHECK
3497	020474	112777	000100	162662	21\$:	MOVB	#TREB,@RHCS1B		;LOAD TRE
3498	020502	032777	020606	162630		BIT	#UPE,@RHCS2		;DID ERROR CLEAR
3499	020510	001401				BEQ	9\$;YES EXIT TEST
3500	020512	104050				ERROR	50		;LOADING TRF DID NOT CLEAR ERROR
3501	020514	004737	006572		9\$:	JSR	R7,CLEER		;SEE IF ERRORS ARE CLEARED
3502	020520	004737	050210			JSR	R7,ERRTST		

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3504 020524
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3511 020524 000004
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3513 020526 012777 000007 162604
3514 020534 005701
3515 020536 001402
3516 020540 000137 021306
3517 020544 012777 000004 162610
3518 020552 012777 177776 162552
3519 020560 012777 000000 162572
3520 020566 012777 001162 162540

F!T:
:*****
:*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

PLACE: 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

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3521 020574 012777 000061 162526      MOV      #WRITE0,@RHCS1 ;TELL IT TO WRITE
3522 020602 005037 003446      CLR      BITCNT        ;CLEAR BIT COUNTER
3523 020506 032777 000200 162514 18$:  BIT      #RDY,@RHCS1   ;IS RDY SET
3524 020614 001015      BNE     DYNO           ;BIT IS SET
3525 020616 005237 003446      INC     BITCNT        ;COUNT UP
3526 020622 001371      BNE     18$           ;NOT FINISHED COUNTING
3527 020624 005037 003446      CLR     BITCNT        ;GET READY TO DO IT AGAIN
3528 020630 032777 000200 162472 19$:  BIT     #RDY,@RHCS1   ;IS IT SET YET?
3529 020636 001004      BNE     DYNO           ;YES
3530 020640 005237 003446      INC     BITCNT        ;COUNT UP
3531 020644 001401      BEQ    DYNO           ;BIT IS NOT GOING TO SET
3532 020646 000770      BR     19$
3533 020650      DYNO:
3534 020650 017737 162454 001162      MOV     @RHCS1,$REGO   ;SET UP NEEDED BITS ONLY
3535 020656 042737 027777 001162      BIC     #GO!IE!RDY.A16!A17!PSEL!DVA.MCPE!READ6,$REGO
3536      ;CLEAR BITS NOT NEEDED
3537 020664 017737 162440 003420      MOV     @RHCS1,CS1    ;SAVE RHCS1
3538 020672 017737 162434 003444      MOV     @RHWC,Wc      ;SAVE WORD COUNT
3539 020700 017737 162430 003414      MOV     @RHBA,BA      ;SAVE BUS ADDRESS
3540 020706 005701      TST    R1             ;IS IT AN RH11
3541 020710 001406      BEQ    87$           ;NO IT'S A 70
3542 020712 005037 003416      CLR     BAE           ;CLEAR BAE
3543 020716 005037 003424      CLR     CS3          ;CLEAR CS3
3544 020722 000137 020742      JMP     86$           ;CONTINUE
3545 020726 017737 162426 003416 87$:  MOV     @RHBAE,BAE    ;SAVE BUS ADDRESS EXTENSION
3546 020734 017737 162422 003424      MOV     @RHCS3,CS3    ;SAVE RHCS3
3547 020742 017737 162372 003422 86$:  MOV     @RHCS2,CS2    ;SAVE CS2
3548 020750 017737 162366 003432      MOV     @RHST,DS1     ;SAVE TESTER STATUS
3549 020756 017737 162362 003436      MOV     @RHER,ER1     ;SAVE ERROR REGISTER
3550 020764 017737 162360 003442      MOV     @RHTRD,TDR    ;SAVE TESTER DATA REG.
3551 020772 017737 162340 003440      MOV     @RHMR2,TC     ;SAVE MR2 TESTER REG.
3552 021000 032777 000200 162322      BIT     #RDY,@RHCS1   ;IS READY SET
3553 021006 001003      BNE     99$           ;YES CONTINUE TEST
3554 021010 104102      ERROR  102          ;READY NOT SET
3555 021012 004737 007224      JSR    R7,WHYFO      ;ANY ERRORS SET
3556 021016 032777 020000 162314 99$:  BIT     #UPE,@RHCS2   ;IS UPE SET
3557 021024 001016      BNE     1$           ;YES CHECK TRE AND SC
3558 021026 022737 140000 001162      CMP     #SC!TRE,$REGO ;IS THE SC AND TRE BITS SET
3559 021034 001460      BEQ    2$           ;YES UPE IS IN ERROR
3560 021036 032737 040000 001162      BIT     #TRE,$REGO    ;IS JUST THE TRE BIT SET
3561 021044 001060      BNE     3$           ;TRE BIT MUST BE IN ERROR
3562 021046 032737 100000 001162      BIT     #SC,$REGO     ;IS JUST THE SC BIT SET
3563 021054 001060      BNE     4$           ;SC BIT SET ERRONIOUSLY
3564 021056 104020      ERROR  20           ;UPE NOT SET IN RHCS2
3565 021060 000467      BR     8$           ;SET UP TO TEST AGAIN
3566 021062 022737 140000 001162 1$:  CMP     #SC!TRE,$REGO ;IS SC AND TRE SET
3567 021070 001030      BNE     22$          ;FIND THE ERROR
3568 021072 013737 004124 004124      MOV     $CS1,$CS1     ;TEST FOR SHORTS
3569 021100 012737 157400 004126      MOV     #MPE!MXF!PGE!NEM.NED!WCE!DLT,$CS2
3570 021106 012737 134100 004130      MOV     #APE!DPELO!WCEHI!WCELO!IE3,$CS3
3571 021114 013737 004132 004132      MOV     $ST,$ST
3572 021122 013737 004134 004134      MOV     $ER,$ER
3573 021130 012737 177777 004122      MOV     #-1,BEFORE    ;TELL WHYFO ITS FOR SHORTS
3574 021136 004737 007224      JSR    R7,WHYFO      ;TEST FOR SHORTS
3575 021142 005037 004122      CLR     BEFORE        ;WE HAVE CHECKED FOR SHORTS
3576 021146 000137 021240      JMP     8$           ;LEAVE THE TEST

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3577	021152	032737	040000	001162	22\$:	BIT	#TRE,\$REGO	:	THEN IS THE TRE BIT SET
3578	021160	001022				BNE	6\$:	SC BIT DID NOT SEE TRE BIT
3579	021162	032737	100000	001162		BIT	#SC,\$REGO	:	IS THE SC BIT SET
3580	021170	001022				BNE	7\$:	TRE HAS AN OPEN GOING TO BUS
3581	021172	104006				ERROR	6	:	TRE SET LOGIC NOT WORKING
3582	021174	000421				BR	8\$:	SET UP TO TEST AGAIN
3583	021176	104021			2\$:	ERROR	21	:	UPE HAS OPEN IN LINE GOING TO BUS
3584	021200	004737	007224			JSR	R7,WHYFO	:	SEE IF ANY OTHER ERROR BIT IS
3585								:	SET OTHER THAN UPE
3586	021204	000415				BR	8\$:	SET UP TO TEST AGAIN
3587	021206	104023			3\$:	ERROR	23	:	SOMTHING WRONG WITH TRE BIT
3588	021210	004737	007224			JSR	R7,WHYFO	:	SFE IF AN ERROR BIT IS SET
3589								:	OR BOTH UPE IN RHCS2 AND SC IN
3590								:	RHCS1 HAS AN OPEN BETWEEN IT AND THE BUS
3591	021214	000411				BR	8\$:	SET UP TO TEST AGAIN
3592	021216	104011			4\$:	ERROR	11	:	SC BIT WAS SET BY EITHER ATTN OR
3593	021220	004737	007224			JSR	R7,WHYFO	:	FIND WHAT ERROR BIT IS SET
3594								:	MCPE ERROR OR SC IS SHORTED TO +5 VOLTS
3595	021224	000405				BR	8\$:	SETUP TO TEST AGAIN
3596	021226	104022			6\$:	ERROR	22	:	TRE WAS SET BY OTHER THAN UPE
3597	021230	004737	007224			JSR	R7,WHYFO	:	FIND ERROR BIT THAT SET TRE
3598	021234	000401				BR	8\$:	SETUP TO TEST AGAIN
3599	021236	104013			7\$:	ERROR	13	:	TRE HAS AN OPEN GOING TO THE BUS
3600	021240	032737	041400	177570	8\$:	BIT	#SW14!SW9!SW8,@#177570	:	ANY LOOPING BEEING DONE
3601	021246	001003				BNE	21\$:	YES,LOAD TRE NO MATTER WHAT
3602	021250	105737	001103			TSTB	\$ERFLG	:	WAS THERE AN ERROR
3603	021254	001010				BNE	9\$:	SKIP TRE CHECK
3604	021256	112777	000100	162100	21\$:	MOVB	#TREB,@RHCS1B	:	LOAD TRE
3605	021264	032777	020000	162046		BIT	#UPE,@RHCS2	:	DID ERRUR CLEAR
3606	021272	001401				BEQ	9\$:	YES EXIT TEST
3607	021274	104050				ERROR	50	:	LOADING TRE DID NOT CLEAR ERROR
3608	021276	004737	006572		9\$:	JSR	R7,CLEER	:	SFE IF ERRORS ARE CLEARED
3609	021302	004737	050210			JSR	R7,ERRTST	:	

3610

3611 021306

3612

3613

3614

3615

3616

3617

3618 021306 000004

3619

3620 021310 012777 000000 162022

3621 021316 005701

3622 021320 100403

3623 021322 012777 000000 162030

3624 021330 012777 177777 161774 NEDERR:

3625 021336 012777 001172 161770

3626 021344 012777 000061 161756

3627 021352 005037 003446

3628 021356 032777 000200 161744 18\$:

3629 021364 001015

3630 021366 005237 003446

3631 021372 001371

3632 021374 005037 003446

FANGIE:

*TEST 25 NED BIT TEST

*THIS TEST WILL CHECK THAT NED (NON-EXISTANT DRIVE)

*SETS TRE AND SC BITS IN RHCS1.....

TST25: SCOPE

MOV	#ZERO,@RHCS2	:	SETUP NED
TST	R1	:	RH11 OR RH70
BMI	NEDERR	:	IT'S AN RH11
MOV	#ZERO,@RHBAE	:	SETUP BA EXTENSION
MOV	#-1,@RHWC	:	FOR A 1 WORD TRANSFER
MOV	#\$REG4,@RHBA	:	SETUP BA
MOV	#WRITE0,@RHCS1	:	TELL IT TO WRITE
CLR	BITCNT	:	CLEAR BIT COUNTER
BIT	#RDY,@RHCS1	:	IS RDY SET
BNF	BAKER	:	BIT IS SET
INL	BITCNT	:	COUNT UP
BNE	18\$:	NOT FINISHED COUNTING
CLR	BITCNT	:	GET READY TO DO IT AGAIN.

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3633 021400 032777 000200 161722 19$: BIT #RDY,@RHCS1 ;IS IT SET YET?
3634 021406 001004 BNE BAKER ;YES
3635 021410 005237 003446 INC BITCNT ;COUNT UP
3636 021414 001401 BEQ BAKER ;BIT IS NOT GOING TO SET
3637 021416 000770 BR 19$
3638 021420 BAKER:
3639 021420 017737 161704 001162 MOV @RHCS1,$REGO ;SET UP NEEDED BITS ONLY
3640 021426 042737 027777 001162 BIC #GO!IE.RDY!A16.A17!PSEL!DVA!MCPE!READ6,$REGO ;CLEAR BITS NOT NEEDED
3641 021434 017737 161670 003420 MOV @RHCS1,CS1 ;SAVE RHCS1
3642 021442 017737 161664 003444 MOV @RHWC,WC ;SAVE WORD COUNT
3643 021450 017737 161660 003414 MOV @RHBA,BA ;SAVE BUS ADDRESS
3644 021456 005701 TST R1 ;IS IT AN RH11
3645 021460 001406 BEQ 87$ ;NO IT'S A 70
3646 021462 005037 003416 CLR BAE ;CLEAR BAE
3647 021466 005037 003424 CLR CS3 ;CLEAR CS3
3648 021472 000137 021512 JMP 86$ ;CONTINUE
3649 021476 017737 161656 003416 87$: MOV @RHBAE,BAE ;SAVE BUS ADDRESS EXTENSION
3650 021504 017737 161652 003424 MOV @RHCS3,CS3 ;SAVE RHCS3
3651 021512 017737 161622 003422 86$: MOV @RHCS2,CS2 ;SAVE CS2
3652 021520 017737 161616 003432 MOV @RHST,DS1 ;SAVE TESTER STATUS
3653 021526 017737 161612 003436 MOV @RHER,ER1 ;SAVE ERROR REGISTER
3654 021534 017737 161610 003442 MOV @RHTDB,TDR ;SAVE TESTER DATA REG.
3655 021542 017737 161570 003440 MOV @RHMR2,TC ;SAVE MR2 TESTER REG.
3656 021550 032777 000200 161552 BIT #RDY,@RHCS1 ;IS RFADY SET
3657 021556 001003 BNE 99$ ;YES CONTINUE TEST
3658 021560 104102 ERROR 102 ;READY NOT SET
3659 021562 004737 007224 JSR R7,WHYFO ;ANY ERRORS SET
3660 021566 032777 010000 161544 99$: BIT #NED,@RHCS2 ;IS NED SET
3661 021574 001016 BNE 1$ ;YES CHECK TRE AND SC
3662 021576 022737 140000 001162 CMP #SC!TRE,$REGO ;IS THE SC AND TRE BITS SET
3663 021604 001460 BEQ 2$ ;YES NED IS IN ERROR
3664 021606 032737 040000 001162 BIT #TRE,$REGO ;IS JUST THE TRE BIT SET
3665 021614 001060 BNE 3$ ;TRE BIT MUST BE IN ERROR
3666 021616 032737 100000 001162 BIT #SC,$REGO ;IS JUST THE SC BIT SET
3667 021624 001060 BNE 4$ ;SC BIT SET ERRONIOUSLY
3668 021626 104024 ERROR 24 ;NED NOT SET IN RHCS2
3669 021630 000467 BR 8$ ;SET UP TO TEST AGAIN
3670 021632 022737 140000 001162 1$: CMP #SC!TRE,$REGO ;IS SC AND TRE SET
3671 021640 001030 BNE 22$ ;FIND THE ERROR
3672 021642 012737 000000 004124 MOV #ZERU,$CS1 ;TEST FOR SHORTS
3673 021650 012737 167400 004126 MOV #MPE!MXF!PGE!NEM!UFE!WCE!DLT,$CS2
3674 021656 012737 174100 004130 MOV #APE!DPEHI!DPELO!WCEHI.WCELO!IE3,$CS3
3675 021664 013737 004132 004132 MOV $ST,$ST
3676 021672 013737 004134 004134 MOV $ER,$ER
3677 021700 012737 177777 004122 MOV #-1,BEFORE ;TELL WHYFO ITS FOR SHORTS
3678 021706 004737 007224 JSR R7,WHYFO ;TEST FOR SHORTS
3679 021712 005037 004122 CLR BEFORE ;WE HAVE CHECKED FOR SHORTS
3680 021716 000137 022010 JMP 8$ ;LEAVE THE TEST
3681 021722 032737 040000 001162 22$: BIT #TRE,$REGO ;THEN IS THE TRE BIT SET
3682 021730 001022 BNE 6$ ;SC BIT DID NOT SEE TRE BIT
3683 021732 032737 100000 001162 BIT #SC,$REGO ;IS THE SC BIT SET
3684 021740 001022 BNE 7$ ;TRE HAS AN OPEN GOING TO BUS
3685 021742 104006 ERROR 6 ;TRE SET LOGIC NOT WORKING
3686 021744 000421 BR 8$ ;SET UP TO TEST AGAIN
3687 021746 104025 2$: ERROR 25 ;NED HAS OPEN IN LINE GOING TO BUS

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3745	022200	017737	161124	003420		MOV	@RHCS1,CS1	:SAVE RHCS1
3746	022206	017737	161120	003444		MOV	@RHWC,WC	:SAVE WORD COUNT
3747	022214	017737	161114	003414		MOV	@RHBA,BA	:SAVE BUS ADDRESS
3748	022222	005701				TST	R1	:IS IT AN RH11
3749	022224	001406				BEQ	87\$:NO IT'S A 70
3750	022226	005037	003416			CLR	BAE	:CLEAR BAE
3751	022232	005037	003424			CLR	CS3	:CLEAR CS3
3752	022236	000137	022256			JMP	86\$:CONTINUE
3753	022242	017737	161112	003416	87\$:	MOV	@RHBAE,BAE	:SAVE BUS ADDRESS EXTENSION
3754	022250	017737	161106	003424		MOV	@RHCS3,CS3	:SAVE RHCS3
3755	022256	017737	161056	003422	86\$:	MOV	@RHCS2,CS2	:SAVE CS2
3756	022264	017737	161052	003432		MOV	@RHST,DS1	:SAVE TESTER STATUS
3757	022272	017737	161046	003436		MOV	@RHER,ER1	:SAVE ERROR REGISTER
3758	022300	017737	161044	003442		MOV	@RHTDB,TDR	:SAVE TESTER DATA REG.
3759	022306	017737	161024	003440		MOV	@RHMR2,TC	:SAVE MR2 TESTER REG.
3760	022314	032777	000200	161006		BIT	#RDY,@RHCS1	:IS READY SET
3761	022322	001003				BNE	99\$:YES CONTINUE TEST
3762	022324	104102				ERROR	102	:READY NOT SET
3763	022326	004737	007224			JSR	R7,WHYFO	:ANY ERRORS SET
3764	022332	032777	001000	161000	99\$:	BIT	#MXF,@RHCS2	:IS MXF SET
3765	022340	001016				BNE	1\$:YES CHECK TRE AND SC
3766	022342	022737	140000	001162		CMP	#SC!TRE,\$REGO	:IS THE SC AND TRE BITS SET
3767	022350	001460				BEQ	2\$:YES MXF IS IN ERROR
3768	022352	032737	040000	001162		BIT	#TRE,\$REGO	:IS JUST THE TRE BIT SET
3769	022360	001060				BNE	3\$:TRE BIT MUST BE IN ERROR
3770	022362	032737	100000	001162		BIT	#SC,\$REGO	:IS JUST THE SC BIT SET
3771	022370	001060				BNE	4\$:SC BIT SET ERRONIOUSLY
3772	022372	104030				ERROR	30	:MXF NOT SET IN RHCS2
3773	022374	000467				BR	8\$:SET UP TO TEST AGAIN
3774	022376	022737	140000	001162	1\$:	CMP	#SC!TRE,\$REGO	:IS SC AND TRE SET
3775	022404	001030				BNE	22\$:FIND THE ERROR
3776	022406	012737	020000	004124		MOV	#MCPE,\$CS1	:TEST FOR SHORTS
3777	022414	012737	176400	004126		MOV	#MPE!PGE!NEM!NED!UPE!WCE!DLT,\$CS2	
3778	022422	013737	004130	004130		MOV	\$CS3,\$CS3	
3779	022430	013737	004132	004132		MOV	\$ST,\$ST	
3780	022436	012737	030165	004134		MOV	#ILF!RMR!DPE!RMBEX!RFAIL!DTE!OPI,\$ER	
3781	022444	012737	177777	004122		MOV	#-1,BEFORE	:TELL WHYFO ITS FOR SHORTS
3782	022452	004737	007224			JSR	R7,WHYFO	:TEST FOR SHORTS
3783	022456	005037	004122			CLR	BEFORE	:WE HAVE CHECKED FOR SHORTS
3784	022462	000137	022554			JMP	8\$:LEAVE THE TEST
3785	022466	032737	040000	001162	22\$:	BIT	#TRE,\$REGO	:THEN IS THE TRE BIT SET
3786	022474	001022				BNE	6\$:SC BIT DID NOT SEE TRE BIT
3787	022476	032737	100000	001162		BIT	#SC,\$REGO	:IS THE SC BIT SET
3788	022504	001022				BNE	7\$:TRE HAS AN OPEN GOING TO BUS
3789	022506	104006				ERROR	6	:TRE SET LOGIC NOT WORKING
3790	022510	000421				BR	8\$:SET UP TO TEST AGAIN
3791	022512	104031			2\$:	ERROR	31	:MXF HAS OPEN IN LINE GOING TO BUS
3792	022514	004737	007224			JSR	R7,WHYFO	:SEE IF ANY OTHER ERROR BIT IS
3793								:SET OTHER THAN MXF
3794	022520	000415				BR	8\$:SET UP TO TEST AGAIN
3795	022522	104032			3\$:	ERROR	32	:SOMTHING WRONG WITH TRE BIT
3796	022524	004737	007224			JSR	R7,WHYFO	:SEE IF AN ERROR BIT IS SET
3797								:OR BOTH MXF IN RHCS2 AND SC IN
3798								:RHCS1 HAS AN OPEN BETWEEN IT AND THE BUS
3799	022530	000411				BR	8\$:SET UP TO TEST AGAIN
3800	022532	104011			4\$:	ERROR	..	:SC BIT WAS SET BY EITHER ATTN OR

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3801 022534 004737 007224 JSR R7,WHYFO ;FIND WHAT ERROR BIT IS SET
3802 ;MCPE ERROR OR SC IS SHORTED TO +5 VOLTS
3803 022540 000405 BR 8$ ;SETUP TO TEST AGAIN
3804 022542 104033 6$: ERROR 33 ;TRE WAS SET BY OTHER THAN MXF
3805 022544 004737 007224 JSR R7,WHYFO ;FIND ERROR BIT THAT SET TRE
3806 022550 000401 BR 8$ ;SETUP TO TEST AGAIN
3807 022552 104013 7$: ERROR 13 ;TRE HAS AN OPEN GOING TO THE BUS
3808 022554 032737 041400 177570 8$: BIT #SW14!SW9!SW8,@#177570 ;ANY LOOPING BEEING DONE
3809 022562 001003 BNE 21$ ;YES,LOAD TRE NO MATTER WHAT
3810 022564 105737 001103 TSTB $ERFLG ;WAS THERE AN ERROR
3811 022570 001010 BNE 9$ ;SKIP TRE CHECK
3812 022572 112777 000100 160564 21$: MOVB #TRE3,@RHCS1B ;LOAD TRE
3813 022600 032777 001000 160532 BIT #MXF,@RHCS2 ;DID ERROR CLEAR
3814 022606 001401 BEQ 9$ ;YES EXIT TEST
3815 022610 104050 ERROR 50 ;LOADING TRE DID NOT CLEAR ERROR
3816 022612 004737 006572 9$: JSR R7,CLEER ;SEE IF ERRORS ARE CLEARED
3817 022616 004737 050210 JSR R7,ERRTST
3818 ;*****
3819 ;*TEST 27 PGE ERROR BIT TEST
3820 ;*THIS TEST FORCES PGE TO SET IN RHCS2
3821 ;*AND VERIFYS TRE AND SC IS SET IN RHCS1
3822 ;*****
3823 022622 000004 TST27: SCOPE
3824 022624 012777 000007 160506 MOV #7,@RHCS2 ;SET UNIT NUMBER
3825 022632 012777 004000 160474 MOV #EVENAD,@RHBA ;SETUP BUS ADDRESS
3826 022640 005701 TST R1 ;IS IT AN 11 OR A 70
3827 022642 100403 BMI JUMP ;ITS AN RH11
3828 022644 012777 000000 160506 MOV #ZERO,@RHBAE ;SETUP BAE
3829 022652 012777 000061 160450 JUMP: MOV #WRITE0,@RHCS1 ;TELL IT TO WRITE
3830 022660 012777 000061 160442 MOV #WRITE0,@RHCS1 ;CREATE THE ERROR
3831 022666 005037 003446 CLR BITCNT ;CLEAR BIT COUNTER
3832 022672 032777 000200 160430 18$: BIT #RDY,@RHCS1 ;IS RDY SET
3833 022700 001015 BNE PGETST ;BIT IS SET
3834 022702 005237 003446 INC BITCNT ;COUNT UP
3835 022706 001371 BNE 18$ ;NOT FINISHED COUNTING
3836 022710 005037 003446 CLR BITCNT ;GET READY TO DO IT AGAIN
3837 022714 032777 000200 160406 19$: BIT #RDY,@RHCS1 ;IS IT SET YET?
3838 022722 001004 BNE PGETST ;YES
3839 022724 005237 003446 INC BITCNT ;COUNT UP
3840 022730 001401 BEQ PGETST ;BIT IS NOT GOING TO SET
3841 022732 000770 BR 19$
3842 022734 PGETST:
3843 022734 017737 160370 001162 MOV @RHCS1,$REGO ;SET UP NEEDED BITS ONLY
3844 022742 042737 027777 001162 BIC #GO!IE!RDY!A16!A17!PSEL.DVA!MCPE!READ6,$REGO ;CLEAR BITS NOT NEEDED
3845 ;SAVE RHCS1
3846 022750 017737 160354 003420 MOV @RHCS1,CS1 ;SAVE WORD COUNT
3847 022756 017737 160350 003444 MOV @RHWC,W ;SAVE BUS ADDRESS
3848 022764 017737 160344 003414 MOV @RHBA,BA ;IS IT AN RH11
3849 022772 005701 TST R1 ;NO IT'S A 70
3850 022774 001406 BEQ 87$ ;CLEAR BAE
3851 022776 005037 003416 CLR BAE ;CLEAR CS3
3852 023002 005037 003424 CLR CS3 ;CONTINUE
3853 023006 000137 023026 JMP 86$ ;SAVE BUS ADDRESS EXTENSION
3854 023012 017737 160342 003416 87$: MOV @RHBAE,BAE ;SAVE RHCS3
3855 023020 017737 160336 003424 MOV @RHCS3,CS3 ;SAVE CS2
3856 023026 017737 160306 003422 86$: MOV @RHCS2,CS2
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3857	023034	017737	160302	003432		MOV	@RHST,DS1	:SAVE TESTER STATUS
3858	023042	017737	160276	003436		MOV	@RHER,ER1	:SAVE ERROR REGISTER
3859	023050	017737	160274	003442		MOV	@RHIDB,TDR	:SAVE TESTER DATA REG.
3860	023056	017737	160254	003440		MOV	@RHMR2,TC	:SAVE MR2 TESTER REG.
3861	023064	032777	000200	160236		BIT	#RDY,@RHCS1	:IS READY SET
3862	023072	001003				BNE	99\$:YES CONTINUE TEST
3863	023074	104102				ERROR	102	:READY NOT SET
3864	023076	004737	007224			JSR	R7,WHYFO	:ANY ERRORS SET
3865	023102	032777	002000	160230	99\$:	BIT	#PGE,@RHCS2	:IS PGE SET
3866	023110	001016				BNE	1\$:YES CHECK TRE AND SC
3867	023112	022737	140000	001162		CMR	#SC!TRE,\$REGO	:IS THE SC AND TRE BITS SET
3868	023120	001460				BEQ	2\$:YES PGE IS IN ERROR
3869	023122	032737	040000	001162		BIT	#TRE,\$REGO	:IS JUST THE TRE BIT SET
3870	023130	001060				BNE	3\$:TRE BIT MUST BE IN ERROR
3871	023132	032737	100000	001162		BIT	#SC,\$REGO	:IS JUST THE SC BIT SET
3872	023140	001060				BNE	4\$:SC BIT SET ERRONIOUSLY
3873	023142	104051				ERROR	51	:PGE NOT SET IN RHCS2
3874	023144	000467				BR	8\$:SET UP TO TEST AGAIN
3875	023146	022737	140000	001162	1\$:	CMR	#SC!TRE,\$REGO	:IS SC AND TRE SET
3876	023154	001030				BNE	22\$:FIND THE ERROR
3877	023156	013737	004124	004124		MOV	\$CS1,\$CS1	:TEST FOR SHORTS
3878	023164	012737	175400	004126		MOV	#MPE!MXF!NEM!NED!UPE!WCE.DLT,\$CS2	
3879	023172	013737	004130	004130		MOV	\$CS3,\$CS3	
3880	023200	013737	004132	004132		MOV	\$ST,\$ST	
3881	023206	012737	030175	004134		MOV	#ILF!CPE!RMR!DPE!RMBEX.RFAIL!DTE!OPI,\$EP	
3882	023214	012737	177777	004122		MOV	#-1,BEFORE	:TELL WHYFO ITS FOR SHORTS
3883	023222	004737	007224			JSR	R7,WHYFO	:TEST FOR SHORTS
3884	023226	005037	004122			CLR	BEFORE	:WE HAVE CHECKED FOR SHORTS
3885	023232	000137	023324			JMP	8\$:LEAVE THE TEST
3886	023236	032737	040000	001162	22\$:	BIT	#TRE,\$REGO	:THEN IS THE TRE BIT SET
3887	023244	001022				BNE	6\$:SC BIT DID NOT SEE TRE BIT
3888	023246	032737	100000	001162		BIT	#SC,\$REGO	:IS THE SC BIT SET
3889	023254	001022				BNE	7\$:TRE HAS AN OPEN GOING TO BUS
3890	023256	104006				ERROR	6	:TRE SET LOGIC NOT WORKING
3891	023260	000421				BR	8\$:SET UP TO TEST AGAIN
3892	023262	104123			2\$:	ERROR	123	:PGE HAS OPEN IN LINE GOING TO BUS
3893	023264	004737	007224			JSR	R7,WHYFO	:SEE IF ANY OTHER ERROR BIT IS
3894								:SET OTHER THAN PGE
3895	023270	000415				BR	8\$:SET UP TO TEST AGAIN
3896	023272	104171			3\$:	ERROR	171	:SOMTHING WRONG WITH TRE BIT
3897	023274	004737	007224			JSR	R7,WHYFO	:SEE IF AN ERROR BIT IS SET
3898								:OR BOTH PGE IN RHCS2 AND SC IN
3899								:RHCS1 HAS AN OPEN BETWEEN IT AND THE BUS
3900	023300	000411				BR	8\$:SET UP TO TEST AGAIN
3901	023302	104011			4\$:	ERROR	11	:SC BIT WAS SET BY EITHER ATTN OR
3902	023304	004737	007224			JSR	R7,WHYFO	:FIND WHAT ERROR BIT IS SET
3903								:MCPE ERROR OR SC IS SHORTED TO +5 VOLTS
3904	023310	000405				BR	6\$:SETUP TO TEST AGAIN
3905	023312	104172			6\$:	ERROR	172	:TRE WAS SET BY OTHER THAN PGE
3906	023314	004737	007224			JSR	R7,WHYFO	:FIND ERROR BIT THAT SET TRE
3907	023320	000401				BR	8\$:SETUP TO TEST AGAIN
3908	023322	104013			7\$:	ERROR	13	:TRE HAS AN OPEN GOING TO THE BUS
3909	023324	032737	041400	177570	8\$:	BIT	#SW14.SW9:SW8,@177570	:ANY LOOPING BEEING DONE
3910	023332	001003				BNE	21\$:YES,LOAD TRE NO MATTER WHAT
3911	023334	105737	001103			TSTB	\$ERFLG	:WAS THERE AN ERROR
3912	023340	001010				BNE	9\$:SKIP TRE CHECK

```

3913 023342 112777 000100 160014 21$:  MOVB  #TREB,@RHCS1B      ;LOAD TRE
3914 023350 032777 002000 157762      BIT  #PGE,@RHCS2      ;DID ERROR CLEAR
3915 023356 001401                BEQ  9$                ;YES EXIT TEST
3916 023360 104050                ERROR 50              ;LOADING TRE DID NOT CLEAR ERROR
3917 023362 004737 006572          9$:  JSR  R7,CLEER        ;SEE IF ERRORS ARE CLEARED
3918 023366 004737 050210          JSR  R7,ERRTST
3919
3920
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3923
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3925
3926 023372 000004          *****
3927 023374 005701          ;*TEST 30      MXF,TRE AND SC BIT TEST (RH11 ONLY)
3928 023376 100402          ;*THIS TEST SEES IF MXF CAN BE SET BY A MOVE
3929 023400 000137 024124          ;*INSTRUCTION AND THAT TRE AND SC ARE SET IN
3930 023404 012777 000007 157726 LEAP:  MOV  #7,@RHCS2      ;*RHCS1,MXF CAN BE SET THIS WAY IN AN RH11 BUT CN
3931 023412 052777 001000 157720      BIS  #MXF,@RHCS2     ;*NOT BE SET THIS WAY IN AN RH70.....
3932 023420 005037 003446          *****
3933 023424 032777 001000 157706 18$:  BIT  #MXF,@RHCS2     ;SCOPE
3934 023432 001015                CLR  BITCNT          ;TST R1 ;IS IT A 70 OR 11
3935 023434 005237 003446          BMI  LEAP            ;IT'S AN RH11 DO THE TEST
3936 023440 001371                JMP  FROG            ;RH70,EXIT TEST
3937 023442 005037 003446          LEAP:  MOV  #7,@RHCS2 ;SETUP UNIT 7
3938 023446 032777 001000 157664 19$:  BIS  #MXF,@RHCS2     ;SET MXF
3939 023454 001004                CLR  BITCNT          ;CLEAR BIT COUNTER
3940 023456 005237 003446          18$:  BIT  #MXF,@RHCS2     ;IS MXF SET
3941 023462 001401                BNE  MIXIT           ;BIT IS SET
3942 023464 000770                INC  BITCNT          ;COUNT UP
3943 023466                BNE  18$             ;NOT FINISHED COUNTING
3944 023466 017737 157636 001162 MIXIT:  CLR  BITCNT          ;GET READY TO DO IT AGAIN
3945 023474 042737 027777 001162          BIT  #MXF,@RHCS2     ;IS IT SET YET?
3946                BNE  MIXIT           ;YES
3947 023502 017737 157622 003420          INC  BITCNT          ;COUNT UP
3948 023510 017737 157616 003444          BEQ  MIXIT           ;BIT IS NOT GOING TO SET
3949 023516 017737 157612 003414          BR   19$
3950 023524 005701                MOV  @RHCS1,$REGO    ;SET UP NEEDED BITS ONLY
3951 023526 001406                BIC  #GO!IE.RDY!A16!A17!PSEL!DVA!MCPE!READ6,$REGO ;CLEAR BITS NOT NEEDED
3952 023530 005037 003416          MOV  @RHCS1,CS1      ;SAVE RHCS1
3953 023534 005037 003424          MOV  @RHWC,WC        ;SAVE WORD COUNT
3954 023540 000137 023560          MOV  @RHBA,BA        ;SAVE BUS ADDRESS
3955 023544 017737 157610 003416 87$:  TST  R1              ;IS IT AN RH11
3956 023552 017737 157604 003424          BEQ  87$             ;NO IT'S A 70
3957 023560 017737 157554 003422 86$:  CLR  BAE            ;CLEAR BAE
3958 023566 017737 157550 003432          CLR  CS3             ;CLEAR CS3
3959 023574 017737 157544 003436          JMP  86$             ;CONTINUE
3960 023602 017737 157542 003442          MOV  @RHBAE,BAE      ;SAVE BUS ADDRESS EXTENSION
3961 023610 017737 157522 003440          MOV  @RHCS3,CS3      ;SAVE RHCS3
3962 023616 032777 000200 157504          MOV  @RHCS2,CS2      ;SAVE CS2
3963 023624 001003                MOV  @RHST,DS1       ;SAVE TESTER STATUS
3964 023626 104102                MOV  @RHER,ER1       ;SAVE ERROR REGISTER
3965 023630 004737 007224          MOV  @RHTDB,TDR      ;SAVE TESTER DATA REG.
3966 023634 032777 001000 157476 99$:  MOV  @RHMP2,TC        ;SAVE MR2 TESTER REG.
3967 023642 001016                BIT  #RDY,@RHCS1     ;IS READY SET
3968 023644 022737 140000 001162          BNE  99$             ;YES CONTINUE TEST
                                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

```

3969	023652	001460				BEQ	2\$:YES MXF IS IN ERROR
3970	023654	032737	040000	001162		BIT	#TRE,\$REGO		:IS JUST THE TRE BIT SET
3971	023662	001060				BNE	3\$:TRE BIT MUST BE IN ERROR
3972	023664	032737	100000	001162		BIT	#SC,\$REGO		:IS JUST THE SC BIT SET
3973	023672	001060				BNE	4\$:SC BIT SET ERRONIOUSLY
3974	023674	104030				ERROR	30		:MXF NOT SET IN RHCS2
3975	023676	000467				BR	8\$:SET UP TO TEST AGAIN
3976	023700	022737	140000	001162	1\$:	CMP	#SC!TRE,\$REGO		:IS SC AND TRE SET
3977	023706	001030				BNE	22\$:FIND THE ERROR
3978	023710	013737	004124	004124		MOV	\$CS1,\$CS1		:TEST FOR SHORTS
3979	023716	012737	176400	004126		MOV	#MPE,PGE!NEM!NED.UPE.WCE!DLT,\$CS2		
3980	023724	013737	004130	004130		MOV	\$CS3,\$CS3		
3981	023732	013737	004132	004132		MOV	\$ST,\$ST		
3982	023740	013737	004134	004134		MOV	\$ER,\$ER		
3983	023746	012737	177777	004122		MOV	#-1,BEFORE		:TELL WHYFO ITS FOR SHORTS
3984	023754	004737	007224			JSR	R7,WHYFO		:TEST FOR SHORTS
3985	023760	005037	004122			CLR	BEFORE		:WE HAVE CHECKED FOR SHORTS
3986	023764	000137	024056			JMP	8\$:LEAVE THE TEST
3987	023770	032737	040000	001162	22\$:	BIT	#TRE,\$REGO		:THEN IS THE TRE BIT SET
3988	023776	001022				BNE	6\$:SC BIT DID NOT SEE TRE BIT
3989	024000	032737	100000	001162		BIT	#SC,\$REGO		:IS THE SC BIT SET
3990	024006	001022				BNE	7\$:TRE HAS AN OPEN GOING TO BUS
3991	024010	104006				ERROR	6		:TRE SET LOGIC NOT WORKING
3992	024012	000421				BR	8\$:SET UP TO TEST AGAIN
3993	024014	104031			2\$:	ERROR	31		:MXF HAS OPEN IN LINE GOING TO BUS
3994	024016	004737	007224			JSR	R7,WHYFO		:SEE IF ANY OTHER ERROR BIT IS
3995									:SET OTHER THAN MXF
3996	024022	000415				BR	8\$:SET UP TO TEST AGAIN
3997	024024	104032			3\$:	ERROR	32		:SOMTHING WRONG WITH TRE BIT
3998	024026	004737	007224			JSR	R7,WHYFO		:SEE IF AN ERROR BIT IS SET
3999									:OR BOTH MXF IN RHCS2 AND SC IN
4000									:RHCS1 HAS AN OPEN BETWEEN IT AND THE BUS
4001	024032	000411				BR	8\$:SET UP TO TEST AGAIN
4002	024034	104011			4\$:	ERROR	11		:SC BIT WAS SET BY EITHER ATTN OR
4003	024036	004737	007224			JSR	R7,WHYFO		:FIND WHAT ERROR BIT IS SET
4004									:MCPE ERROR OR SC IS SHORTED TO +5 VOLTS
4005	024042	000405				BR	8\$:SETUP TO TEST AGAIN
4006	024044	104033			6\$:	ERROR	33		:TRE WAS SET BY OTHER THAN MXF
4007	024046	004737	007224			JSR	R7,WHYFO		:FIND ERROR BIT THAT SET TRE
4008	024052	000401				BR	8\$:SETUP TO TEST AGAIN
4009	024054	104013			7\$:	ERROR	13		:TRE HAS AN OPEN GOING TO THE BUS
4010	024056	032737	041400	177570	8\$:	BIT	#SW14!SW9!SW8,@#177570		:ANY LOOPING BEEING DONE
4011	024064	001003				BNE	21\$:YES,LOAD TRE NO MATTER WHAT
4012	024066	105737	001103			TSTB	\$ERFLG		:WAS THERE AN ERROR
4013	024072	001010				BNE	9\$:SKIP TRE CHECK
4014	024074	112777	000100	157262	21\$:	MOVB	#TPEB,@RHCS1B		:LOAD TRE
4015	024102	032777	001000	157230		BIT	#MXF,@RHCS2		:DID ERROR CLEAR
4016	024110	001401				BEQ	9\$:YES EXIT TEST
4017	024112	104050				ERROR	50		:LOADING TRE DID NOT CLEAR ERROR
4018	024114	004737	006572		9\$:	JSR	R7,CLEER		:SEE IF ERRORS ARE CLEARED
4019	024120	004737	050210			JSR	R7,ERRTST		
4020	024124								
4021									
4022									
4023									
4024									

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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4025
4026 024124 000004
4027 024126 012777 000007 157204
4028 024134 012777 000010 157212
4029 024142 013777 001162 157200
4030 024150 013777 001162 157172
4031 024156 005037 003446
4032 024162 032777 000200 157140 18$:
4033 024170 001015
4034 024172 005237 003446
4035 024176 001371
4036 024200 005037 003446
4037 024204 032777 000200 157116 19$:
4038 024212 001004
4039 024214 005237 003446
4040 024220 001401
4041 024222 000770
4042 024224
4043 024224 017737 157100 003420
4044 024232 017737 157074 003444
4045 024240 017737 157070 003414
4046 024246 005701
4047 024250 001406
4048 024252 005037 003416
4049 024256 005037 003424
4050 024262 000137 024302
4051 024266 017737 157066 003416 87$:
4052 024274 017737 157062 003424
4053 024302 017737 157032 003422 86$:
4054 024310 017737 157026 003432
4055 024316 017737 157022 003436
4056 024324 017737 157020 003442
4057 024332 017737 157000 003440
4058 024340 032777 000200 156762
4059 024346 001003
4060 024350 104102
4061 024352 004737 007224
4062 024356 032777 020000 156744 MPETST:
4063 024364 001425
4064 024366 032777 100000 156734
4065 024374 001416
4066 024376 012737 040000 004124
4067 024404 012737 177400 004126
4068 024412 012737 177777 004122
4069 024420 004737 007224
4070 024424 005037 004122
4071 024430 000406
4072 024432 104130 22$:
4073
4074
4075
4076 024434 000137 024446
4077 024440 104131 1$:
4078 024442 004737 007224
4079 024446 004737 006572
4080 024452 004737 050210

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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 $REGO,@RHTDB ;DO IT FOR SECOND TIME
CLR BITCNT ;CLEAR BIT COUNTER
18$: 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
19$: BIT #RDY,@RHCS1 ;IS IT SET YET?
BNE MCPET ;YES
INC BITCNT ;COUNT UP
BEQ MCPET ;BIT IS NOT GOING TO SET
BR 19$

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 BAF ;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 MPETST ;YES,TEST MCPE
ERROR 102 ;READY IS NOT SET
JSR R7,WHYFO ;ANY ERRORS SET
MPETST: 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
22$: ERROR 130 ;GET OUT OF TEST
;MCPE ERROR OK BUT SC DID
;NOT SET SC HAS OPEN TC
;BUS OR MCPE GOING TO OR
;GATE FOR SC WAS NOT SEEN

1$: JMP ERR30
ERROR 131 ;MCPE DID NOT SET
JSR R7,WHYFO ;WAS THERE ANOTHER ERROR
ERR30: JSR R7,CLEER ;CLEAR ERRORS
JSR R7,ERRTST ;WAS THERE AN ERROR

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*****
;*TEST 32      DOUBLE TRANSFER TEST,1 WORD FROM AN ADDRESS BASE 4
;*THIS TEST CHECKS THAT A ONE WORD TRANSFER
;*FROM AN ADDRESS DIVISIBLE BY 4 WILL NOT SET
;*DBL IN RHCS3.....RH70 ONLY.....
*****
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
4097     024526 032777 000200 156574 18$: BIT      #RDY,@RHCS1    ;IS RDY SET
4098     024534 001015                BNE      3$          ;BIT IS SET
4099     024536 005237 003446          INC      BITCNT     ;COUNT UP
4100     024542 001371                BNE      18$        ;NOT FINISHED COUNTING
4101     024544 005037 003446          CLR      BITCNT     ;GET READY TO DO IT AGAIN
4102     024550 032777 000200 156552 19$: BIT      #RDY,@RHCS1    ;IS IT SET YET?
4103     024556 001004                BNE      3$          ;YES
4104     024560 005237 003446          INC      BITCNT     ;COUNT UP
4105     024564 001401                BEQ      3$          ;BIT IS NOT GOING TO SET
4106     024566 000770                BR       19$
4107     024570                3$:
4108     024570 017737 156534 003420    MOV      @RHCS1,CS1   ;SAVE RHCS1
4109     024576 017737 156530 003444    MOV      @RHWC,WC     ;SAVE WORD COUNT
4110     024604 017737 156524 003414    MOV      @RHBA,BA     ;SAVE BUS ADDRESS
4111     024612 005701                TST      R1           ;IS IT AN RH11
4112     024614 001406                BEQ      87$         ;NO IT'S A 70
4113     024616 005037 003416          CLR      BAE         ;CLEAR BAE
4114     024622 005037 003424          CLR      CS3        ;CLEAR CS3
4115     024626 000137 024646          IMP     86$         ;CONTINUE
4116     024632 017737 156522 003416 87$: MOV      @RHBAE,BAE    ;SAVE BUS ADDRESS EXTENSION
4117     024640 017737 156516 003424    MOV      @RHCS3,CS3  ;SAVE RHCS3
4118     024646 017737 156466 003422 86$: MOV      @RHCS2,CS2  ;SAVE CS2
4119     024654 017737 156462 003432    MOV      @RHST,DS1   ;SAVE TESTER STATUS
4120     024662 017737 156456 003436    MOV      @RHER,ER1   ;SAVE ERROR REGISTER
4121     024670 017737 156454 003442    MOV      @RHTDB,TDR  ;SAVE TESTER DATA REG.
4122     024676 017737 156434 003440    MOV      @RHMR2,TC   ;SAVE MR2 TESTER REG.
4123     024704 032777 000200 156416    BIT      #RDY,@RHCS1 ;IS READY SET
4124     024712 001003                BNE      1$         ;RDY SET CONT. TEST
4125     024714 104102                ERROR   102        ;READY DID NOT SET
4126     024716 004737 007224          JSR     R7,WHYFO    ;ANY ERRORS SET
4127     024722 032777 002000 156432 1$: BIT      #DBL,@RHCS3 ;IS DOUBLE SET
4128     024730 001403                BEQ     2$         ;DBL SET
4129     024732 104125                ERROR   125        ;DBL DID SET ON A 1 WORD TRANSFER
4130     024734 004737 007224          JSR     R7,WHYFO    ;TELL WHY NOT
4131     024740 004737 006572 2$: JSR     R7,CLEER    ;CLEAR ERRORS
4132     024744 004737 050210          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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4137
4138
4139 024750 000004
4140 024752 005701
4141 024754 100524
4142 024756 012777 177776 156346
4143 024764 012777 004000 156342
4144 024772 012777 000061 156330
4145 025000 005037 003446
4146 025004 032777 000200 156316 18$:
4147 025012 001015
4148 025014 005237 003446
4149 025020 001371
4150 025022 005037 003446
4151 025026 032777 000200 156274 19$:
4152 025034 001004
4153 025036 005237 003446
4154 025042 001401
4155 025044 000770
4156 025046
4157 025046 017737 156256 003420
4158 025054 017737 156252 003444
4159 025062 017737 156246 003414
4160 025070 005701
4161 025072 001406
4162 025074 005037 003416
4163 025100 005037 003424
4164 025104 000137 025124
4165 025110 017737 156244 003416 87$:
4166 025116 017737 156240 003424
4167 025124 017737 156210 003422 86$:
4168 025132 017737 156204 003432
4169 025140 017737 156200 003436
4170 025146 017737 156176 003442
4171 025154 017737 156156 003440
4172 025162 032777 000200 156140
4173 025170 001003
4174 025172 104102
4175 025174 004737 007224
4176 025200 032777 002000 156154 FOOEY:
4177 025206 001003
4178 025210 104127
4179 025212 004737 007224
4180 025216 004737 006572
4181 025222 004737 050210
4182
4183
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4188
4189 025226 000104
4190 025230 005701
4191 025232 100524
4192 025234 012777 177775 156070

; *DIVISABLE BY 4.....RH70 ONLY.....
;*****
TST33: SCOPE
TST R1 ;IS IT AN 11 OR A 70
BMI TST34 ;;GET OUT OF TEST
MOV #-2,@RHWC ;SETUP WORD COUNT FOR DOUBLE TRANSFER
MOV #EVENAD,@RHBA ;CORRECT BA
MOV #WRITE0,@RHCS1 ;FILL IT TO WRITE
CLR BITCNT ;CLEAR BIT COUNTER
BIT #RDY,@RHCS1 ;IS RDY SET
BNE DBLWDS ;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 DBLWDS ;YES
INC BITCNT ;COUNT UP
BEQ DBLWDS ;BIT IS NOT GOING TO SET
BR 19$

DBLWDS:
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 @RHIDB,TDR ;SAVE TESTER DATA REG.
MOV @RHMR2,TC ;SAVE MR2 TESTER REG.
BIT #RDY,@RHCS1 ;IS READY SET
BNE FOOEY ;RDY IS SET
ERROR 102 ;RDY DID NOT SET
JSR R7,WHYFO ;ANY ERRORS SET
BIT #DBL,@RHCS3 ;IS DOUBLE SET
BNE ER1R ;DBL IS SET
ERROR 127 ;DBL DID NOT SET IN RHCS3
JSR R7,WHYFO ;ANY OTHER ERROR SET
JSR R7,CLEER ;CLEAR ERRORS
JSR R7,ERRTST

;*****
; *TEST 34 DOUBLE TEST ,3 WORD TRANSFER FROM A BASE 4 ADDRESS
; *THIS TEST CHECKS THAT DBL WILL NOT SET
; *IN RHCS3 AFTER A 3 WORD TRANSFER STARTING
; *FROM AN ADDRESS DIVISABLE BY 4
; *.....RH70 ONLY.....
;*****
TST34: SCOPE
TST R1 ;IS IT AN 11 OR A 70
BMI TST35 ;;GET OUT OF TEST
MOV #-3,@RHWC ;SET UP FOR A 3 WORD TRANSFER
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4193 025242 012777 004000 156064      MOV      #EVENAD,@RHBA      ;CORRECT BA
4194 025250 012777 000061 156052      MOV      #WRITE0,@RHCS1    ;TELL IT TO WRITE
4195 025256 005037 003446          CLR      BITCNT            ;CLEAR BIT COUNTER
4196 025262 032777 000200 156040 18$:  BIT      #RDY,@RHCS1      ;IS RDY SET
4197 025270 001015          BNE     THREE             ;BIT IS SET
4198 025272 005237 003446          INC     BITCNT            ;COUNT UP
4199 025276 001371          BNE     18$              ;NOT FINISHED COUNTING
4200 025300 005037 003446          CLR      BITCNT            ;GET READY TO DO IT AGAIN
4201 025304 032777 000200 156016 19$:  BIT      #RDY,@RHCS1      ;IS IT SET YET?
4202 025312 001004          BNE     THREE             ;YES
4203 025314 005237 003446          INC     BITCNT            ;COUNT UP
4204 025320 001401          BEQ     THREE             ;BIT IS NOT GOING TO SET
4205 025322 000770          BR      19$
4206 025324          THREE:
4207 025324 017737 156000 003420      MOV      @RHCS1,CS1        ;SAVE RHCS1
4208 025332 017737 155774 003444      MOV      @RHWC,WC         ;SAVE WORD COUNT
4209 025340 017737 155770 003414      MOV      @RHBA,BA        ;SAVE BUS ADDRESS
4210 025346 005701          TST     R1                ;IS IT AN RH11
4211 025350 001406          BEQ     87$              ;NO IT'S A 70
4212 025352 005037 003416          CLR     BAE               ;CLEAR BAE
4213 025356 005037 003424          CLR     CS3              ;CLEAR CS3
4214 025362 000137 025402          JMP     86$              ;CONTINUE
4215 025366 017737 155766 003416 87$:  MOV      @RHBAE,BAE       ;SAVE BUS ADDRESS EXTENSION
4216 025374 017737 155762 003424      MOV      @RHCS3,CS3      ;SAVE RHCS3
4217 025402 017737 155732 003422 86$:  MOV      @RHCS2,CS2      ;SAVE CS2
4218 025410 017737 155726 003432      MOV      @RHST,DS1       ;SAVE TESTER STATUS
4219 025416 017737 155722 003436      MOV      @RHER,ER1       ;SAVE ERROR REGISTER
4220 025424 017737 155720 003442      MOV      @RHTDB,TDR      ;SAVE TESTER DATA REG.
4221 025432 017737 155700 003440      MOV      @RHMR2,TC       ;SAVE MR2 TESTER REG.
4222 025440 032777 000200 155662      BIT      #RDY,@RHCS1     ;IS READY SET
4223 025446 001003          BNE     ERRIP            ;RDY IS SET
4224 025450 104102          ERFOR  102              ;RDY DID NOT SET
4225 025452 004737 007224          JSR     R7,WHYFO         ;ANY ERRORS SET
4226 025456 032777 002000 155676 ERRIP: BIT      #DBL,@RHCS3     ;IS DOUBLE SET
4227 025464 001403          BEQ     ERPIP           ;DBL IS SET
4228 025466 104126          ERROR  126             ;DOUBLE SET ON A 3 WORD TRANSFER
4229 025470 004737 007224          JSR     R7,WHYFO         ;SEE IF ANY ERROR BITS ARE SET
4230 025474 004737 006572          ERPIP: JSR     R7,CLEER    ;CLEAR ERRORS
4231 025500 004737 050210          JSR     R7,ERRTST
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4239 025504 000004          TST35: SCOPE
4240 025506 005701          TST     R1                ;IS IT AN 11 OR A 70
4241 025510 100524          BMI     TST36            ;:GET OUT OF TEST
4242 025512 012777 177774 155612      MOV      #-4,@RHWC       ;SET UP FOR 4 WORD TRANSFER
4243 025520 012777 004000 155606      MOV      #EVENAD,@RHBA   ;CORRECT BA
4244 025526 012777 000061 155574      MOV      #WRITE0,@RHCS1 ;TELL IT TO WRITE
4245 025534 005037 003446          CLR     BITCNT            ;CLEAR BIT COUNTER
4246 025540 032777 000200 155562 18$:  BIT      #RDY,@RHCS1     ;IS RDY SET
4247 025546 001015          BNE     DBLED            ;BIT IS SET
4248 025550 005237 003446          INC     BITCNT            ;COUNT UP
```

4249	025554	001371				BNE	18\$:NOT FINISHED COUNTING
4250	025556	005037	003446			CLR	BITCNT		:GET READY TO DO IT AGAIN
4251	025562	032777	000200	155540	19\$:	BIT	#RDY,@RHCS1		:IS IT SET YET?
4252	025570	001004				BNE	DBLED		:YES
4253	025572	005237	003446			INC	BITCNT		:COUNT UP
4254	025576	001401				BEQ	DBLED		:BIT IS NOT GOING TO SET
4255	025600	000770				BR	19\$		
4256	025602								
4257	025602	017737	155522	003420		DBLED:			
4258	025610	017737	155516	003444		MOV	@RHCS1,CS1		:SAVE RHCS1
4259	025616	017737	155512	003414		MOV	@RHWC,WC		:SAVE WORD COUNT
4260	025624	005701				MOV	@RHBA,BA		:SAVE BUS ADDRESS
4261	025626	001406				TST	R1		:IS IT AN RH11
4262	025630	005037	003416			BEQ	87\$:NO IT'S A 70
4263	025634	005037	003424			CLR	BAE		:CLEAR BAE
4264	025640	000137	025660			CLR	CS3		:CLEAR CS3
4265	025644	017737	155510	003416	87\$:	JMP	86\$:CONTINUE
4266	025652	017737	155504	003424		MOV	@RHBAE,BAE		:SAVE BUS ADDRESS EXTENSION
4267	025660	017737	155454	003422	86\$:	MOV	@RHCS3,CS3		:SAVE RHCS3
4268	025666	017737	155450	003432		MOV	@RHCS2,CS2		:SAVE CS2
4269	025674	017737	155444	003436		MOV	@RHST,DS1		:SAVE TESTER STATUS
4270	025702	017737	155442	003442		MOV	@RHER,ER1		:SAVE ERROR REGISTER
4271	025710	017737	155422	003440		MOV	@RHTDB,TDR		:SAVE TESTER DATA REG.
4272	025716	032777	000200	155404		MOV	@RMR2,TC		:SAVE MR2 TESTER REG.
4273	025724	001003				BIT	#RDY,@RHCS1		:IS READY SET
4274	025726	104102				BNE	DAYAMS		:RDY IS SET
4275	025730	004737	007224			ERROR	102		:RDY DID NOT SET
4276	025734	032777	002000	155420	DAYAMS:	JSR	R7,WHYFO		:WHAT ERRORS ARE SET
4277	025742	001003				BIT	#DBL,@RHCS3		:IS DOUBLE SET
4278	025744	104124				BNE	ERR29		:TEST IS OK
4279	025746	004737	007224			ERROR	124		:DOUBLE DID NOT SET AFTER A 4 WORD
4280	025752	004737	006572			JSR	R7,WHYFO		:SEE IF ANY ERROR ARE SET
4281	025756	004737	050210		ERR29:	JSR	R7,CLEER		:CLEAR ERRORS
4282						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.....  
:*****
```

4292	025762	000004				TST36:	SCOPE		
4293	025764	005701				TST	R1		:IS IN AN RH11
4294	025766	100532				BMI	TST37		:GET OUT OF TEST
4295	025770	012777	177777	155334		MOV	#-1,@RHWC		:SET UP WC FOR ONE WORD
4296	025776	012777	004000	155330		MOV	#EVENAD,@RHBA		:SETUP BUS ADDRESS
4297	026004	012777	000000	155346		MOV	#ZERO,@RHBAE		:SETUP BUS ADDRESS EXTENSION
4298	026012	012777	000007	155320		MOV	#7,@RHCS2		:DEVICE 7
4299	026020	012777	000071	155302		MOV	#READO,@RHCS1		:TELL IT TO READO
4300	026026	005037	003446			CLR	BITCNT		:CLEAR BIT COUNTER
4301	026032	032777	000200	155270	18\$:	BIT	#RDY,@RHCS1		:IS RDY SET
4302	026040	001015				BNE	3\$:BIT IS SET
4303	026042	005237	003446			INC	BITCNT		:COUNT UP
4304	026046	001371				BNE	18\$:NOT FINISHED COUNTING

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4305 026050 005037 003446          CLR      BITCNT          ;GET READY TO DO IT AGAIN
4306 026054 032777 000200 155246 19$: BIT      #RDY,@RHCS1    ;IS IT SFT YET?
4307 026062 001004          BNE      3$              ;YES
4308 026064 005237 003446          INC      BITCNT          ;COUNT UP
4309 026070 001401          BEQ     3$              ;BIT IS NOT GOING TO SET
4310 026072 000770          BR      19$
4311 026074          3$:
4312 026074 017737 155230 003420      MOV     @RHCS1,CS1      ;SAVE RHCS1
4313 026102 017737 155224 003444      MOV     @RHWC,WC       ;SAVE WORD COUNT
4314 026110 017737 155220 003414      MOV     @RHBA,BA       ;SAVE BUS ADDRESS
4315 026116 005701          TST     R1             ;IS IT AN RH11
4316 026120 001406          BEQ     87$            ;NO IT'S A 70
4317 026122 005037 003416          CLR     BAE            ;CLEAR BAE
4318 026126 005037 003424          CLR     CS3           ;CLEAR CS3
4319 026132 000137 026152          JMP     86$            ;CONTINUE
4320 026136 017737 155216 003416 87$: MOV     @RHBAE,BAE      ;SAVE BUS ADDRESS EXTENSION
4321 026144 017737 155212 003424      MOV     @RHCS3,CS3     ;SAVE RHCS3
4322 026152 017737 155162 003422 86$: MOV     @RHCS2,CS2     ;SAVE CS2
4323 026160 017737 155156 003432      MOV     @RHST,DS1      ;SAVE TESTER STATUS
4324 026166 017737 155152 003436      MOV     @RHER,ER1      ;SAVE ERROR REGISTER
4325 026174 017737 155150 003442      MOV     @RHTDB,TDR     ;SAVE TESTER DATA REG.
4326 026202 017737 155130 003440      MOV     @RHMR2,TC      ;SAVE MR2 TESTER REG.
4327 026210 032777 000200 155112      BIT     #RDY,@RHCS1    ;IS READY SET
4328 026216 001003          BNE     1$            ;RDY SET CONT. TEST
4329 026220 104102          ERROR   102           ;READY DID NOT SET
4330 026222 004737 007224          JSR     R7,WHYFO       ;ANY ERRORS SET
4331 026226 032777 002000 155126 1$: BIT     #DBL,@RHCS3    ;IS DOUBLE SET
4332 026234 001403          BEQ     2$            ;DBL SET
4333 026236 104154          ERROR   154           ;DBL DID SET ON A 1 WORD TRANSFER
4334 026240 004737 007224          JSR     R7,WHYFO       ;TELL WHY NOT
4335 026244 004737 006572 2$: JSR     R7,CLEER       ;CLEAR ERRORS
4336 026250 004737 050210          JSR     R7,ERRST
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4345 026254 000004          ;*****
4346 026256 005701          ;*TEST 37      DOUBLE TEST WITH 2 WORD TRANSFER AND BAI SET
4347 026260 100532          ;*THESE TEST CHECK DBL IN RHCS3 WITHREAD FWD AND REV
4348 026262 012777 177776 155042      ;*WRITE FWD AND REV AND WITH BAI SET IN RHCS2
4349 026270 012777 004000 155036      ;*OPERATION BEING PREFORMED WILL BE PRINTED OUT
4350 026276 012777 000000 155054      ;*IN ERROR MESSAGE.
4351 026304 012777 000017 155026      ;*.....RH70 ONLY.....
4352 026312 012777 000061 155010      ;*****
4353 026320 005037 003446          TST37: SCOPE
4354 026324 032777 000200 154776 18$: TST     R1             ;IS IN AN RH11
4355 026332 001015          BMI     TST40          ;;GET OUT OF TEST
4356 026334 005237 003446          MOV     #-2,@RHWC      ;SET UP WC FOR TWO WORD
4357 026340 001371          MOV     #EVENAD,@RHBA  ;SETUP BUS ADDRESS
4358 026342 005037 003446          MOV     #ZERO,@RHBAE   ;SETUP BUS ADDRESS EXTENSION
4359 026346 032777 000200 154754 19$: MOV     #7!BAI,@RHCS2  ;DEVICE 7
4360 026354 001004          MOV     #WRITE0,@RHCS1 ;TELL IT TO WRITE0
          CLR     BITCNT     ;CLEAR BIT COUNTER
          BIT     #RDY,@RHCS1 ;IS RDY SET
          BNE     3$        ;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

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4361 026356 005237 003446      INC      BITCNT      :COUNT UP
4362 026362 001401              BEQ      3$          :BIT IS NOT GOING TO SET
4363 026364 000770              BR       19$
4364 026366                    3$:
4365 026366 017737 154736 003420      MOV      @RHCS1,CS1  :SAVE RHCS1
4366 026374 017737 154732 003444      MOV      @RHWC,WC    :SAVE WORD COUNT
4367 026402 017737 154726 003414      MOV      @RHBA,BA    :SAVE BUS ADDRESS
4368 026410 005701              TST      R1          :IS IT AN RH11
4369 026412 001406              BEQ      87$         :NO IT'S A 70
4370 026414 005037 003416      CLR      BAE         :CLEAR BAE
4371 026420 005037 003424      CLR      CS3         :CLEAR CS3
4372 026424 000137 026444      JMP      86$         :CONTINUE
4373 026430 017737 154724 003416 87$:      MOV      @RHBAE,BAE  :SAVE BUS ADDRESS EXTENSION
4374 026436 017737 154720 003424      MOV      @RHCS3,CS3  :SAVE RHCS3
4375 026444 017737 154670 003422 86$:      MOV      @RHCS2,CS2  :SAVE CS2
4376 026452 017737 154664 003432      MOV      @RHST,DS1   :SAVE TESTER STATUS
4377 026460 017737 154660 003436      MOV      @RHER,ER1   :SAVE ERROR REGISTER
4378 026466 017737 154656 003442      MOV      @RHIDB,TDR  :SAVE TESTER DATA REG.
4379 026474 017737 154636 003440      MOV      @RHMR2,TC   :SAVE MR2 TESTER REG.
4380 026502 032777 000200 154620      BIT      #RDY,@RHCS1 :IS READY SET
4381 026510 001003              BNE     1$          :RDY SET CONT. TEST
4382 026512 104102              ERROR   102        :READY DID NOT SET
4383 026514 004737 007224      JSR     R7,WHYFO    :ANY ERRORS SET
4384 026520 032777 002000 154634 1$:      BIT      #DBL,@RHCS3 :IS DOUBLE SET
4385 026526 001403              BEQ     2$          :DBL SET
4386 026530 104153              ERROR   153        :DBL DID SET ON A 2 WORD TRANSFER
4387 026532 004737 007224      JSR     R7,WHYFO    :TELL WHY NOT
4388 026536 004737 006572 2$:      JSR     R7,CLEER    :CLEAR ERRORS
4389 026542 004737 050210      JSR     R7,ERRTST
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4398 026546 000004      TST40: SCOPE
4399 026550 005701      TST      R1          :IS IN AN RH11
4400 026552 100532      BMI     TST41        ::GET OUT OF TEST
4401 026554 012777 177776 154550      MOV      #-2,@RHWC   :SET UP WC FOR TWO WORD
4402 026562 012777 004000 154544      MOV      #EVENAD,@RHBA :SETUP BUS ADDRESS
4403 026570 012777 000000 154562      MOV      #ZERO,@RHBAE :SETUP BUS ADDRESS EXTENSION
4404 026576 012777 000017 154534      MOV      #7!BAI,@RHCS2 :DEVICE 7
4405 026604 012777 000067 154516      MOV      #WRITE6,@RHCS1 :TELL IT TO WRITE6
4406 026612 005037 003446      CLR      BITCNT      :CLEAR BIT COUNTER
4407 026616 032777 000200 154504 18$:      BIT      #RDY,@RHCS1 :IS RDY SET
4408 026624 001015              BNE     3$          :BIT IS SET
4409 026626 005237 003446      INC      BITCNT      :COUNT UP
4410 026632 001371              BNE     18$         :NOT FINISHED COUNTING
4411 026634 005037 003446      CLR      BITCNT      :GET READY TO DO IT AGAIN
4412 026640 032777 000200 154462 19$:      BIT      #RDY,@RHCS1 :IS IT SET YET?
4413 026646 001004              BNE     3$          :YES
4414 026650 005237 003446      INC      BITCNT      :COUNT UP
4415 026654 001401              BEQ     3$          :BIT IS NOT GOING TO SET
4416 026656 000770              BR      19$
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4417 026660
4418 026660 017737 154444 003420
4419 026666 017737 154440 003444
4420 026674 017737 154434 003414
4421 026702 005701
4422 026704 001406
4423 026706 005037 003416
4424 026712 005037 003424
4425 026716 000137 026736
4426 026722 017737 154432 003416 87$:
4427 026730 017737 154426 003424
4428 026736 017737 154376 003422 86$:
4429 026744 017737 154372 003432
4430 026752 017737 154366 003436
4431 026760 017737 154364 003442
4432 026766 017737 154344 003440
4433 026774 032777 000200 154326
4434 027002 001003
4435 027004 104102
4436 027006 004737 007224
4437 027012 032777 002000 154342 1$:
4438 027020 001403
4439 027022 104155
4440 027024 004737 007224
4441 027030 004737 006572
4442 027034 004737 050210
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4451 027040 000004
4452 027042 005701
4453 027044 100532
4454 027046 012777 177776 154256
4455 027054 012777 004002 154252
4456 027062 012777 000000 154270
4457 027070 012777 000007 154242
4458 027076 012777 000061 154224
4459 027084 005037 003446
4460 027110 032777 000200 154212 18$:
4461 027116 001015
4462 027120 005237 003446
4463 027124 001371
4464 027126 005037 003446
4465 027132 032777 000200 154170 19$:
4466 027140 001004
4467 027142 005237 003446
4468 027146 001401
4469 027150 000770
4470 027152
4471 027152 017737 154152 003420
4472 027160 017737 154146 003444
3$:
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
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 @RHIDB,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 155 ;DBL DID SET ON A 2 WORD TRANSFER
JSR R7,WHYFO ;TELL WHY NOT
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 PREFORMED WILL BE PRINTED OUT
:*IN ERROR MESSAGE.
:*.....RH70 ONLY.....
:*****
ST41: 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
BIT #RDY,@RHCS1 ;IS RDY SET
BNE 3$ ;BIT IS SET
INC BITCN ;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
BR 19$ ;BIT IS NOT GOING TO SET
3$:
MOV @RHCS1,CS1 ;SAVE RHCS1
MOV @RHWC,WC ;SAVE WORD COUNT

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4473	027166	017737	154142	003414		MOV	@RHBA,BA		:SAVE BUS ADDRESS
4474	027174	005701				TST	R1		:IS IT AN RH11
4475	027176	001406				BEQ	87\$:NO IT'S A 70
4476	027200	005037	003416			CLR	BAE		:CLEAR BAE
4477	027204	005037	003424			CLR	CS3		:CLEAR CS3
4478	027210	000137	027230			JMP	86\$:CONTINUE
4479	027214	017737	154140	003416	87\$:	MOV	@RHBAE,BAE		:SAVE BUS ADDRESS EX'ENSION
4480	027222	017737	154134	003424		MOV	@RHCS3,CS3		:SAVE RHCS3
4481	027230	017737	154104	003422	86\$:	MOV	@RHCS2,CS2		:SAVE CS2
4482	027236	017737	154100	003432		MOV	@RHST,DS1		:SAVE TESTER STATUS
4483	027244	017737	154074	003436		MOV	@RHER,ER1		:SAVE ERROR REGISTER
4484	027252	017737	154072	003442		MOV	@RHTDB,TDR		:SAVE TESTER DATA REG.
4485	027260	017737	154052	003440		MOV	@RHMR2,TC		:SAVE MR2 TESTER REG.
4486	027266	032777	000200	154034		BIT	#RDY,@RHCS1		:IS READY SET
4487	027274	001003				BNE	1\$:RDY SET CONT. TEST
4488	027276	104*02				ERROR	102		:READY DID NOT SET
4489	027300	004737	007224			JSR	R7,WHYFO		:ANY ERRORS SET
4490	027304	032777	002000	154050	1\$:	BIT	#DBL,@RHCS3		:IS DOUBLE SET
4491	027312	001403				BEQ	2\$:DBL SET
4492	027314	104156				ERROR	156		:DBL DID SET ON A 2 WORD TRANSFER
4493	027316	004737	007224			JSR	R7,WHYFO		:TELL WHY NOT
4494	027322	004737	006572		2\$:	JSR	R7,CLEER		:CLEAR ERRORS
4495	027326	004737	050210			JSR	R7,ERRST		
4496						:*****			
4497						:*TEST 42 DBL TEST EVEN ADD. WRITE FWD			
4498						:*THESE TEST CHECK DBL IN RHCS3 WITHREAD FWD AND REV			
4499						:*WRITE FWD AND REV AND WITH BAI SET IN RHCS2			
4500						:*OPERATION BEING PREFORMED WILL BE PRINTED OUT			
4501						:*IN ERROR MESSAGE.			
4502						:*.....RH70 ONLY.....			
4503						:*****			
4504	027332	000004				TST42:	SCOPE		
4505	027334	005701				TST	R1		:IS IN AN RH11
4506	027336	100532				BMI	TST43	::GET OUT OF TEST	
4507	027340	012777	177776	153764		MOV	#-2,@RHWC		:SET UP WC FOR TWO WORD
4508	027346	012777	004000	153760		MOV	#EVEJAD,@RHBA		:SETUP BUS ADDRESS
4509	027354	012777	000000	153776		MOV	#ZERO,@RHBAE		:SETUP BUS ADDRESS EXTENSION
4510	027362	012777	000007	153750		MOV	#7,@RHCS2		:DEVICE 7
4511	027370	012777	000067	153732		MOV	#WRITE6,@RHCS1		:TELL IT TO WRITE6
4512	027376	005037	003446			CLR	BITCNT		:CLEAR BIT COUNTER
4513	027402	032777	000200	153720	18\$:	BIT	#RDY,@RHCS1		:IS RDY SET
4514	027410	001015				BNE	3\$:BIT IS SET
4515	027412	005237	003446			INC	BITCNT		:COUNT UP
4516	027416	001371				BNE	18\$:NOT FINISHED COUNTING
4517	027420	005037	003446			CLR	BITCNT		:GET READY TO DO IT AGAIN
4518	027424	032777	000200	153676	19\$:	BIT	#RDY,@RHCS1		:IS IT SET YET?
4519	027432	001004				BNE	3\$:YES
4520	027434	005237	003446			INC	BITCNT		:COUNT UP
4521	027440	001401				BEQ	3\$:BIT IS NOT GOING TO SET
4522	027442	000770				BR	19\$		
4523	027444				3\$:				
4524	027444	017737	153660	003420		MOV	@RHCS1,CS1		:SAVE RHCS1
4525	027452	017737	153654	003444		MOV	@RHWC,WC		:SAVE WORD COUNT
4526	027460	017737	153650	003414		MOV	@RHBA,BA		:SAVE BUS ADDRESS
4527	027466	005701				TST	R1		:IS IT AN RH11
4528	027470	001406				BEQ	87\$:NO IT'S A 70

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4529 027472 005037 003416 CLR BAE ;CLEAR BAE
4530 027476 005037 003424 CLR CS3 ;CLEAR CS3
4531 027502 000137 027522 JMP 86$ ;CONTINUE
4532 027506 017737 153646 003416 87$: MOV @RHBAE,BAE ;SAVE BUS ADDRESS EXTENSION
4533 027514 017737 153642 003424 MOV @RHCS3,CS3 ;SAVE RHCS3
4534 027522 017737 153612 003422 86$: MOV @RHCS2,CS2 ;SAVE CS2
4535 027530 017737 153606 003432 MOV @RHST,DS1 ;SAVE TESTER STATUS
4536 027536 017737 153602 003436 MOV @RHER,ER1 ;SAVE ERROR REGISTER
4537 027544 017737 153600 003442 MOV @RHTDB,TDR ;SAVE TESTER DATA REG.
4538 027552 017737 153560 003440 MOV @RHMR2,TC ;SAVE MR2 TESTER REG.
4539 027560 032777 000200 153542 BIT #RDY,@RHCS1 ;IS READY SET
4540 027566 001003 BNE 1$ ;RDY SET CONT. TEST
4541 027570 104102 ERROR 102 ;READY DID NOT SET
4542 027572 004737 007224 JSR R7,WHYFO ;ANY ERRORS SET
4543 027576 032777 002000 153556 1$: BIT #DBL,@RHCS3 ;IS DOUBLE SET
4544 027604 001403 BEQ 2$ ;DBL SET
4545 027606 104157 ERROR 157 ;DBL DID SET ON A 2 WORD TRANSFER
4546 027610 004737 007224 JSR R7,WHYFO ;TELL WHY NOT
4547 027614 004737 006572 2$: JSR R7,CLEER ;CLEAR ERRORS
4548 027620 004737 050210 JSR R7,ERRTS?
4549
4550 ;*****
4551 ;*TEST 43 DBL TEST 2 WORD ODD ADD. WRITE REV
4552 ;*THESE TEST CHECK DBL IN RHCS3 WITH READ FWD AND REV
4553 ;*WRITE FWD AND REV AND WITH BAI SET IN RHCS2
4554 ;*OPERATION BEING PERFORMED WILL BE PRINTED OUT
4555 ;*IN ERROR MESSAGE.
4556 ;*.....RH70 ONLY.....
4557 ;*****
4557 027624 000004 TST43: SCOPE
4558 027626 005701 TST R1 ;IS IN AN RH11
4559 027630 100532 BMI TST44 ;;GET OUT OF TEST
4560 027632 012777 177776 153472 MOV #-2,@RHWC ;SET UP WC FOR TWO WORD
4561 027640 012777 004002 153466 MOV #ODDAD,@RHBA ;SETUP BUS ADDRESS
4562 027646 012777 000000 153504 MOV #ZERO,@RHBAE ;SETUP BUS ADDRESS EXTENSION
4563 027654 012777 000007 153456 MOV #7,@RHCS2 ;DEVICE 7
4564 027662 012777 000067 153440 MOV #WRITE6,@RHCS1 ;TELL IT TO WRITE6
4565 027670 005037 003446 CLR BITCNT ;CLEAR BIT COUNTER
4566 027674 032777 000200 153426 18$: BIT #RDY,@RHCS1 ;IS RDY SET
4567 027702 001015 BNE 3$ ;BIT IS SET
4568 027704 005237 003446 INC BITCNT ;COUNT UP
4569 027710 001371 BNE 18$ ;NOT FINISHED COUNTING
4570 027712 005037 003446 CLR BITCNT ;GET READY TO DO IT AGAIN
4571 027716 032777 000200 153404 19$: BIT #RDY,@RHCS1 ;IS IT SET YET?
4572 027724 001004 BNE 3$ ;YES
4573 027726 005237 003446 INC BITCNT ;COUNT UP
4574 027732 001401 BEQ 3$ ;BIT IS NOT GOING TO SET
4575 027734 000770 BR 19$
4576 027736 3$:
4577 027736 017737 153366 003420 MOV @RHCS1,CS1 ;SAVE RHCS1
4578 027744 017737 153362 003444 MOV @RHWC,WC ;SAVE WORD COUNT
4579 027752 017737 153356 003414 MOV @RHBA,BA ;SAVE BUS ADDRESS
4580 027760 005701 TST R1 ;IS IT AN RH11
4581 027762 001406 BEQ 87$ ;NO IT'S A 70
4582 027764 005037 003416 CLR BAE ;CLEAR BAE
4583 027770 005037 003424 CLR CS3 ;CLEAR CS3
4584 027774 000137 030014 JMP 86$ ;CONTINUE
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4585 030000 017737 153354 003416 87$: MOV @RHBAE,BAE ;SAVE BUS ADDRESS EXTENSION
4586 030006 017737 153350 003424 MOV @RHCS3,CS3 ;SAVE RHCS3
4587 030014 017737 153320 003422 86$: MOV @RHCS2,CS2 ;SAVE CS2
4588 030022 017737 153314 003432 MOV @RHST,DS1 ;SAVE TESTER STATUS
4589 030030 017737 153310 003436 MOV @RHER,ER1 ;SAVE ERROR REGISTER
4590 030036 017737 153306 003442 MOV @RHTDB,TDR ;SAVE TESTER DATA REG.
4591 030044 017737 153266 003440 MOV @RHMR2,TC ;SAVE MR2 TESTER REG.
4592 030052 032777 000200 153250 BIT #RDY,@RHCS1 ;IS READY SET
4593 030060 001003 BNE 1$ ;RDY SET CONT. TEST
4594 030062 104102 ERROR 102 ;READY DID NOT SET
4595 030064 004737 007224 JSR R7,WHYFO ;ANY ERRORS SET
4596 030070 032777 002000 153264 1$: BIT #DBL,@RHCS3 ;IS DOUBLE SET
4597 030076 001003 BNE 2$ ;DBL SET
4598 030100 104160 ERROR 160 ;DBL DIDN'T SET ON A 2 WORD TRANSFER
4599 030102 004737 007224 JSR R7,WHYFO ;TELL WHY NOT
4600 030106 004737 006572 2$: JSR R7,CLEEK ;CLEAR ERRORS
4601 030112 004737 050210 JSR R7,ERRTST
4602 *****
4603 ;*TEST 44 DBL TEST 3 WORD ODD ADD. WRITE REV
4604 ;*THESE TEST CHECK DBL IN RHCS3 WITHREAD FWD AND REV
4605 ;*WRITE FWD AND REV AND WITH BAI SET IN RHCS2
4606 ;*OPERATION BEING PREFORMED WILL BE PRINTED OUT
4607 ;*IN ERROR MESSAGE.
4608 ;*.....RH70 ONLY.....
4609 *****
4610 030116 000004 TST44: SCOPE
4611 030120 005701 TST R1 ;IS IN AN RH11
4612 030122 100532 BMI TST45 ;;GET OUT OF TEST
4613 030124 012777 177775 153200 MOV #-3,@RHWC ;SET UP WC FOR THREE WORD
4614 030132 012777 004002 153174 MOV #ODDAD,@RHBA ;SETUP BUS ADDRESS
4615 030140 012777 000000 153212 MOV #ZERO,@RHBAE ;SETUP BUS ADDRESS EXTENSION
4616 030146 012777 000007 153164 MOV #7,@RHCS2 ;DEVICE 7
4617 030154 012777 000067 153146 MOV #WRITE6,@RHCS1 ;TELL IT TO WRITE6
4618 030162 005037 003446 CLR BITCNT ;CLEAR BIT COUNTER
4619 030166 032777 000200 153134 18$: BIT #RDY,@RHCS1 ;IS RDY SET
4620 030174 001015 BNE 3$ ;BIT IS SET
4621 030176 005237 003446 INC BITCNT ;COUNT UP
4622 030202 001371 BNE 18$ ;NOT FINISHED COUNTING
4623 030204 005037 003446 CLR BITCNT ;GET READY TO DO IT AGAIN
4624 030210 032777 000200 153112 19$: BIT #RDY,@RHCS1 ;IS IT SET YET?
4625 030216 001004 BNE 3$ ;YES
4626 030220 005237 003446 INC BITCNT ;COUNT UP
4627 030224 001401 BEQ 3$ ;BIT IS NOT GOING TO SET
4628 030226 000770 BR 19$
4629 030230 3$:
4630 030230 017737 153074 003420 MOV @RHCS1,CS1 ;SAVE RHCS1
4631 030236 017737 153070 003444 MOV @RHWC,WC ;SAVE WORD COUNT
4632 030244 017737 153064 003414 MOV @RHBA,BA ;SAVE BUS ADDRESS
4633 030252 005701 TST R1 ;IS IT AN RH11
4634 030254 001406 BEQ 87$ ;NO IT'S A 70
4635 030256 005037 003416 CLR BAE ;CLEAR BAE
4636 030262 005037 003424 CLR CS3 ;CLEAR CS3
4637 030266 000137 030306 JMP 86$ ;CONTINUE
4638 030272 017737 153062 003416 87$: MOV @RHBAE,BAE ;SAVE BUS ADDRESS EXTENSION
4639 030300 017737 153056 003424 MOV @RHCS3,CS3 ;SAVE RHCS3
4640 030306 017737 153026 003422 86$: MOV @RHCS2,CS2 ;SAVE CS2
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4641 030314 017737 153022 003432      MOV      @RHST,DS1      ;SAVE TESTER STATUS
4642 030322 017737 153016 003436      MOV      @RHER,ER1     ;SAVE ERROR REGISTER
4643 030330 017737 153014 003442      MOV      @RHTDB,TDR    ;SAVE TESTER DATA REG.
4644 030336 017737 152774 003440      MOV      @RHMR2,TC     ;SAVE MR2 TESTER REG.
4645 030344 032777 000200 152756      BIT      #RDY,@RHCS1   ;IS READY SET
4646 030352 001003                BNE      1$           ;RDY SET CONT. TEST
4647 030354 104102                FRROR    102         ;READY DID NOT SET
4648 030356 004737 007224                JSR      R7,WHYFO     ;ANY ERRORS SET
4649 030362 032777 002000 152772 1$:      BIT      #DBL,@RHCS3   ;IS DOUBLE SET
4650 030370 001403                BEQ      2$           ;DBL SET
4651 030372 104161                ERROR    161         ;DBL DID SET ON A 3 WORD TRANSFER
4652 030374 004737 007224                JSR      R7,WHYFO     ;TELL WHY NOT
4653 030400 004737 006572 2$:      JSR      R7,CLEER     ;CLEAR ERRORS
4654 030404 004737 050210                JSR      R7,ERRTST
4655
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4657
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4660
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4662
4663 030410 000004                *****
4664 030412 005701                ;*TEST 45      DBL TEST 2 WORD READ FWD
4665 030414 100532                ;*THESE TEST CHECK DBL IN RHCS3 WITHREAD FWD AND REV
4666 030416 012777 177776 152706                ;*WRITE FWD AND REV AND WITH BAI SET IN RHCS2
4667 030424 012777 004000 152702                ;*OPERATION BEING PREFORMED WILL BE PRINTED OUT
4668 030432 012777 000000 152720                ;*IN ERROR MESSAGE.
4669 030440 012777 000007 152672                ;*.....RH70 ONLY.....
4670 030446 012777 000071 152654                *****
4671 030454 005037 003446                TST45. SCOPE
4672 030460 032777 000200 152642 18$:      TST      R1           ;IS IN AN RH11
4673 030466 001015                BMI      TST46        ;:GET OUT OF TEST
4674 030470 005237 003446                MOV      #-2,@RHWC    ;SET UP WC FOR TWO WORD
4675 030474 001371                MOV      #EVENAD,@RHBA ;SETUP BUS ADDRESS
4676 030476 005037 003446                MOV      #ZERO,@RHBAE ;SETUP BUS ADDRESS EXTENSION
4677 030502 032777 000200 152620 19$:      MOV      #7,@RHCS2    ;DEVICE 7
4678 030510 001004                MOV      #READO,@RHCS1 ;TELL IT TO READO
4679 030512 005237 003446                CLR      BITCNT       ;CLEAR BIT COUNTER
4680 030516 001401                BIT      #RDY,@RHCS1  ;IS RDY SET
4681 030520 000770                BNE      3$           ;BIT IS SET
4682 030522                INC      BITCNT       ;COUNT UP
4683 030522 017737 152602 003420                BNE      18$         ;NOT FINISHED COUNTING
4684 030530 017737 152576 003444                CLR      BITCNT       ;GET READY TO DO IT AGAIN
4685 030536 017737 152572 003414                BIT      #RDY,@RHCS1  ;IS IT SET YET?
4686 030544 005701                BNE      3$           ;YES
4687 030546 001406                INC      BITCNT       ;COUNT UP
4688 030550 005037 003416                BEQ      3$           ;BIT IS NOT GOING TO SET
4689 030554 005037 003424                BR
4690 030560 000137 030600 3$:      MOV      @RHCS1,CS1   ;SAVE RHCS1
4691 030564 017737 152570 003416 87$:      MOV      @RHWC,WC     ;SAVE WORD COUNT
4692 030572 017737 152564 003424                MOV      @RHBA,BA     ;SAVE BUS ADDRESS
4693 030600 017737 152534 003422 86$:      TST      R1           ;IS IT AN RH11
4694 030606 017737 152530 003432                BEQ      87$         ;NO IT'S A 70
4695 030614 017737 152524 003436                CLR      BAE         ;CLFAR BAE
4696 030622 017737 152522 003442                CLR      CS3         ;CLEAR CS3
4697                JMP      86$         ;CONTINUE
4698                MOV      @RHBAE,BAE   ;SAVE BUS ADDRESS EXTENSION
4699                MOV      @RHCS3,CS3   ;SAVE RHCS3
4700                MOV      @RHCS2,CS2   ;SAVE CS2
4701                MOV      @RHST,DS1   ;SAVE TESTER STATUS
4702                MOV      @RHER,ER1  ;SAVE ERROR REGISTER
4703                MOV      @RHTDB,TDR ;SAVE TESTER DATA REG.

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4697 030630 017737 152502 003440      MOV      @RHMR2,TC      ;SAVE MR2 TESTER REG.
4698 030636 032777 000200 152464      BIT      #RDY,@RHCS1   ;IS READY SET
4699 030644 001003          .          BNE      1$           ;RDY SET CONT. TEST
4700 030646 104102          .          ERROR   102        ;READY DID NOT SET
4701 030650 004737 007224          .          JSR      R7,WHYFO    ;ANY ERRORS SET
4702 030654 032777 002000 152500 1$:      BIT      #DBL,@RHCS3   ;IS DOUBLE SET
4703 030662 001003          .          BNE      2$           ;DBL SET
4704 030664 104162          .          ERROR   162        ;DBL DIDN'T SET ON A 2 WORD TRANSFER
4705 030666 004737 007224          .          JSR      R7,WHYFO    ;TELL WHY NOT
4706 030672 004737 005572          .          JSR      R7,CLEER    ;CLEAR ERRORS
4707 030676 004737 050210          .          JSR      R7,ERRST
4708
4709
4710
4711
4712
4713
4714
4715
4716 030702 000004          .          TST46: SCOPE
4717 030704 005701          .          TST      R1           ;IS IN AN RH11
4718 030706 100532          .          BMI      TST47      ;;GET OUT OF TEST
4719 030710 012777 177776 152414          .          MOV      #-2,@RHWC    ;SET UP WC FOR TWO WORD
4720 030716 012777 004002 152410          .          MOV      #ODDAD,@RHBA  ;SETUP BUS ADDRESS
4721 030724 012777 000000 152426          .          MOV      #ZERO,@RHBAE  ;SETUP BUS ADDRESS EXTENSION
4722 030732 012777 000007 152400          .          MOV      #7,@RHCS2     ;DEVICE 7
4723 030740 012777 000071 152362          .          MOV      #READO,@RHCS1 ;TELL IT TO READO
4724 030746 005037 003446          .          CLR      BITCNT     ;CLEAR BIT COUNTER
4725 030752 032777 000200 152350 18$:      BIT      #RDY,@RHCS1   ;IS RDY SET
4726 030760 001015          .          BNE      3$           ;BIT IS SET
4727 030762 005237 003446          .          INC      BITCNT     ;COUNT UP
4728 030766 001371          .          BNE      18$        ;NOT FINISHED COUNTING
4729 030770 005037 003446          .          CLR      BITCNT     ;GET READY TO DO IT AGAIN
4730 030774 032777 000200 152326 19$:      BIT      #RDY,@RHCS1   ;IS IT SET YET?
4731 031002 001004          .          BNE      3$           ;YES
4732 031004 005237 003446          .          INC      BITCNT     ;COUNT UP
4733 031010 001401          .          BEQ      3$           ;BIT IS NOT GOING TO SET
4734 031012 000770          .          BR       19$
4735 031014          .
4736 031014 017737 152310 003420 3$:      MOV      @RHCS1,CS1     ;SAVE RHCS1
4737 031022 017737 152304 003444          .          MOV      @RHWC,WC      ;SAVE WORD COUNT
4738 031030 017737 152300 003414          .          MOV      @RHBA,BA      ;SAVE BUS ADDRESS
4739 031036 005701          .          TST      R1           ;IS IT AN RH11
4740 031040 001406          .          BEQ      87$        ;NO IT'S A 70
4741 031042 005037 003416          .          CLR      BAE         ;CLEAR BAE
4742 031046 005037 003424          .          CLR      CS3         ;CLEAR CS3
4743 031052 000137 031072          .          JMP      86$           ;CONTINUE
4744 031056 017737 152276 003416 87$:      MOV      @RHBAE,BAE    ;SAVE BUS ADDRESS EXTENSION
4745 031064 017737 152272 003424          .          MOV      @RHCS3,CS3    ;SAVE RHCS3
4746 031072 017737 152242 003422 86$:      MOV      @RHCS2,CS2    ;SAVE CS2
4747 031100 017737 152236 003432          .          MOV      @RHST,DS1     ;SAVE TESTER STATUS
4748 031106 017737 152232 003436          .          MOV      @RHER,ER1     ;SAVE ERROR REGISTER
4749 031114 017737 152230 003442          .          MOV      @RHTDB,TDR    ;SAVE TESTER DATA REG.
4750 031122 017737 152210 003440          .          MOV      @RHMR2,TC     ;SAVE MR2 TESTER REG.
4751 031130 032777 000200 152172          .          BIT      #RDY,@RHCS1 ;IS READY SET
4752 031136 001003          .          BNE      1$           ;RDY SET CONT. TEST

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4753 031140 104102          ERROR 102          ;READY DID NOT SET
4754 031142 004737 007224    JSR    R7,WHYFO    ;ANY ERRORS SET
4755 031146 032777 002000 152206 1$:  BIT    #DBL,@RHCS3 ;IS DOUBLE SET
4756 031154 001403          BEQ    2$          ;DBL SET
4757 031156 104163          ERROR 163          ;DBL DID SET ON A 2 WORD TRANSFER
4758 031160 004737 007224    JSR    R7,WHYFO    ;TELL WHY NOT
4759 031164 004737 006572    2$:  JSR    R7,CLEER  ;CLEAR ERRORS
4760 031170 004737 050210    JSR    R7,ERRTST
4761
4762          ;*****
4763          ;*TEST 47          DBL TEST 2 WORD EVEN ADD. READ REV
4764          ;*THESE TEST CHECK DBL IN RHCS3 WITHREAD FWD AND REV
4765          ;*WRITE FWD AND REV AND WITH BAI SET IN RHCS2
4766          ;*OPERATION BEING PREFORMED WILL BE PRINTED OUT
4767          ;*IN ERROR MESSAGE.
4768          ;*.....RH70 ONLY.....
4769          ;*****
4769 031174 000004          TST47: SCOPE
4770 031176 005701          TST    R1          ;IS IN AN RH11
4771 031200 100532          BMI    TST50      ;:GET OUT OF TEST
4772 031202 012777 177776 152122    MOV    #-2,@RHWC  ;SET UP WC FOR TWO WORD
4773 031210 012777 004000 152116    MOV    #EVENAD,@RHBA ;SETUP BUS ADDRESS
4774 031216 012777 000000 152134    MOV    #ZERO,@RHBAE ;SETUP BUS ADDRESS EXTENSION
4775 031224 012777 000007 152106    MOV    #7,@RHCS2   ;DEVICE 7
4776 031232 012777 000077 152070    MOV    #READ6,@RHCS1 ;TELL IT TO READ6
4777 031240 005037 003446          CLR    BITCNT     ;CLEAR BIT COUNTER
4778 031244 032777 000200 152056 18$:  BIT    #RDY,@RHCS1 ;IS RDY SET
4779 031252 001015          BNE    3$         ;BIT IS SET
4780 031254 005237 003446          INC    BITCNT     ;COUNT UP
4781 031260 001371          BNE    18$       ;NOT FINISHED COUNTING
4782 031262 005037 003446          CLR    BITCNT     ;GET READY TO DO IT AGAIN
4783 031266 032777 000200 152034 19$:  BIT    #RDY,@RHCS1 ;IS IT SET YET?
4784 031274 001004          BNE    3$         ;YES
4785 031276 005237 003446          INC    BITCNT     ;COUNT UP
4786 031302 001401          BEQ    3$         ;BIT IS NOT GOING TO SET
4787 031304 000770          BR     19$
4788 031306          3$:
4789 031306 017737 152016 003420    MOV    @RHCS1,CS1 ;SAVE RHCS1
4790 031314 017737 152012 003444    MOV    @RHWC,WC   ;SAVE WORD COUNT
4791 031322 017737 152006 003414    MOV    @RHBA,BA   ;SAVE BUS ADDRESS
4792 031330 005701          TST    R1          ;IS IT AN RH11
4793 031332 001406          BEQ    87$       ;NO IT'S A 70
4794 031334 005037 003416          CLR    BAE        ;CLEAR BAE
4795 031340 005037 003424          CLR    CS3        ;CLEAR CS3
4796 031344 000137 031364          JMP    86$        ;CONTINUE
4797 031350 017737 152004 003416 87$:  MOV    @RHBAE,BAE ;SAVE BUS ADDRESS EXTENSION
4798 031356 017737 152000 003424    MOV    @RHCS3,CS3 ;SAVE RHCS3
4799 031364 017737 151750 003422 86$:  MOV    @RHCS2,CS2 ;SAVE CS2
4800 031372 017737 151744 003432    MOV    @RHST,DS1  ;SAVE TESTER STATUS
4801 031400 017737 151740 003436    MOV    @RHER,ER1  ;SAVE ERROR REGISTER
4802 031406 017737 151736 003442    MOV    @RHTDB,TDR ;SAVE TESTER DATA REG.
4803 031414 017737 151716 003440    MOV    @RHMR2,TC  ;SAVE MR2 TESTER REG.
4804 031422 032777 000200 151700    BIT    #RDY,@RHCS1 ;IS READY SET
4805 031430 001003          BNE    1$         ;RDY SET CONT. TEST
4806 031432 104102          ERROR 102          ;READY DID NOT SET
4807 031434 004737 007224    JSR    R7,WHYFO    ;ANY ERRORS SET
4808 031440 032777 002000 151714 1$:  BIT    #DBL,@RHCS3 ;IS DOUBLE SET

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4809 031446 001403          BEQ      2$          ;DBL SET
4810 031450 104164          ERROR    164        ;DBL DID SET ON A 2 WORD TRANSFER
4811 031452 004737 007224    JSR      R7,WHYFO   ;TELL WHY NOT
4812 031456 004737 006572    2$: JSR      R7,CLEER ;CLEAR ERRORS
4813 031462 004737 050210    JSR      R7,ERRTST
4814
4815
4816
4817
4818
4819
4820
4821
4822 031466 000004          *****
4823 031470 005701          *TEST 50          DBL TEST 2 WORD ODD ADD. READ REV
4824 031472 100532          ;*THESE TEST CHECK DBL IN RHCS3 WITHREAD FWD AND REV
4825 031474 012777 177776 151630  ;*WRITE FWD AND REV AND WITH BAI SET IN RHCS2
4826 031502 012777 004002 151624  ;*OPERATION BEING PREFORMED WILL BE PRINTED OUT
4827 031510 012777 000000 151642  ;*IN ERROR MESSAGE.
4828 031516 012777 000007 151614  ;*.....RH70 ONLY.....
4829 031524 012777 000077 151576  *****
4830 031532 005037 003446          TST50: SCOPE
4831 031536 032777 000200 151564 18$: TST      R1          ;IS IN AN RH11
4832 031544 001015          BMI      TST51      ;:GET OUT OF TEST
4833 031546 005237 003446          MOV      #-2,@RHWC  ;SET UP WC FOR TWO WORD
4834 031552 001371          MOV      #ODDAD,@RHBA ;SETUP BUS ADDRESS
4835 031554 005037 003446          MOV      #ZERO,@RHBAE ;SETUP BUS ADDRESS EXTENSION
4836 031560 032777 000200 151542 19$: MOV      #7,@RHCS2   ;DEVICE 7
4837 031566 001004          MOV      #READ6,@RHCS1 ;TELL IT TO READ6
4838 031570 005237 003446          CLR      BITCNT     ;CLEAR BIT COUNTER
4839 031574 001401          BIT      #RDY,@RHCS1 ;IS RDY SET
4840 031576 000770          BNE      3$        ;BIT IS SET
4841 031600          INC      BITCNT     ;COUNT UP
4842 031600 017737 151524 003420 3$: BNE      18$      ;NOT FINISHED COUNTING
4843 031606 017737 151520 003444          CLR      BITCNT     ;GET READY TO DO IT AGAIN
4844 031614 017737 151514 003414          BIT      #RDY,@RHCS1 ;IS IT SET YET?
4845 031622 005701          BNE      3$        ;YES
4846 031624 001406          INC      BITCNT     ;COUNT UP
4847 031626 005037 003416          BEQ      3$        ;BIT IS NOT GOING TO SET
4848 031632 005037 003424          BR       19$
4849 031636 000137 031656          MOV      @RHCS1,CS1 ;SAVE RHCS1
4850 031642 017737 151512 003416 87$: MOV      @RHWC,WC   ;SAVE WORD COUNT
4851 031650 017737 151506 003424          MOV      @RHBA,BA   ;SAVE BUS ADDRESS
4852 031656 017737 151456 003422 86$: TST      R1          ;IS IT AN RH11
4853 031664 017737 151452 003432          BEQ      87$      ;NO IT'S A 70
4854 031672 017737 151446 003436          CLR      BAE        ;CLEAR BAE
4855 031700 017737 151444 003442          CLR      CS3       ;CLEAR CS3
4856 031706 017737 151424 003440          JMP      86$       ;CONTINUE
4857 031714 032777 000200 151406          MOV      @RHBAE,BAE ;SAVE BUS ADDRESS EXTENSION
4858 031722 001003          MOV      @RHCS3,CS3 ;SAVE RHCS3
4859 031724 104102          MOV      @RHCS2,CS2 ;SAVE CS2
4860 031726 004737 007224          MOV      @RHST,DS1  ;SAVE TESTER STATUS
4861 031732 032777 002000 151422 1$: MOV      @RHER,ER1  ;SAVE ERROR REGISTER
4862 031740 001003          MOV      @RHTDB,TDR ;SAVE TESTER DATA REG.
4863 031742 104165          MOV      @RHMR2,TC  ;SAVE MR2 TESTER REG.
4864 031744 004737 007224          BIT      #RDY,@RHCS1 ;IS READY SET
          BNE      1$    ;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    165 ;DBL DIDN'T SET ON A 2 WORD TRANSFER
          JSR      R7,WHYFO ;TELL WHY NOT

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4865 031750 004737 006572
4866 031754 004737 050210
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4875 031760 000004
4876 031762 005701
4877 031764 100532
4878 031766 012777 177775 151336
4879 031774 012777 004000 151332
4880 032002 012777 000000 151350
4881 032010 012777 000007 151322
4882 032016 012777 000071 151304
4883 032024 005037 003446
4884 032030 032777 000200 151272 18\$:
4885 032036 001015
4886 032040 005237 003446
4887 032044 001371
4888 032046 005037 003446
4889 032052 032777 000200 151250 19\$:
4890 032060 001004
4891 032062 005237 003446
4892 032066 001401
4893 032070 000770
4894 032072
4895 032072 017737 151232 003420 3\$:
4896 032100 017737 151226 003444
4897 032106 017737 151222 003414
4898 032114 005701
4899 032116 001406
4900 032120 005037 003416
4901 032124 005037 003424
4902 032130 000137 032150
4903 032134 017737 151220 003416 87\$:
4904 032142 017737 151214 003424
4905 032150 017737 151164 003422 86\$:
4906 032156 017737 151160 003432
4907 032164 017737 151154 003436
4908 032172 017737 151152 003442
4909 032200 017737 151132 003440
4910 032206 032777 000200 151114
4911 032214 001003
4912 032216 104102
4913 032220 004737 007224
4914 032224 032777 002000 151130 1\$:
4915 032232 001403
4916 032234 104166
4917 032236 004737 007224
4918 032242 004737 006572
4919 032246 004737 050210
4920

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2$: JSR R7,CLEER ;CLEAR ERRORS
     JSR R7,ERRTST
;*****
;*TEST 51 DBL TEST 3 WORD EVEN ADD. READ FWD
;*THESE TEST CHECK DBL IN RHCS3 WITHREAD FWD AND REV
;*WRITE FWD AND REV AND WITH BAI SET IN RHCS2
;*OPERATION BEING PREFORMED WILL BE PRINTED OUT
;*IN ERROR MESSAGE.
;*.....RH70 ONLY.....
;*****
†ST51: SCOPE
      TST R1 ;IS IN AN RH11
      BMI TST52 ;;GET OUT OF TEST
      MOV #-3,@RHWC ;SET UP WC FOR THREE WORD
      MOV #EVENAD,@RHBA ;SETUP BUS ADDRESS
      MOV #ZERO,@RHBAE ;SETUP BUS ADDRESS EXTENSION
      MOV #7,@RHCS2 ;DEVICE 7
      MOV #READO,@RHCS1 ;TELL IT TO READO
      CLR BITCNT ;CLEAR BIT COUNTER
      BIT #RDY,@RHCS1 ;IS RDY SET
      BNE 3$ ;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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4928 032252 000004
4929 032254 005701
4930 032256 100532
4931 032260 012777 177775 151044
4932 032266 012777 004000 151040
4933 032274 012777 000000 151056
4934 032302 012777 000007 151030
4935 032310 012777 000077 151012
4936 032316 005037 003446
4937 032322 032777 000200 151000 18\$:
4938 032330 001015
4939 032332 005237 003446
4940 032336 001371
4941 032340 005037 003446
4942 032344 032777 000200 150756 19\$:
4943 032352 001004
4944 032354 005237 003446
4945 032360 001401
4946 032362 000770
4947 032364
4948 032364 017737 150740 003420
4949 032372 017737 150734 003444
4950 032400 017737 150730 003414
4951 032406 005701
4952 032410 001406
4953 032412 005037 003416
4954 032416 005037 003424
4955 032422 000137 032442
4956 032426 017737 150726 003416 87\$:
4957 032434 017737 150722 003424
4958 032442 017737 150672 003422 86\$:
4959 032450 017737 150666 003432
4960 032456 017737 150662 003436
4961 032464 017737 150660 003442
4962 032472 017737 150640 003440
4963 032500 032777 000200 150622
4964 032506 001003
4965 032510 104102
4966 032512 004737 007224
4967 032516 032777 002000 150636 1\$:
4968 032524 001003
4969 032526 104167
4970 032530 004737 007224
4971 032534 004737 006572
4972 032540 004737 050210
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4976

:*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
18\$: BIT #RDY,@RHCS1 ;IS RDY SET
BNE 3\$;BIT IS SET
INC BITCNT ;COUNT UP
BNE 18\$;NOT FINISHED COUNTING
CLR BITCNT ;GET READY TO DO IT AGAIN
19\$: BIT #RDY,@RHCS1 ;IS IT SET YET?
BNE 3\$;YES
INC BITCNT ;COUNT UP
BEQ 3\$;BIT IS NOT GOING TO SET
BR 19\$
3\$:
MOV @RHCS1,CS1 ;SAVE RHCS1
MOV @RHWC,WC ;SAVE WORD COUNT
MOV @RHBA,BA ;SAVE BUS ADDRESS
TST R1 ;IS IT AN RH11
BEQ 87\$;NO IT'S A 70
CLR BAE ;CLEAR BAE
CLR CS3 ;CLEAR CS3
JMP 86\$;CONTINUE
87\$: MOV @RHBAE,BAE ;SAVE BUS ADDRESS EXTENSION
MOV @RHCS3,CS3 ;SAVE RHCS3
86\$: MOV @RHCS2,CS2 ;SAVE CS2
MOV @RHST,DS1 ;SAVE TESTER STATUS
MOV @RHER,ER1 ;SAVE ERROR REGISTER
MOV @RHTDB,TDR ;SAVE TESTER DATA REG.
MOV @RHMR2,TC ;SAVE MR2 TESTER REG.
BIT #RDY,@RHCS1 ;IS READY SET
BNE 1\$;RDY SET CONT. TEST
ERROR 102 ;READY DID NOT SET
1\$: 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
2\$: 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

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4981 032544 000004
4982 032546 012737 000001 001212
4983 032554 005701
4984 032556 001402
4985 032560 000137 033336
4986 032564 012777 000007 150546
4987 032572 012777 000000 150560
4988 032600 012777 004000 150526
4989
4990 032606 013737 004000 004002
4991
4992 032614 012777 177776 150510
4993 032622 012777 000061 150500
4994 032630 005037 003446
4995 032634 032777 000200 150466
4996 032642 001015
4997 032644 005237 003446
4998 032650 001371
4999 032652 005037 003446
5000 032656 032777 000200 150444
5001 032664 001004
5002 032666 005237 003446
5003 032672 001401
5004 032674 000770
5005 032676
5006 032676 017737 150426 003420
5007 032704 017737 150422 003444
5008 032712 017737 150416 003414
5009 032720 005701
5010 032722 001406
5011 032724 005037 003416
5012 032730 005037 003424
5013 032734 000137 032754
5014 032740 017737 150414 003416
5015 032746 017737 150410 003424
5016 032754 017737 150360 003422
5017 032762 017737 150354 003432
5018 032770 017737 150350 003436
5019 032776 017737 150346 003442
5020 033004 017737 150326 003440
5021 033012 032777 000200 15031C
5022 033020 001003
5023 033022 104102
5024 033024 004737 007224
5025 033030 005137 004000
5026 033034 012777 004000 150272
5027 033042 012777 177776 150262
5028 033050 012777 000051 150252
5029 033056 005037 003446
5030 033062 032777 000200 150240
5031 033070 001015
5032 033072 005237 003446

; *IT ALSO CHECKS THAT WCEHI DOES NOT SET
; *WITH WCELO IN RHCS3.....
; *.....RH70 ONLY.....
;*****
TST53: SCOPE
MOV #1,$TIMES ;;DO 1 ITERATION
TST R1 ;IS IT AN RH11
BEQ 1$ ;IT'S AN RH70
JMP FANG ;IT'S AN RH11, EXIT TEST
1$: MOV #7,@RHCS2 ;SET DEVICE 7
MOV #ZERO,@RHBAE ;SETUP BUS ADDRESS EXT.
MOV #EVENAD,@RHBA ;SETUP BUS ADDRESS
;*****
CHGE1: MOV EVENAD,ODDAD ;MAKE BOTH ADD EQUAL
;*****
MOV #-2,@RHWC ;FOR TWO WORD TRANSFER
MOV #WRITE0,@RHCS1 ;TELL IT TO WRITE
CLR BITCNT ;CLEAR BIT COUNTER
18$: BIT #RDY,@RHCS1 ;IS RDY SET
BNE MITE ;BIT IS SET
INC BITCNT ;COUNT UP
BNE 18$ ;NOT FINISHED COUNTING
CLR BITCNT ;GET READY TO DO IT AGAIN
19$: BIT #RDY,@RHCS1 ;IS IT SET YET?
BNE MITE ;YES
INC BITCNT ;COUNT UP
BEQ MITE ;BIT IS NOT GOING TO SET
BR 19$

MITE: 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 VOUS ;RDY IS SET
ERROR 102 ;RDY DID NOT SET
JSR R7,WHYFO ;ANY ERRORS SET
VOUS: COM EVENAD ;INVERT BITS FOR WCELO
MOV #EVENAD,@RHBA ;FIX BUS ADDRESS
MOV #-2,@RHWC ;FIX WORD COUNT
MOV #WRCHO,@RHCS1 ;TELL IT TO WRITE CHECK
CLR BITCNT ;CLEAR BIT COUNTER
18$: BIT #RDY,@RHCS1 ;IS RDY SET
BNE FAST ;BIT IS SET
INC BITCNT ;COUNT UP

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5033 033076 001371          BNE      18$          ;NOT FINISHED COUNTING
5034 033100 005037 003446    CLR      BITCNT      ;GET READY TO DO IT AGAIN
5035 033104 032777 000200 150216 19$:  BIT      #RDY,@RHCS1 ;IS IT SET YET?
5036 033112 001004          BNE      FAST        ;YES
5037 033114 005237 003446    INC      BITCNT      ;COUNT UP
5038 033120 001401          BEQ      FAST        ;BIT IS NOT GOING TO SET
5039 033122 000770          BR       19$
5040 033124          FAST:
5041 033124 017737 150200 003420    MOV      @RHCS1,CS1  ;SAVE RHCS1
5042 033132 017737 150174 003444    MOV      @RHWC,WC    ;SAVE WORD COUNT
5043 033140 017737 150170 003414    MOV      @RHBA,BA    ;SAVE BUS ADDRESS
5044 033146 005701          TST      R1          ;IS IT AN RH11
5045 033150 001406          BEQ      87$        ;NO IT'S A 70
5046 033152 005037 003416    CLR      BAE        ;CLEAR BAE
5047 033156 005037 003424    CLR      CS3        ;CLEAR CS3
5048 033162 000137 033202          JMP      86$        ;CONTINUE
5049 033166 017737 150166 003416 87$:  MOV      @RHBAE,BAE  ;SAVE BUS ADDRESS EXTENSION
5050 033174 017737 150162 003424    MOV      @RHCS3,CS3 ;SAVE RHCS3
5051 033202 017737 150132 003422 86$:  MOV      @RHCS2,CS2 ;SAVE CS2
5052 033210 017737 150126 003432    MOV      @RHST,DS1  ;SAVE TESTER STATUS
5053 033216 017737 150122 003436    MOV      @RHER,ER1  ;SAVE ERROR REGISTER
5054 033224 017737 150120 003442    MOV      @RHTDB,TDR ;SAVE TESTER DATA REG.
5055 033232 017737 150100 003440    MOV      @RHMR2,TC  ;SAVE MR2 TESTER REG.
5056 033240 032777 000200 150062    BIT      #RDY,@RHCS1 ;IS READY SET
5057 033246 001003          BNE      SUPER      ;RDY IS SET
5058 033250 104102          ERROR    102        ;RDY DID NOT SET
5059 033252 004737 007224          JSR      R7,WHYFO   ;ANY ERRORS SET
5060 033256 032777 004000 150076 SUPER: BIT      #WCELO,@RHCS3 ;IS WCELO SET
5061 033264 001006          BNE      RITEON     ;WCELO IS SET
5062 033266 104132          ERROR    132        ;WCELO DID NOT SET IN RHCS3
5063 033270 004737 007224          JSR      R7,WHYFO   ;ANY ERRORS SET
5064 033274 105737 001103          TSTB    $ERFLG     ;WAS THERE AN ERROR
5065 033300 001005          BNE      TWANG      ;YES
5066 033302 032777 010000 150052 RITEON: BIT      #WCEHI,@RHCS3 ;IS WCEHI SET
5067 033310 001406          BEQ      TWANGY     ;WCEHI DID NOT SET
5068 033312 104133          ERROR    133        ;WCEHI SET WITH WCELO
5069 033314 032777 040000 150016 TWANG: BIT      #WCE,@RHCS2 ;DID WCE SET IN CS?
5070 033322 001001          BNE      TWANGY     ;YES,IT SHOULD BE
5071 033324 104134          ERROR    134        ;WCE DID NOT SET IN RHCS2
5072 033326 004737 006572          JSR      R7,CLEER   ;CLEAR ERRORS
5073 033332 004737 050210          JSR      R7,ERRST
5074 033336
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5082 033336 000004          TST54: SCOPE
5083 033340 005701          TST      R1          ;IS IT AN 11 OR A 70
5084 033342 001402          BEQ      1$        ;IT'S AN RH70
5085 033344 000137 034142          JMP      FANGY      ;IT'S AN RH11, EXIT TEST
5086 033350 012777 000007 147762 1$:  MOV      #7,@RHCS2  ;SET DEVICE 7
5087 033356 012777 177776 147746    MOV      #-2,@RHWC  ;TWO WORD TRANSFER
5088 033364 012777 004000 147742    MOV      #EVENAD,@RHBA ;SETUP BUS ADDRESS

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*****
*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.....
*****

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5089	033372	013737	004002	004000		MOV	ODDAD,EVENAD		:DUP ODDAD
5090	033400	012777	000061	147722		MOV	#WRITE0,@RHCS1		:TELL IT TO WRITE
5091	033406	005037	003446			CLR	BITCNT		:CLEAR BIT COUNTER
5092	033412	032777	000200	147710	18\$:	BIT	#RDY,@RHCS1		:IS RDY SET
5093	033420	001015				BNE	WCEOWT		:BIT IS SET
5094	033422	005237	003446			INC	BITCNT		:COUNT UP
5095	033426	001371				BNE	18\$:NOT FINISHED COUNTING
5096	033430	005037	003446			CLR	BITCNT		:GET READY TO DO IT AGAIN
5097	033434	032777	000200	147666	19\$:	BIT	#RDY,@RHCS1		:IS IT SET YET?
5098	033442	001004				BNE	WCEOWT		:YES
5099	033444	005237	003446			INC	BITCNT		:COUNT UP
5100	033450	001401				BEQ	WCEOWT		:BIT IS NOT GOING TO SET
5101	033452	000770				BR	19\$		
5102	033454								
5103	033454	017737	147650	003420		MOV	@RHCS1,CS1		:SAVE RHCS1
5104	033462	017737	147644	003444		MOV	@RHWC,WC		:SAVE WORD COUNT
5105	033470	017737	147640	003414		MOV	@RHBA,BA		:SAVE BUS ADDRESS
5106	033476	005701				TST	R1		:IS IT AN RH11
5107	033500	001406				BEQ	87\$:NO IT'S A 70
5108	033502	005037	003416			CLR	BAE		:CLEAR BAE
5109	033506	005037	003424			CLR	CS3		:CLEAR CS3
5110	033512	000137	033532			JMP	86\$:CONTINUE
5111	033516	017737	147636	003416	87\$:	MOV	@RHBAE,BAE		:SAVE BUS ADDRESS EXTENSION
5112	033524	017737	147632	003424		MOV	@RHCS3,CS3		:SAVE RHCS3
5113	033532	017737	147602	003422	86\$:	MOV	@RHCS2,CS2		:SAVE CS2
5114	033540	017737	147576	003432		MOV	@RHST,DS1		:SAVE TESTER STATUS
5115	033546	017737	147572	003436		MOV	@RHER,ER1		:SAVE ERROR REGISTER
5116	033554	017737	147570	003442		MOV	@RHTDB,TDR		:SAVE TESTER DATA REG.
5117	033562	017737	147550	003440		MOV	@RHMR2,TC		:SAVE MR2 TESTER REG.
5118	033570	032777	000200	147532		BIT	#RDY,@RHCS1		:IS READY SET
5119	033576	001003				BNE	BEAU		:RDY IS SET
5120	033600	104102				ERROR	102		:RDY DID NOT SET
5121	033602	004737	007224			JSR	R7,WHYFO		:ANY ERRORS SET
5122	033606	052777	000040	147524	BEAU:	BIS	#40,@RHCS2		:DO A CONTROLLER CLEAR
5123	033614	005037	003446			CLR	BITCNT		:SET UP FOR DELAY
5124	033620	005237	003446		17\$:	INC	BITCNT		:COUNT UP
5125	033624	001375				BNE	17\$		
5126	033626	012777	000007	147504		MOV	#7,@RHCS2		:SELECT UNIT #7
5127	033634	005137	004002			COM	ODDAD		:REVERSE BITS IN ODDAD
5128	033640	012777	004000	147466		MOV	#EVENAD,@RHBA		:CORRECT BUS ADDRESS
5129	033646	012777	177776	147456		MOV	#-2,@RHWC		:CORRECT WC
5130	033654	012777	000051	147446		MOV	#WRCHO,@RHCS1		:TELL IT TO WRITE CHECK
5131	033662	005037	003446			CLR	BITCNT		:CLEAR BIT COUNTER
5132	033666	032777	000200	147434	18\$:	BIT	#RDY,@RHCS1		:IS RDY SET
5133	033674	001015				BNE	WCEERR		:BIT IS SET
5134	033676	005237	003446			INC	BITCNT		:COUNT UP
5135	033702	001371				BNE	18\$:NOT FINISHED COUNTING
5136	033704	005037	003446			CLR	BITCNT		:GET READY TO DO IT AGAIN
5137	033710	032777	000200	147412	19\$:	BIT	#RDY,@RHCS1		:IS IT SET YET?
5138	033716	001004				BNE	WCEERR		:YES
5139	033720	005237	003446			INC	BITCNT		:COUNT UP
5140	033724	001401				BEQ	WCEERR		:BIT IS NOT GOING TO SET
5141	033726	000770				BR	19\$		
5142	033730								
5143	033730	017737	147374	003420		MOV	@RHCS1,CS1		:SAVE RHCS1
5144	033736	017737	147370	003444		MOV	@RHWC,WC		:SAVE WORD COUNT

WCEOWT:

BEAU:

WCEERR:

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5145 033744 017737 147364 003414      MOV    @RHBA,BA      :SAVE BUS ADDRESS
5146 033752 005701                    TST    R1            :IS IT AN RH11
5147 033754 001406                    BEQ    87$           :NO IT'S A 70
5148 033756 005037 003416      CLR    BAE           :CLEAR BAE
5149 033762 005037 003424      CLR    CS3           :CLEAR CS3
5150 033766 000137 034006      JMP    86$           :CONTINUE
5151 033772 017737 147362 003416 87$:  MOV    @RHBAE,BAE    :SAVE BUS ADDRESS EXTENSION
5152 034000 017737 147356 003424      MOV    @RHCS3,CS3    :SAVE RHCS3
5153 034006 017737 147326 003422 86$:  MOV    @RHCS2,CS2    :SAVE CS2
5154 034014 017737 147322 003432      MOV    @RHST,DS1     :SAVE TESTER STATUS
5155 034022 017737 147316 003436      MOV    @RHER,ER1     :SAVE ERROR REGISTER
5156 034030 017737 147314 003442      MOV    @RHTDB,TDR    :SAVE TESTER DATA REG.
5157 034036 017737 147274 003440      MOV    @RHMR2,TC     :SAVE MR2 TESTER REG.
5158 034044 032777 000200 147256      BIT    #RDY,@RHCS1   :IS READY SET
5159 034052 001003                    BNE    ERTIP         :RDY IS SET
5160 034054 104102                    ERROR  102           :RDY DID NOT SET
5161 034056 004737 007224      JSR    R7,WHYFO      :ANY ERRORS SET
5162 034062 032777 010000 147272 ERTIP: BIT    #WCEHI,@RHCS3  :IS WCEHI SET
5163 034070 001006                    BNE    BUSH          :WCEHI IS SET
5164 034072 104135                    ERROR  135           :WCEHI DID NOT SET IN RHCS3
5165 034074 004737 007224      JSR    R7,WHYFO      :ANY OTHER ERRORS SET
5166 034100 105737 001103      TSTB  $ERFLG         :WAS THERE AN ERROR
5167 034104 001012                    BNE    LEAGUE        :YES
5168 034106 032777 004000 147246 BUSH:  BIT    #WCELO,@RHCS3  :IS WCELO SET
5169 034114 001406                    BEQ    LEAGUE        :NO,WCELO IS OK
5170 034116 104137                    ERROR  137           :WCELO SET WITH WCEHI
5171 034120 032777 040000 147212 LEFOUT: BIT    #WCE,@RHCS2  :DID WCE SET
5172 034126 001001                    BNE    LEAGUE        :WCE IS SET IN RHCS2
5173 034130 104136                    ERROR  136           :WCE DID NOT SET IN RHCS2
5174 034132 004737 006572      LEAGUE: JSR    R7,CLEER  :CLEAR ERRORS
5175 034136 004737 050210      JSR    R7,ERTST
5176 034142
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5182 034142 000004      TST55: SCOPE
5183 034144 012777 000007 147166      MOV    #7,@RHCS2    :SETUP UNIT NUMBER
5184 034152 012777 004000 147154      MOV    #EVENAD,@RHBA :SETUP BUS ADDRESS
5185 034160 005701                    TST    R1            :RH11 OR RH70 ?
5186 034162 100403                    BMI    READY         :ITS AN RH11
5187 034164 012777 000000 147166      MOV    #ZERO,@RHBAE :ZERO THE BAE
5188 034172 012777 034454 147206 READY: MOV    #IETST,@VECADD :SET UP VECTOR ADDRESS
5189 034200 012737 000340 177776      MOV    #340,PS      :SET PRIORITY 7
5190 034206 012777 177777 147116      MOV    #-1,@RHWC    :SET FOR ONE WORD
5191 034214 012777 000161 147106      MOV    #WRITEO!IE,@RHCS1 :TELL IT TO WRITE
5192 034222 032777 000100 147100      BIT    #IE,@RHCS1   :IS IE SET
5193 034230 001001                    BNF    2$            :YES CONTINUE TEST
5194 034232 104174                    ERROR  174           :IE WILL NOT SET
5195 034234 005037 177776 2$:    CLR    @#177776
5196 034240 005037 003446      CLR    BITCNT        :CLEAR BIT COUNTER
5197 034244 032777 000200 147056 18$:  BIT    #RDY,@RHCS1  :IS RDY SET
5198 034252 001015                    BNE    TSTIE         :BIT IS SET
5199 034254 005237 003446      INC    BITCNT        :COUNT UP
5200 034260 00371                    BNE    8$            :NOT FINISHED COUNTING
```

5201	034262	005037	003446			CLR	BITCNT		:GET READY TO DO IT AGAIN
5202	034266	032777	000200	147034	19\$:	BIT	#RDY,@RHCS1		:IS IT SET YET?
5203	034274	001004				BNE	TSTIE		:YES
5204	034276	005237	003446			INC	BITCNT		:COUNT UP
5205	034302	001401				BEQ	TSTIE		:BIT IS NOT GOING TO SET
5206	034304	000770				BR	19\$		
5207	034306								
5208	034306	017737	147016	003420		MOV	@RHCS1,CS1		:SAVE RHCS1
5209	034314	017737	147012	003444		MOV	@RHWC,WC		:SAVE WORD COUNT
5210	034322	017737	147006	003414		MOV	@RHBA,BA		:SAVE BUS ADDRESS
5211	034330	005701				TST	R1		:IS IT AN RH11
5212	034332	001406				BEQ	87\$:NO I'S A 70
5213	034334	005037	003416			CLR	BAE		:CLEAR BAE
5214	034340	005037	003424			CLR	CS3		:CLEAR CS3
5215	034344	000137	034364			JMP	86\$:CONTINUE
5216	034350	017737	147004	003416	87\$:	MOV	@RHBAE,BAE		:SAVE BUS ADDRESS EXTENSION
5217	034356	017737	147000	003424		MOV	@RHCS3,CS3		:SAVE RHCS3
5218	034364	017737	146750	003422	86\$:	MOV	@RHCS2,CS2		:SAVE CS2
5219	034372	017737	146744	003432		MOV	@RHST,DS1		:SAVE TESTER STATUS
5220	034400	017737	146740	003436		MOV	@RHER,ER1		:SAVE ERROR REGISTER
5221	034406	017737	146736	003442		MOV	@RHTDB,TDR		:SAVE TESTER DATA REG.
5222	034414	017737	146716	003440		MOV	@RHMR2,TC		:SAVE MR2 TESTER REG.
5223	034422	032777	000200	146700		BIT	#RDY,@RHCS1		:IS READY SET ?
5224	034430	001003				BNE	1\$:YES
5225	034432	104102				ERROR	102		:READY DID NOT SET
5226	034434	000137	034466			JMP	SPLIT		:EXIT TEST
5227	034440	105737	001103		1\$:	TSTB	\$ERFLG		:WAS IE SET
5228	034444	001010				BNE	SPLIT		:NO,EXIT TEST
5229	034446	104173				ERROR	173		:RDY DID NOT CAUSE AN INTERRUPT
5230	034450	000137	034466			JMP	SPLIT		:EXIT TEST
5231	034454	022626			1ETST:	CMPL	(SP)+,(SP)+		:CORRECT STACK

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T55 INTERRUPT ENABLE TEST

SEQ 0099

5232	034456	105737	001103
5233	034462	001401	
5234	034464	104175	
5235	034466	004737	006572
5236	034472	004737	050210

	TSTB	\$ERFLG	
	BEQ	SPLIT	
	ERROR	175	
SPLIT:	JSR	R7,CLEER	
	JSR	R7,ERRTST	

:DID IE SET
:YES,EXIT TEST
:IE HAS OPEN GOING TO BUS
:CLEAR ERRORS

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034476 000004
 034500 012777 000007 146632
 034506 012777 177777 146616
 034514 012777 004100 146612
 034522 012737 000000 004100
 034530 012777 125252 146612
 034536 005701
 034540 100403
 034542 012777 000000 146610
 034550 012777 000071 146552
 034556 005037 003446
 034562 032777 000200 146540
 034570 001015
 034572 005237 003446
 034576 001371
 034600 005037 003446
 034604 032777 000200 146516
 034612 001004
 034614 005237 003446
 034620 001401
 034622 000770
 034624
 034624 017737 146500 003420
 034632 017737 146474 003444
 034640 017737 146470 003414
 034646 005701
 034650 001406
 034652 005037 003416
 034656 005037 003424
 034662 000137 034702
 034666 017737 146466 003416
 034674 017737 146462 003424
 034702 017737 146432 003422
 034710 017737 146426 003432
 034716 017737 146422 003436
 034724 017737 146420 003442
 034732 017737 146400 003440
 034740 017737 146404 001162
 034746 032777 000200 146354
 034754 001003
 034756 104102
 034760 004737 007224
 034764 023777 004100 146356
 034772 001407
 034774 005737 004100
 035000 001403
 035002 104147

 *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
 1\$: MOV #READ0,@RHCS1 ;TELL IT TO READ0
 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
 ERROR 147 ;ALL BITS DID NOT LOAD DURING
 ;AN READ0 OPERATION

5293 035004 000137 035012
5294 035010 104150
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5296 035012 004737 007224
5297 035016 105737 001103
5298 035022 001402
5299 035024 104146
5300 035026 104170
5301 035030 004737 006572
5302 035034 004737 050210
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5311 035040 000004
5312 035042 012777 000007 146270
5313 035050 012737 125252 004000
5314 035056 012777 000003 146270
5315 035064 012777 177777 146240
5316 035072 005701
5317 035074 100403
5318 035076 012777 000000 146254
5319 035104 012777 004000 146222
5320 035112 012777 000061 146210
5321 035120 012777 000001 146226
5322 035126 005037 003446
5323 035132 005237 003446
5324 035136 022737 000015 003446
5325 035144 001372
5326 035146 012777 000003 146200
5327 035154 012777 000001 146172
5328 035162 012777 000003 146164
5329 035170 012777 000001 146156
5330 035176 012777 000000 146150
5331 035204 005037 003446
5332 035210 032777 000200 146112
5333 035216 001015
5334 035220 005237 003446
5335 035224 001371
5336 035226 005037 003446
5337 035232 032777 000200 146070
5338 035240 001004
5339 035242 005237 003446
5340 035246 001401
5341 035250 000770
5342 035252
5343 035252 017737 146052 003420
5344 035260 017737 146046 003444
5345 035266 017737 146042 003414
5346 035274 005701
5347 035276 001406
5348 035300 005037 003416

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 #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 #WRITE0,@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 SUSEC WAIT
BNE 2\$:NO LOOP AGAIN
MOV #DMD.MCLK,@RHMR1 :START CHANGING CLOCK
MOV #DMD,@RHMR1 :CHANGE CLOCK AGAIN
MOV #DMD:MCLK,@RHMR1 :CHANGE CLOCK AGAIN
MOV #DMD,@RHMR1 :CHANGE CLOCK AGAIN
MOV #ZERO,@RHMR1 :GET OUT OF DIAG MODE
CLR BITCNT :CLEAR BIT COUNTER
18\$: BIT #RDY,@RHCS1 :IS RDY SET
BNE 7\$:BIT IS SET
INC BITCNT :COUNT UP
BNE 18\$:NOT FINISHED COUNTING
CLR BITCNT :GET READY TO DO IT AGAIN
19\$: BIT #RDY,@RHCS1 :IS IT SET YET?
BNE 7\$:YES
INC BITCNT :COUNT UP
BEQ 7\$:BIT IS NOT GOING TO SET
BR 19\$
7\$: MOV @RHCS1,CS1 :SAVE RHCS1
MOV @RHWC,WC :SAVE WORD COUNT
MOV @RHBA,BA :SAVE BUS ADDRESS
TST R1 :IS IT AN RH11
BEQ 87\$:NO IT'S A 70
CLR BAE :CLEAR BAE

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5349 035304 005037 003424 CLR CS3 ;CLEAR CS3
5350 035310 000137 035330 JMP 86$ ;CONTINUE
5351 035314 017737 146040 003416 87$: MOV @RHBAE,BAE ;SAVE BUS ADDRESS EXTENSION
5352 035322 017737 146034 003424 ; MOV @RHCS3,CS3 ;SAVE RHCS3
5353 035330 017737 146004 003422 86$: MOV @RHCS2,CS2 ;SAVE CS2
5354 035336 017737 146000 003432 MOV @RHS1,DS1 ;SAVE TESTER STATUS
5355 035344 017737 145774 003436 MOV @RHER,ER1 ;SAVE ERROR REGISTER
5356 035352 017737 145772 003442 MOV @RHTDB,TDR ;SAVE TESTER DATA REG.
5357 035360 017737 145752 003440 MOV @RHMR2,TC ;SAVE MR2 TESTER REG.
5358 035366 017737 145756 001162 MOV @RHTDB,$REGO ;GET DATA
5359 035374 032777 000200 145726 BIT #RDY,@RHCS1 ;IS READY SET
5360 035402 001001 BNE 8$ ;YES,CONTINUE TEST
5361 035404 104102 ERROR 102 ;READY DID NOT SET
5362 035406 022777 177777 145716 8$: CMP #-1,@RHWC ;DID WC INCREMENT
5363 035414 001001 BNE 3$ ;YES,CONT TEST
5364 035416 104140 ERROR 140 ;WRITETO OPERATION DID NOT INC WC
5365 035420 022777 004002 145706 3$: CMP #ODDAD,@RHBA ;DID BA INCREMENT
5366 035426 001401 BEQ 4$ ;YES CONT TEST
5367 035430 104141 ERROR 141 ;BA DID NOT INCREMENT AFTER AN WRITETO OPERATION
5368 035432 023777 004000 145710 4$: CMP EVENAD,@RHTDB ;DID INFO WRITETO TESTER
5369 035440 001401 BEQ 5$ ;YES,CONT
5370 035442 104142 ERROR 142 ;INFO DID NOT WRITETO TESTER
5371 035444 004737 007224 5$: JSR R7,WHYFO ;ARE ANY ERROR BITS SET
5372 035450 105737 001103 TSTB $ERFLG ;WAS THER AN ERROR
5373 035454 001402 BEQ 6$ ;NO EXIT TEST
5374 035456 104146 ERROR 146 ;THESE ARE THE CONTENTS OF ALL RH70 REG.
5375 035460 104170 ERROR 170 ;THIS IS TO COMMPLETE ERROR PRINTOUT
5376 035462 004737 006572 6$: JSR R7,CLEER ;CLEER ERRORS IF ANY
5377 035466 004737 050210 JSR R7,ERRTST
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5379 ;*****
5380 ;*TEST 60 READ OPERATIONAL TEST (NORMAL) #2
5381 ;*THESE TESTS VERIFY ALL READ AND WRITE CODES
5382 ;*WHETHER IT BE A READ REV. OR FWD OR A WRITE REV. OR FWD
5383 ;*DURING THESE TESTS THE TESTER TIMING IS MARGINED AND
5384 ;*NO ERRORS SHOULD OCCUR
5385 ;*****
5386 035472 000004 TST60: SCOPE
5387 035474 012777 000007 145636 MOV #7,@RHCS2 ;SETUP UNIT SEVEN
5388 035502 012777 177777 145622 MOV #-1,@RHWC ;FOR ONE WORD
5389 035510 012777 004100 145616 MOV #RBUF,@RHBA ;SRTUP BA
5390 035516 012737 000000 004100 MOV #ZERO,RBUF ;SETUP DATA
5391 035524 012777 125252 145616 MOV #OAB,@RHTDB ;SETUP TESTER DB
5392 035532 005701 TST R1 ;IS IT AN 11 OR A 70
5393 035534 100403 BMI 1$ ;IT'S AN RH11
5394 035536 012777 000000 145614 MOV #ZERO,@RHBAE ;ZERO BAE
5395 035544 012777 000073 145556 1$: MOV #READ2,@RHCS1 ;TELL IT TO READ2
5396 035552 005037 003446 CLR BITCNT ;CLEAR BIT COUNTER
5397 035556 032777 000200 145544 18$: BIT #RDY,@RHCS1 ;IS RDY SET
5398 035564 001015 BNE 2$ ;BIT IS SET
5399 035566 005237 003446 INC BITCNT ;COUNT UP
5400 035572 001371 BNE 18$ ;NOT FINISHED COUNTING
5401 035574 005037 003446 CLR BITCNT ;GET READY TO DO IT AGAIN
5402 035600 032777 000200 145522 19$: BIT #RDY,@RHCS1 ;IS IT SET YET?
5403 035606 001004 BNE 2$ ;YES
5404 035610 005237 003446 INC BITCNT ;COUNT UP

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5405 035614 001401 BEQ 2$ ;BIT IS NO* GOING TO SET
5406 035616 000770 BR 19$
5407 035620 2$:
5408 035620 017737 145504 003420 MOV @RHCS1,CS1 ;SAVE RHCS1
5409 035626 017737 145500 003444 MOV @RHWC,WC ;SAVE WORD COUNT
5410 035634 017737 145474 003414 MOV @RHBA,BA ;SAVE BUS ADDRESS
5411 035642 005701 TST R1 ;IS IT AN RH11
5412 035644 001406 BEQ 87$ ;NO IT'S A 70
5413 035646 005037 003416 CLR BAE ;CLEAR BAE
5414 035652 005037 003424 CLR CS3 ;CLEAR CS3
5415 035656 000137 035676 JMP 86$ ;CONTINUE
5416 035662 017737 145472 003416 87$: MOV @RHBAE,BAE ;SAVE BUS ADDRESS EXTENSION
5417 035670 017737 145466 003424 MOV @RHCS3,CS3 ;SAVE RHCS3
5418 035676 017737 145436 003422 86$: MOV @RHCS2,CS2 ;SAVE CS2
5419 035704 017737 145432 003432 MOV @RHST,DS1 ;SAVE TESTER STATUS
5420 035712 017737 145426 003436 MOV @RHER,ER1 ;SAVE ERROR REGISTER
5421 035720 017737 145424 003442 MOV @RHTDB,TDR ;SAVE TESTER DATA REG.
5422 035726 017737 145404 003440 MOV @RHMR2,TC ;SAVE MR2 TESTER REG.
5423 035734 017737 145410 001162 MOV @RHTDB,$REGO ;GET DATA
5424 035742 032777 000200 145360 BIT #RDY,@RHCS1 ;IS OR SET
5425 035750 001003 BNE 3$ ;YES RDY IS SET
5426 035752 104102 ERROR 102 ;READY DID NOT SET
5427 035754 004737 007224 JSR R7,WHYFO ;ARE ANY ERRORS SET
5428 035760 023777 004100 145362 3$: CMP RBUF,@RHTDB ;DID INFO GET WRITTEN OR READ
5429 035766 001407 BEQ 4$ ;INFO GOT LOADED
5430 035770 005737 004100 TST RBUF ;DOES RBUF = 0
5431 035774 001403 BEQ 5$ ;YES INFO DID NOT LOAD
5432 035776 104147 ERROR 147 ;ALL BITS DID NOT LOAD DURING
5433 ;AN READ2 OPERATION
5434 036000 000137 036006 JMP 4$ ;EXIT TEST
5435 036004 104150 5$: ERROR 150 ;READ2 OPERATION DID NOT WORK
5436 ;NO BITS WERE LOADED TO RBUF
5437 036006 004737 007224 4$: JSR R7,WHYFO ;ANY ERRORS SET
5438 036012 105737 001103 TSTB $ERFLG ;ANY ERRORS ?
5439 036016 001402 BEQ 6$ ;NO,EXIT TEST
5440 036020 104146 ERROR 146 ;PRINT REGISTERS
5441 036022 104170 ERROR 170
5442 036024 004737 006572 6$: JSR R7,CLEER ;CLEAR ERRORS
5443 036030 004737 050210 JSR R7,ERRTST
5444 ;*****
5445 ;*TEST 61 READ OPERATIONAL TEST #1
5446 ;*THESE TESTS VERIFY ALL READ AND WRITE CODES
5447 ;*WHETHER IT BE A READ REV. OR FWD OR A WRITE REV. OR FWD
5448 ;*DURING THESE TESTS THE TESTER TIMING IS MARGINED AND
5449 ;*NO ERRORS SHOULD OCCUR
5450 ;*****
5451 TST61: SCOPE
5452 036034 000004 MOV #7,@RHCS2 ;SETUP UNIT SEVEN
5453 036036 012777 000007 145274 MOV #AB,@RHTDB ;SETUP INFORMATION
5454 036044 012777 052525 145276 MOV #DMD!MCLK,@RHMR1 ;SETUP DIAG. MODE
5455 036052 012777 000003 145274 MOV #-1,@RHWC ;FOR ONE WORD
5456 036060 012777 177777 145244 TST R1 ;IS IT A 11 OR 70
5457 036066 005701 BMI 1$ ;IT'S AN 11
5458 036070 100403 MOV #ZERO,@RHBAE ;ZERO BAE
5459 036072 012777 000000 145260 1$: MOV #EVENAD,@RHBA ;SETUP BA
5460 036100 012777 004000 145226
```


5461	036106	012777	000071	145214		MOV	#READ0,@RHCS1	:TELL IT TO READFROM
5462	036114	012777	000001	145232		MOV	#DMD,@RHMR1	:MANIPULATE CLOCK
5463	036122	005037	003446			CLR	BITCNT	:CLEAR LOOP COUNTER
5464	036126	005237	003446		2\$:	INC	BITCNT	:INCREMENT LOOP COUNTER
5465	036132	022737	000015	003446		CMP	#15,BITCNT	:IS IT THIRD LOOP FOR 5USEC WAIT
5466	036140	001372				BNE	2\$:NO LOOP AGAIN
5467	036142	012777	000003	145204		MOV	#DMD!MCLK,@RHMR1	:START CHANGING CLOCK
5468	036150	012777	000001	145176		MOV	#DMD,@RHMR1	:CHANGE CLOCK AGAIN
5469	036156	012777	000003	145170		MOV	#DMD!MCLK,@RHMR1	:CHANGE CLOCK AGAIN
5470	036164	012777	000001	145162		MOV	#DMD,@RHMR1	:CHANGE CLOCK AGAIN
5471	036172	012777	000000	145154		MOV	#ZERO,@RHMR1	:GET OUT OF DIAG MODE
5472	036200	005037	003446			CLR	BITCNT	:CLEAR BIT COUNTER
5473	036204	032777	000200	145116	18\$:	BIT	#RDY,@RHCS1	:IS RDY SET
5474	036212	001015				BNE	7\$:BIT IS SET
5475	036214	005237	003446			INC	BITCNT	:COUNT UP
5476	036220	001371				BNE	18\$:NOT FINISHED COUNTING
5477	036222	005037	003446			CLR	BITCNT	:GET READY TO DO IT AGAIN
5478	036226	032777	000200	145074	19\$:	BIT	#RDY,@RHCS1	:IS IT SET YET?
5479	036234	001004				BNE	7\$:YES
5480	036236	005237	003446			INC	BITCNT	:COUNT UP
5481	036242	001401				BEQ	7\$:BIT IS NOT GOING TO SET
5482	036244	000770				BR	19\$	
5483	036246				7\$:			
5484	036246	017737	145056	003420		MOV	@RHCS1,CS1	:SAVE RHCS1
5485	036254	017737	145052	003444		MOV	@RHWC,WC	:SAVE WORD COUNT
5486	036262	017737	145046	003414		MOV	@RHBA,BA	:SAVE BUS ADDRESS
5487	036270	005701				TST	R1	:IS IT AN RH11
5488	036272	001406				BEQ	87\$:NO IT'S A 70
5489	036274	005037	003416			CLR	BAE	:CLEAR BAF
5490	036300	005037	003424			CLR	CS3	:CLEAR CS3
5491	036304	000137	036324			JMP	86\$:CONTINUE
5492	036310	017737	145044	003416	87\$:	MOV	@RHBAE,BAE	:SAVE BUS ADDRESS EXTENSION
5493	036316	017737	145040	003424		MOV	@RHCS3,CS3	:SAVE RHCS3
5494	036324	017737	145010	003422	86\$:	MOV	@RHCS2,CS2	:SAVE CS2
5495	036332	017737	145004	003432		MOV	@RHST,DS1	:SAVE TESTER STATUS
5496	036340	017737	145000	003436		MOV	@RHER,ER1	:SAVE ERROR REGISTER
5497	036346	017737	144776	003442		MOV	@RHTDB,TDR	:SAVE TESTER DATA REG.
5498	036354	017737	144756	003440		MOV	@RHMR2,TC	:SAVE MR2 TESTER REG.
5499	036362	017737	144762	001162		MOV	@RHTDB,\$REGO	:GET DATA
5500	036370	032777	000200	144732		BIT	#RDY,@RHCS1	:IS READY SET
5501	036376	001001				BNE	8\$:YES,CONTINUE TEST
5502	036400	104102				ERROR	102	:READY DID NOT SET
5503	036402	022777	177777	144722	8\$:	CMP	#-1,@RHWC	:DID WC INCREMENT
5504	036410	001001				BNE	3\$:YES,CONT TEST
5505	036412	104143				ERROR	143	:READFROM OP. RATION DID NOT INC WC
5506	036414	022777	004002	144712	3\$:	CMP	#ODDAD,@RHBA	:DID BA INCREMENT
5507	036422	001401				BEQ	4\$:YES CONT TEST
5508	036424	104144				ERROR	144	:BA DID NOT INCREMENT AFTER AN READFROM OPERATIO
5509	036426	023777	004000	144714	4\$:	CMP	EVENAD,@RHTDB	:DID INFO READFROM TESTER
5510	036434	001401				BEQ	5\$:YES,CONT
5511	036436	104145				ERROR	145	:INFO DID NOT READFROM TESTER
5512	036440	004737	007224		5\$:	JSR	R7,WHYFO	:ARE ANY ERROR BITS SET
5513	036444	105737	001103			TSTB	\$ERFLG	:WAS THER AN ERROR
5514	036450	001402				BEQ	6\$:NO EXIT TEST
5515	036452	104146				ERROR	146	:THESE ARE THE CONTENTS OF ALL RH70 REG.
5516	036454	104170				ERROR	170	:THIS IS TO COMPLETE ERROR PRINTOUT

5517 036456 004737 006572
5518 036462 004737 050210
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5527 036466 000004
5528 036470 012777 000007 144642
5529 036476 012777 177777 144626
5530 036504 012777 004100 144622
5531 036512 012737 000000 004100
5532 036520 012777 125252 144622
5533 036526 005701
5534 036530 100403
5535 036532 012777 000000 144620
5536 036540 012777 000075 144562 18\$:
5537 036546 005037 003446
5538 036552 032777 000200 144550 18\$:
5539 036560 001015
5540 036562 005237 003446
5541 036566 001371
5542 036570 005037 003446
5543 036574 032777 000200 144526 19\$:
5544 036602 001004
5545 036604 005237 003446
5546 036610 001401
5547 036612 000770
5548 036614
5549 036614 017737 144510 003420 2\$:
5550 036622 017737 144504 003444
5551 036630 017737 144500 003414
5552 036636 005701
5553 036640 001406
5554 036642 005037 003416
5555 036646 005037 003424
5556 036652 000137 036672
5557 036656 017737 144476 003416 87\$:
5558 036664 017737 144472 003424
5559 036672 017737 144442 003422 86\$:
5560 036700 017737 144436 003432
5561 036706 017737 144432 003436
5562 036714 017737 144430 003442
5563 036722 017737 144410 003440
5564 036730 017737 144414 001162
5565 036736 032777 000200 144364
5566 036744 001003
5567 036746 104102
5568 036750 004737 007224
5569 036754 023777 004100 144366 3\$:
5570 036762 001407
5571 036764 005737 004100
5572 036770 001403

6\$: JSR R7,CLEER ;CLEER ERRORS IF ANY
JSR R7,ERRTST
:*****
:*TEST 62 READ OPERATIONAL TEST (NORMAL) #3
:*THESE TESTS VERIFY ALL READ AND WRITE CODES
:*WHETHER IT BE A READ REV. OR FWD OR A WRITE REV. OR FWD
:*DURING THESE TESTS THE TESTER TIMING IS MARGINED AND
:*NO ERRORS SHOULD OCCUR
:*****
TST62: SCOPE
MOV #7,@RHCS2 ;SETUP UNIT SEVEN
MOV #-1,@RHWC ;FOR ONE WORD
MOV #RBUF,@RHBA ;SRTUP BA
MOV #ZERO,RBUF ;SETUP DATA
MOV #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.
;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

5573 036772 104147
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5575 036774 000137 037002
5576 037000 104150
5577
5578 037002 004737 007224
5579 037006 105737 001103
5580 037012 001402
5581 037014 104146
5582 037016 104170
5583 037020 004737 006572
5584 037024 004737 050210

ERROR 147
5\$: JMP 4\$
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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T63 RH OPERATIONAL WRITE TEST #2

SFO 0107

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5593 037030 000004

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

5594	037032	012777	000007	144300		MOV	#7,@RHCS2	:SETUP UNIT SEVEN
5595	037040	012737	125252	004000		MOV	#OAB,EVENAD	:SETUP INFORMATION
5596	037046	012777	001003	144300		MOV	#DMD:MCLK:SLKM,@RHMR1	:SETUP DIAG. MODE
5597	037054	012777	177777	144250		MOV	#-1,@RHWC	:FOR ONE WORD
5598	037062	005701				TST	R1	:IS IT A 11 OR 70
5599	037064	100403				BMI	1\$:IT'S AN 11
5600	037066	012777	000000	144264		MOV	#ZERC,@RHBAE	:ZERO BAE
5601	037074	012777	004000	144232	1\$:	MOV	#EVENAD,@RHBA	:SETUP BA
5602	037102	012777	000063	144220		MOV	#WRITE2,@RHCS1	:TELL IT TO WRITETO
5603	037110	012777	001001	144236		MOV	#DMD:SLKM,@RHMR1	:MANIPULATE CLOCK
5604	037116	005037	003446			CLR	BITCNT	:CLEAR LOOP COUNTER
5605	037122	005237	003446		2\$:	INC	BITCNT	:INCREMENT LOOP COUNTER
5606	037126	022737	000015	003446		CMP	#15,BITCNT	:IS IT THIRD LOOP FOR 5USEC WAIT
5607	037134	001372				BNE	2\$:NO LOOP AGAIN
5608	037136	012777	001003	144210		MOV	#DMD:MCLK:SLKM,@RHMR1	:START CHANGING CLOCK
5609	037144	012777	001001	144202		MOV	#DMD:SLKM,@RHMR1	:CHANGE CLOCK AGAIN
5610	037152	012777	001003	144174		MOV	#DMD:MCLK:SLKM,@RHMR1	:CHANGE CLOCK AGAIN
5611	037160	012777	001001	144166		MOV	#DMD:SLKM,@RHMR1	:CHANGE CLOCK AGAIN
5612	037166	012777	000000	144160		MOV	#ZERO,@RHMR1	:GET OUT OF DIAG MODE
5613	037174	005037	003446			CLR	BITCNT	:CLEAR BIT COUNTER
5614	037200	032777	000200	144122	18\$:	BIT	#RDY,@RHCS1	:IS RDY SET
5615	037206	001015				BNE	7\$:BIT IS SET
5616	037210	005237	003446			INC	BITCNT	:COUNT UP
5617	037214	001371				BNE	18\$:NOT FINISHED COUNTING
5618	037216	005037	003446			CLR	BITCNT	:GET READY TO DO IT AGAIN
5619	037222	032777	000200	144100	19\$:	BIT	#RDY,@RHCS1	:IS IT SET YET?
5620	037230	001004				BNE	7\$:YES
5621	037232	005237	003446			INC	BITCNT	:COUNT UP
5622	037236	001401				BEQ	7\$:BIT IS NOT GOING TO SET
5623	037240	000770				BR	19\$	
5624	037242				7\$:			
5625	037242	017737	144062	003420		MOV	@RHCS1,CS1	:SAVE RHCS1
5626	037250	017737	144056	003444		MOV	@RHWC,WC	:SAVE WORD COUNT
5627	037256	017737	144052	003414		MOV	@RHBA,BA	:SAVE BUS ADDRESS
5628	037264	005701				TST	R1	:IS IT AN RH11
5629	037266	001406				BEQ	87\$:NO IT'S A 70
5630	037270	005037	003416			CLR	BAE	:CLEAR BAE
5631	037274	005037	003424			CLR	CS3	:CLEAR CS3
5632	037300	000137	037320			JMP	86\$:CONTINUE
5633	037304	017737	144050	003416	87\$:	MOV	@RHBAE,BAE	:SAVE BUS ADDRESS EXTENSION
5634	037312	017737	144044	003424		MOV	@RHCS3,CS3	:SAVE RHCS3
5635	037320	017737	144014	003422	86\$:	MOV	@RHCS2,CS2	:SAVE CS2
5636	037326	017737	144010	003432		MOV	@RHST,DS1	:SAVE TESTER STATUS
5637	037334	017737	144004	003436		MOV	@RHER,ER1	:SAVE ERROR REGISTER
5638	037342	017737	144002	003442		MOV	@RHTDB,TDR	:SAVE TESTER DATA REG.
5639	037350	017737	143762	003440		MOV	@RHMR2,TC	:SAVE MR2 TESTER REG.
5640	037356	017737	143766	001162		MOV	@RHTDB,\$REGO	:GET DATA
5641	037364	032777	000200	143736		BIT	#RDY,@RHCS1	:IS READY SET
5642	037372	001001				BNE	8\$:YES,CONTINUE TEST
5643	037374	104102				ERROR	102	:READY DID NOT SET
5644	037376	022777	177777	143726	8\$:	CMP	#-1,@RHWC	:DID WC INCREMENT
5645	037404	001001				BNE	3\$:YES,CONT TEST
5646	037406	104140				ERROR	140	:WRITETO OPERATION DID NOT INC WC
5647	037410	022777	004002	143716	3\$:	CMP	#ODDAD,@RHBA	:DID BA INCREMENT
5648	037416	001401				BEQ	4\$:YES CONT TEST
5649	037420	104141				ERROR	141	:BA DID NOT INCREMENT AFTER AN WRITETO OPERATION

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5650 037422 023777 004000 143720 4$:  CMP      EVENAD,@RHTDB      ;DID INFO WRITEIO TESTER
5651 037430 001401                BEQ      5$                ;YES,CONT
5652 037432 104142                ERROR   142               ;INFO DID NOT WRITETO TESTER
5653 037434 004737 007224 5$:  JSR      R7,WHYFO         ;ARE ANY ERROR BITS SET
5654 037440 105737 001103        TSTB   $ERFLG            ;WAS THER AN ERROR
5655 037444 001402                BEQ      6$                ;NO EXIT TEST
5656 037446 104146                ERROR   146               ;THESE ARE THE CONTENTS OF ALL RH70 REG.
5657 037450 104170                ERROR   170               ;THIS IS TO COMMMLETE ERROR PRINTOUT
5658 037452 004737 006572 6$:  JSR      R7,CLEER        ;CLEER ERRORS IF ANY
5659 037456 004737 050210        JSR      R7,ERRTST

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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

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5660
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5668 037462 000004                TST64: SCOPE
5669 037464 012777 000007 143646  MOV      #7,@RHCS2      ;SETUP UNIT SEVEN
5670 037472 012777 177777 143632  MOV      #-1,@RHWC      ;FOR ONE WORD
5671 037500 012777 004100 143626  MOV      #RBUF,@RHBA    ;SRTUP BA
5672 037506 012737 000000 004100  MOV      #ZERO,RBUF     ;SETUP DATA
5673 037514 012777 125252 143626  MOV      #TAB,@RHTDB    ;SETUP TESTER DB
5674 037522 005701                TST      R1              ;IS IT AN 11 OR A 70
5675 037524 100403                BMI     1$                ;IT'S AN RH11
5676 037526 012777 000000 143624  MOV      #ZERO,@RHBAE   ;ZERO BAE
5677 037534 012777 000077 143566 1$:  MOV      #READ6,@RHCS1  ;TELL IT TO READ6
5678 037542 005037 003446        CLR     BITCNT          ;CLEAR BIT COUNTER
5679 037546 032777 000200 143554 18$:  BIT      #RDY,@RHCS1   ;IS RDY SET
5680 037554 001015                BNE     2$                ;BIT IS SET
5681 037556 005237 003446        INC     BITCNT          ;COUNT UP
5682 037562 001371                BNE     18$              ;NOT FINISHED COUNTING
5683 037564 005037 003446        CLR     BITCNT          ;GET READY TO DO IT AGAIN
5684 037570 032777 000200 143532 19$:  BIT      #RDY,@RHCS1   ;IS IT SET YET?
5685 037576 001004                BNE     2$                ;YES
5686 037600 005237 003446        INC     BITCNT          ;COUNT UP
5687 037604 001401                BEQ     2$                ;BIT IS NOT GOING TO SET
5688 037606 000770                BR      19$
5689 037610
5690 037610 017737 143514 003420 2$:  MOV      @RHCS1,CS1     ;SAVE RHCS1
5691 037616 017737 143510 003444  MOV      @RHWC,WC       ;SAVE WORD COUNT
5692 037624 017737 143504 003414  MOV      @RHBA,BA       ;SAVE BUS ADDRESS
5693 037632 005701                TST      R1              ;IS IT AN RH11
5694 037634 001406                BEQ     87$              ;NO IT'S A 70
5695 037636 005037 003416        CLR     BAE              ;CLEAR BAE
5696 037642 005037 003424        CLR     CS3              ;CLEAR CS3
5697 037646 000137 037666        JMP     86$              ;CONTINUE
5698 037652 017737 143502 003416 87$:  MOV      @RHBAE,BAE     ;SAVE BUS ADDRESS EXTENSION
5699 037660 017737 143476 003424  MOV      @RHCS3,CS3     ;SAVE RHCS3
5700 037666 017737 143446 003422 86$:  MOV      @RHCS2,CS2     ;SAVE CS2
5701 037674 017737 143442 003432  MOV      @RHST,DS1      ;SAVE TESTER STATUS
5702 037702 017737 143436 003436  MOV      @RHER,ER1      ;SAVE ERROR REGISTER
5703 037710 017737 143434 003442  MOV      @RHTDB,TDR     ;SAVE TESTER DATA REG.
5704 037716 017737 143414 003440  MOV      @RMR2,TC       ;SAVE MR2 TESTER REG.
5705 037724 017737 143420 001162  MOV      @RHTDB,$REGO   ;GET DATA

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5706 037732 032777 000200 143370 BIT #RDY,@RHCS1 ;IS OR SET
5707 037740 001003 BNE 3$ ;YES RDY IS SET
5708 037742 104102 ERROR 102 ;READY DID NOT SET
5709 037744 004737 007224 JSR R7,WHYFO ;ARE ANY ERRORS SET
5710 037750 023777 004100 143372 3$: CMP RBUF,@RHTDB ;DID INFO GET WRITTEN OR READ
5711 037756 001407 BEQ 4$ ;INFO GOT LOADED
5712 037760 005737 004100 TST RBUF ;DOES RBUF = 0
5713 037764 001403 BEQ 5$ ;YES INFO DID NOT LOAD
5714 037766 104115 ERROR 115 ;ALL BITS DID NOT LOAD DURING
5715 ;AN READ6 OPERATION
5716 037770 000137 037776 JMP 4$ ;EXIT TEST
5717 037774 104107 5$: ERROR 107 ;READ6 OPERATION DID NOT WORK
5718 ;NO BITS WERE LOADED TO RBUF
5719 037776 004137 007224 4$: JSR R7,WHYFO ;ANY ERRORS SET
5720 040002 105737 001103 TSTB $ERFLG ;ANY ERRORS ?
5721 040006 001407 BEQ 6$ ;NO,EXIT TEST
5722 040010 104146 ERROR 146 ;PRINT REGISTERS
5723 040012 104170 ERROR 170
5724 040014 004737 006572 6$: JSR R7,CLEER ;CLEAR ERRORS
5725 040020 004737 050210 JSR R7,ERRTST
5726 ;*****
5727 ;*TEST 65 RH OPERATIONAL READ TEST #2
5728 ;*THESE TESTS VERIFY ALL READ AND WRITE CODES
5729 ;*WHETHER IT BE A READ REV. OR FWD OR A WRITE REV. OR FWD
5730 ;*DURING THESE TESTS THE TESTER TIMING IS MARGINED AND
5731 ;*NO ERRORS SHOULD OCCUR
5732 ;*****
5733 ;*****
5734 040024 000004 TST65: SCOPE
5735 040026 012777 000007 143304 MOV #7,@RHCS2 ;SETUP JNIT SEVEN
5736 040034 012777 052525 143306 MOV #AB,@RHTDB ;SETUP INFORMATION
5737 040042 012777 001003 143304 MOV #DMD,MCLK,SLKM,@RHMR1 ;SETUP DIAG. MODE
5738 040050 012777 177777 143254 MOV #-1,@RHWC ;FOR ONE WORD
5739 040056 005701 TST R1 ;IS IT A 11 OR 70
5740 040060 100403 BMI 1$ ;IT'S AN 11
5741 040062 012777 000000 143270 MOV #ZERO,@RHBAE ;ZERO BAE
5742 040070 012777 004000 143236 1$: MOV #EVENAD,@RHBA ;SETUP BA
5743 040076 012777 000073 143224 MOV #READ2,@RHCS1 ;TELL IT TO READFROM
5744 040104 012777 001001 143242 MOV #DMD!SLKM,@RHMR1 ;MANIPULATE CLOCK
5745 040112 005037 003446 CLR BITCNT ;CLEAR LOOP COUNTER
5746 040116 005237 003446 2$: INC BITCNT ;INCREMENT LOOP COUNTER
5747 040122 022737 000015 003446 CMP #15,BITCNT ;IS IT THIRD LOOP FOR 5USEC WAIT
5748 040130 001372 BNE 2$ ;NO LOOP AGAIN
5749 040132 012777 001003 143214 MOV #DMD!MCLK!SLKM,@RHMR1 ;START CHANGING CLOCK
5750 040140 012777 001001 143206 MOV #DMD!SLKM,@RHMR1 ;CHANGE CLOCK AGAIN
5751 040146 012777 001003 143200 MOV #DMD!MCLK!SLKM,@RHMR1 ;CHANGE CLOCK AGAIN
5752 040154 012777 001001 143172 MOV #DMD!SLKM,@RHMR1 ;CHANGE CLOCK AGAIN
5753 040162 012777 000000 143164 MOV #ZERO,@RHMR1 ;GET OUT OF DIAG MODE
5754 040170 005037 003446 CLR BITCNT ;CLEAR BIT COUNTER
5755 040174 032777 000200 143126 18$: BIT #RDY,@RHCS1 ;IS RDY SET
5756 040202 001015 BNE 7$ ;BIT IS SET
5757 040204 005237 003446 INC BITCNT ;COUNT UP
5758 040210 001371 BNE 18$ ;NOT FINISHED COUNTING
5759 040212 005037 003446 CLR BITCNT ;GET READY TO DO IT AGAIN
5760 040216 032777 000200 143104 19$: BIT #RDY,@RHCS1 ;IS IT SET YET?
5761 040224 001004 BNE 7$ ;YES

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```
5762 040226 005237 003446      INC      BITCNT      ;COUNT UP
5763 040232 001401              BEQ      7$         ;BIT IS NOT GOING TO SET
5764 040234 000770              BR       19$
5765 040236                    7$:
5766 040236 017737 143066 003420      MOV      @RHCS1,CS1  ;SAVE RHCS1
5767 040244 017737 143062 003444      MOV      @RHWC,WC    ;SAVE WORD COUNT
5768 040252 017737 143056 003414      MOV      @RHBA,BA    ;SAVE BUS ADDRESS
5769 040260 005701              TST      R1          ;IS IT AN RH11
5770 040262 001406              BEQ      87$        ;NO IT'S A 70
5771 040264 005037 003416      CLR      BAE        ;CLEAR BAE
5772 040270 005037 003424      CLR      CS3        ;CLEAR CS3
5773 040274 000137 040314      JMP      86$        ;CONTINUE
5774 040300 017737 143054 003416 87$:      MOV      @RHBAE,BAE  ;SAVE BUS ADDRESS EXTENSION
5775 040306 017737 143050 003424      MOV      @RHCS3,CS3  ;SAVE RHCS3
5776 040314 017737 143020 003422 86$:      MOV      @RHCS2,CS2  ;SAVE CS2
5777 040322 017737 143014 003432      MOV      @RHST,DS1   ;SAVE TESTER STATUS
5778 040330 017737 143010 003436      MOV      @RHER,CR1   ;SAVE ERROR REGISTER
5779 040336 017737 143006 003442      MOV      @RHTDB,TDP  ;SAVE TESTER DATA REG.
5780 040344 017737 142766 003440      MOV      @RHMR2,TC   ;SAVE MR2 TESTER REG.
5781 040352 017737 142772 001162      MOV      @RHTDB,$REGO ;GET DATA
5782 040360 032777 000200 142742      BIT      #RDY,@RHCS1 ;IS READY SET
5783 040366 001001              BNE      8$         ;YES,CONTINUE TEST
5784 040370 104102              ERROR   102        ;READY DID NOT SET
5785 040372 022777 177777 142732 8$:      CMP      #-1,@RHWC   ;DID WC INCREMENT
5786 040400 001001              BNE      3$         ;YES,CONT TEST
5787 040402 104143              ERROR   143        ;READFROM OPERATION DID NOT INC WC
5788 040404 022777 004002 142722 3$:      CMP      #ODDAD,@RHBA ;DID BA INCREMENT
5789 040412 001401              BEQ      4$         ;YES CONT TEST
5790 040414 104144              ERROR   144        ;BA DID NOT INCREMENT AFTER AN READFROM OPERATIO
5791 040416 023777 004000 142724 4$:      CMP      EVENAD,@RHTDB ;DID INFO READFROM TESTER
5792 040424 001401              BEQ      5$         ;YES,CONT
5793 040426 104145              ERROR   145        ;INFO DID NOT READFROM TESTER
5794 040430 004737 007224 5$:      JSR      R7,WHYFO    ;ARE ANY ERROR BITS SET
5795 040434 105737 001103              TSTB    $ERFLG     ;WAS THER AN ERROR
5796 040440 001402              BEQ      6$         ;NO EXIT TEST
5797 040442 104146              ERROR   146        ;THESE ARE THE CONTENTS OF ALL RH70 REG.
5798 040444 104170              ERROR   170        ;THIS IS TO COMPLETE ERROR PRINTOUT
5799 040446 004737 006572 6$:      JSR      R7,CLEER    ;CLEER FRORS IF ANY
5800 040452 004737 050210      JSR      R7,ERRTST
5801
5802 *****
5803 :*TEST 66      WRITE OPERATIONAL TEST (NORMAL) #1
5804 :*THESE TESTS VERIFY ALL READ AND WRITE CODES
5805 :*WHETHER IT BE A READ REV. OR FWD OR A WRITE REV. OR FWD
5806 :*DURING THESE TESTS THE TESTER TIMING IS MARGINED AND
5807 :*NO ERRORS SHOULD OCCUR
5808 *****
5809 040456 000004      TST66: SCOPE
5810 040460 012777 000007 142652      MOV      #7,@RHCS2  ;SETUP UNIT SEVEN
5811 040466 012777 177777 142636      MOV      #-1,@RHWC  ;FOR ONE WORD
5812 040474 012777 004100 142632      MOV      #RBUF,@RHBA ;SPTUP BA
5813 040502 012737 125252 004100      MOV      #OAB,RBUF  ;SETUP DATA
5814 040510 012777 000000 142632      MOV      #ZERO,@RHTDB ;SETUP TESTER DB
5815 040516 005701              TST      R1          ;IS IT AN 11 OR A 70
5816 040520 100403              BMI     1$          ;IT'S AN RH11
5817 040522 012777 000000 142630      MOV      #ZERO,@RHBAF ;ZERO BAE
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5818 040530 012777 000061 142572 1$: MOV #WRITE0,@RHCS1 ;TELL IT TO WRITE0
5819 040536 005037 003446 CLR BITCNT ;CLEAR BIT COUNTER
5820 040542 032777 000200 142560 18$: BIT #RDY,@RHCS1 ;IS RDY SET
5821 040550 001015 BNE 2$ ;BIT IS SET
5822 040552 005237 003446 INC BITCNT ;COUNT UP
5823 040556 001371 BNE 18$ ;NOT FINISHED COUNTING
5824 040560 005037 003446 CLR BITCNT ;GET READY TO DO IT AGAIN
5825 040564 032777 000200 142536 19$: BIT #RDY,@RHCS1 ;IS IT SET YET?
5826 040572 001004 BNE 2$ ;YES
5827 040574 005237 003446 INC BITCNT ;COUNT UP
5828 040600 001401 BEQ 2$ ;BIT IS NOT GOING TO SET
5829 040602 000770 BR 19$
5830 040604 2$:
5831 040604 017737 142520 003420 MOV @RHCS1,CS1 ;SAVE RHCS1
5832 040612 017737 142514 003444 MOV @RHWC,WL ;SAVE WORD COUNT
5833 040620 017737 142510 003414 MOV @RHBA,BA ;SAVE BUS ADDRESS
5834 040626 005701 TST R1 ;IS IT AN RH11
5835 040630 001406 BEQ 87$ ;NO IT'S A 70
5836 040632 005037 003416 CLR BAE ;CLEAR BAE
5837 040636 005037 003424 CLR CS3 ;CLEAR CS3
5838 040642 000137 040662 JMP 86$ ;CONTINUE
5839 040646 017737 142506 003416 87$: MOV @RHBAE,BAE ;SAVE BUS ADDRESS EXTENSION
5840 040654 017737 142502 003424 MOV @RHCS3,CS3 ;SAVE RHCS3
5841 040662 017737 142452 003422 86$: MOV @RHCS2,CS2 ;SAVE CS2
5842 040670 017737 142446 003432 MOV @RHST,DS1 ;SAVE TESTER STATUS
5843 040676 017737 142442 003436 MOV @RHER,ER1 ;SAVE ERROR REGISTER
5844 040704 017737 142440 003442 MOV @RHTDB,TDR ;SAVE TESTER DATA REG.
5845 040712 017737 142420 003440 MOV @RHMR2,TC ;SAVE MR2 TESTER REG.
5846 040720 017737 142424 001162 MOV @RHTDB,$REGO ;GET DATA
5847 040726 032777 000200 142374 BIT #RDY,@RHCS1 ;IS OR SET
5848 040734 001003 BNE 3$ ;YES RDY IS SET
5849 040736 104102 ERROR 102 ;READY DID NOT SET
5850 040740 004737 007224 JSR R7,WHYFO ;ARE ANY ERRORS SET
5851 040744 023777 004100 142376 3$: CMP RBUF,@RHTDB ;DID INFO GET WRITTEN OR READ
5852 040752 001407 BEQ 4$ ;INFO GOT LOADED
5853 040754 005777 142370 TST @RHTDB ;DOES @RHTDB = 0
5854 040760 001403 BEQ 5$ ;YES INFO DID NOT LOAD
5855 040762 104151 ERROR 151 ;ALL BITS DID NOT LOAD DURING
5856 ;AN WRITE0 OPERATION
5857 040764 000137 040772 JMP 4$ ;EXIT TEST
5858 040770 104152 5$: ERROR 152 ;WRITE0 OPERATION DID NOT WORK
5859 ;NO BITS WERE LOADED TO @RHTDB
5860 040772 004737 007224 4$: JSR R7,WHYFO ;ANY ERRORS SET
5861 040776 105737 001103 TSTB $ERFLG ;ANY ERRORS ?
5862 041002 001402 BEQ 6$ ;NO,EXIT TEST
5863 041004 104146 ERROR 146 ;PRINT REGISTERS
5864 041006 104170 ERROR 170
5865 041010 004737 006572 6$: JSR R7,CLEER ;CLEAR ERRORS
5866 041014 004737 050210 JSR R7,ERRTST
5867 ;*****
5868 ;*TEST 67 RH OPERATIONAL WRITE TEST #3
5869 ;*THESE TESTS VERIFY ALL READ AND WRITE CODES
5870 ;*WHETHER IT BE A READ REV. OR FWD OR A WRITE REV. OR FWD
5871 ;*DURING THESE TESTS THE TESTER TIMING IS MARGINED AND
5872 ;*NO ERRORS SHOULD OCCUR
5873
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5874
5875 041020 000004
5876 041022 012777 000007 142310
5877 041030 012737 125252 004000
5878 041036 012777 003003 142310
5879 041044 012777 177777 142260
5880 041052 005701
5881 041054 100403
5882 041056 012777 000000 142274
5883 041064 012777 004000 142242 1$:
5884 041072 012777 000065 142230
5885 041100 012777 003001 142246
5886 041106 005037 003446
5887 041112 005237 003446 2$:
5888 041116 022737 000015 003446
5889 041124 001372
5890 041126 012777 003003 142220
5891 041134 012777 003001 142212
5892 041142 012777 003003 142204
5893 041150 012777 003001 142176
5894 041156 012777 000000 142170
5895 041164 005037 003446
5896 041170 032777 000200 142132 18$:
5897 041176 001015
5898 041200 005237 003446
5899 041204 001371
5900 041206 005037 003446
5901 041212 032777 000200 142110 19$:
5902 041220 001004
5903 041222 005237 003446
5904 041226 001401
5905 041230 000770
5906 041232
5907 041232 017737 142072 003420 7$:
5908 041240 017737 142066 003444
5909 041246 017737 142062 003414
5910 041254 005701
5911 041256 001406
5912 041260 005037 003416
5913 041264 005037 003424
5914 041270 000137 041310
5915 041274 017737 142060 003416 87$:
5916 041302 017737 142054 003424
5917 041310 017737 142024 003422 86$:
5918 041316 017737 142020 003432
5919 041324 017737 142014 003436
5920 041332 017737 142012 003442
5921 041340 017737 141772 003440
5922 041346 017737 141776 001162
5923 041354 032777 000200 141746
5924 041362 001001
5925 041364 104102
5926 041366 022777 177777 141736 8$:
5927 041374 001001
5928 041376 104140
5929 041400 022777 004002 141726 3$:

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*****
TST67: SCOPE
MOV #7,@RHCS2 ;SFTUP UNIT SEVEN
MOV #0AB,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
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
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 @KHTDB,TDR ;SAVE TESTER DATA REG.
MOV @RHMR2,TC ;SAVE MR2 TESTER REG.
BIT #RDY,@RHCS1 ;GET DATA
BNE 8$ ;IS READY SET
ERROR 102 ;YES,CONTINUE TEST
CMP #-1,@RHWC ;READY DID NOT SET
BNE 3$ ;DID WC INCREMENT
ERROR 140 ;YES,CONT TEST
CMP #ODDAD,@RHBA ;WRITETO OPERATION DID NOT INC WC
;DID BA INCREMENT

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5930 041406 001401 BEQ 4$ :YES CONT TEST
5931 041410 104141 ERROR 141 :BA DID NOT INCREMENT AFTER AN WRITETO OPERATION
5932 041412 023777 004000 141730 4$: CMP EVENAD,@RHTDB :DID INFO WRITETO TESTER
5933 041420 001401 BEQ 5$ :YES,CONT
5934 041422 104142 ERROR 142 :INFO DID NGT WRITETO TESTER
5935 041424 004737 007224 5$: JSR R7,WHYFO :ARE ANY ERROR BITS SET
5936 041430 105737 001103 TSTB $ERFLG 1 :WAS THER AN ERROR
5937 041434 001402 BEQ 6$ :NO EXIT TEST
5938 041436 104146 ERROR 146 :THESE ARE THE CONTENTS OF ALL RH70 REG.
5939 041440 104170 ERROR 170 :THIS IS TO COMPLETE ERROR PRINTOUT
5940 041442 004737 006572 6$: JSR R7,CLEER :CLEAR ERRORS IF ANY
5941 041446 004737 050210 JSR R7,ERRTST
5942
5943 :*****
5944 :*TEST 70 WRITE OPERATIONAL TEST (NORMAL) #2
5945 :*THESE TESTS VERIFY ALL READ AND WRITE CODES
5946 :*WHETHER IT BE A READ REV. OR FWD OR A WRITE REV. OR FWD
5947 :*DURING THESE TESTS THE TESTER TIMING IS MARGINED AND
5948 :*NO ERRORS SHOULD OCCUR
5949
5950 :*****
5950 041452 000004 TST70: SCOPE
5951 041454 012777 000007 141656 MOV #7,@RHCS2 :SETUP UNIT SEVEN
5952 041462 012777 177777 141642 MOV #-1,@RHWC :FOR ONE WORD
5953 041470 012777 004100 141636 MOV #RBUF,@RHBA :SRTUP BA
5954 041476 012737 125252 004100 MOV #OAB,RBUF :SETUP DATA
5955 041504 012777 000000 141636 MOV #ZERO,@RHTDB :SETUP TESTER DB
5956 041512 005701 TST R1 :IS IT AN 11 OR A 70
5957 041514 100403 BMI 1$ :IT'S AN RH11
5958 041516 012777 000000 141634 MOV #ZERO,@RHBAE :ZERO BAE
5959 041524 012777 000063 141576 1$: MOV #WRITE2,@RHCS1 :TELL IT TO WRITE2
5960 041532 005037 003446 CLR BITCNT :CLEAR BIT COUNTER
5961 041536 032777 000200 141564 18$: BIT #RDY,@RHCS1 :IS RDY SET
5962 041544 001015 BNE 2$ :BIT IS SET
5963 041546 005237 003446 INC BITCNT :COUNT UP
5964 041552 001371 BNE 18$ :NOT FINISHED COUNTING
5965 041554 005037 003446 CLR BITCNT :GET READY TO DO IT AGAIN
5966 041560 032777 000200 141542 19$: BIT #RDY,@RHCS1 :IS IT SET YET?
5967 041566 001004 BNE 2$ :YES
5968 041570 005237 003446 INC BITCNT :COUNT UP
5969 041574 001401 BEQ 2$ :BIT IS NOT GOING TO SET
5970 041576 000770 BR 19$
5971 041600 2$:
5972 041600 017737 141524 003420 MOV @RHCS1,CS1 :SAVE RHCS1
5973 041606 017737 141520 003444 MOV @RHWC,WC :SAVE WORD COUNT
5974 041614 017737 141514 003414 MOV @RHBA,BA :SAVE BUS ADDRESS
5975 041622 005701 TST R1 :IS IT AN RH11
5976 041624 001406 BEQ 87$ :NO IT'S A 70
5977 041626 005037 003416 CLR BAE :CLEAR BAE
5978 041632 005037 003424 CLR CS3 :CLEAR CS3
5979 041636 000137 041656 JMP 86$ :CONTINUE
5980 041642 017737 141512 003416 87$: MOV @RHBAE,BAE :SAVE BUS ADDRESS EXTENSION
5981 041650 017737 141506 003424 MOV @RHCS3,CS3 :SAVE RHCS3
5982 041656 017737 141456 003422 86$: MOV @RHCS2,CS2 :SAVE CS2
5983 041664 017737 141452 003432 MOV @RHST,DS1 :SAVE TESTER STATUS
5984 041672 017737 141446 003436 MOV @RHER,ER1 :SAVE ERROR REGISTER
5985 041700 017737 141444 003442 MOV @RHTDB,*DR :SAVE TESTER DATA REG.
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5986 041706 017737 141424 003440      MOV      @RHMR2,TC      ;SAVE MR2 TESTER REG.
5987 041714 017737 141430 001162      MOV      @RHTDB,$REGO      ;GET DATA
5988 041722 032777 000200 141400      BIT      #RDY,@RHCS1      ;IS OR SET
5989 041730 001003                BNE      3$              ;YES RDY IS SET
5990 041732 104102                ERROR    102            ;READY DID NOT SET
5991 041734 004737 007224                JSR      R7,WHYFO        ;ARE ANY ERRORS SET
5992 041740 023777 004100 141402 3$:    CMP      RBUF,@RHTDB      ;DID INFO GET WRITTEN OR READ
5993 041746 001407                BEQ      4$              ;INFO GOT LOADED
5994 041750 005777 141374                TST      @RHTDB          ;DOES @RHTDB = 0
5995 041754 001403                BEQ      5$              ;YES INFO DID NOT LOAD
5996 041756 104151                ERROR    151            ;ALL BITS DID NOT LOAD DURING
5997                                ;AN WRITE2 OPERATION
5998 041760 000137 041766                JMP      4$              ;EXIT TEST
5999 041764 104152                5$:    ERROR    152            ;WRITE2 OPERATION DID NOT WORK
6000                                ;NO BITS WERE LOADED TO @RHTDB
6001 041766 004737 007224                4$:    JSR      R7,WHYFO        ;ANY ERRORS SET
6002 041772 105737 001103                TSTB     $ERFLG          ;ANY ERRORS ?
6003 041776 001402                BEQ      6$              ;NO,EXIT TEST
6004 042000 104146                ERROR    146            ;PRINT REGISTERS
6005 042002 104170                ERROR    170
6006 042004 004737 006572                6$:    JSR      R7,CLEER        ;CLEAR ERRORS
6007 042010 004737 050210                JSR      R7,ERRTST
6008
6009                                ;*****
6010                                ;*TEST 71      RH OPERATIONAL READ TEST #3
6011                                ;*THESE TESTS VERIFY ALL READ AND WRITE CODES
6012                                ;*WHETHER IT BE A READ REV. OR FWD OR A WRITE REV. OR FWD
6013                                ;*DURING THESE TESTS THE TESTER TIMING IS MARGINED AND
6014                                ;*NO ERRORS SHOULD OCCUR
6015                                ;*****
6016 042014 000004                TST71:  SCOPE
6017 042016 012777 000007 141314      MOV      #7,@RHCS2      ;SETUP UNIT SEVEN
6018 042024 012777 052525 141316      MOV      #AB,@RHTDB      ;SETUP INFORMATION
6019 042032 012777 003003 141314      MOV      #DMD!SLKM!ISLK!MCLK,@RHMR1 ;SETUP DIAG. MODE
6020 042040 012777 177777 141264      MOV      #-1,@RHWC       ;FOR ONE WORD
6021 042046 005701                TST      R1              ;IS IT A 11 OR 70
6022 042050 100403                BMI      1$              ;IT'S AN 11
6023 042052 012777 000000 141300      MOV      #ZERO,@RHBAE     ;ZERO BAE-
6024 042060 012777 004000 141246      1$:    MOV      #EVENAD,@RHBA  ;SETUP BA
6025 042066 012777 000075 141234      MOV      #READ4,@RHCS1    ;TELL IT TO READFROM
6026 042074 012777 003001 141252      MOV      #DMD!SLKM!ISLK,@RHMR1 ;MANIPULATE CLOCK
6027 042102 005037 003446                CLR      BITCNT          ;CLEAR LOOP COUNTER
6028 042106 005237 003446                2$:    INC      BITCNT          ;INCREMENT LOOP COUNTER
6029 042112 022737 000015 003446      CMP      #15,BITCNT       ;IS IT THIRD LOOP FOR SUSEC WAIT
6030 042120 001372                BNE      2$              ;NO LOOP AGAIN
6031 042122 012777 003003 141224      MOV      #DMD!SLKM!ISLK!MCLK,@RHMR1 ;START CHANGING CLOCK
6032 042130 012777 003001 141216      MOV      #DMD!SLKM!ISLK,@RHMR1    ;CHANGE CLOCK AGAIN
6033 042136 012777 003003 141210      MOV      #DMD!SLKM!ISLK!MCLK,@RHMR1 ;CHANGE CLOCK AGAIN
6034 042144 012777 003001 141202      MOV      #DMD!SLKM!ISLK,@RHMR1    ;CHANGE CLOCK AGAIN
6035 042152 012777 000000 141174      MOV      #ZERO,@RHMR1      ;GET OUT OF DIAG MODE
6036 042160 005037 003446                CLR      BITCNT          ;CLEAR BIT COUNTER
6037 042164 032777 000200 141136      18$:   BIT      #RDY,@RHCS1    ;IS RDY SET
6038 042172 001015                BNE      7$              ;BIT IS SET
6039 042174 005237 003446                INC      BITCNT          ;COUNT UP
6040 042200 001371                BNE      18$            ;NOT FINISHED COUNTING
6041 042202 005037 003446                CLR      BITCNT          ;GET READY TO DO IT AGAIN

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6042	042206	032777	000200	141114	19\$:	BIT	#RDY,@RHCS1	:IS IT SET YET?
6043	042214	001004				BNE	7\$:YES
6044	042216	005237	003446			INC	BITCNT	:COUNT UP
6045	042222	001401				BEQ	7\$:BIT IS NOT GOING TO SET
6046	042224	000770				BR	19\$	
6047	042226				7\$:			
6048	042226	017737	141076	003420		MOV	@RHCS1,CS1	:SAVE RHCS1
6049	042234	017737	141072	003444		MOV	@RHWC,WC	:SAVE WORD COUNT
6050	042242	017737	141066	003414		MOV	@RHBA,BA	:SAVE BUS ADDRESS
6051	042250	005701				TST	R1	:IS IT AN RH11
6052	042252	001406				BEQ	87\$:NO IT'S A 70
6053	042254	005037	003416			CLR	BAE	:CLEAR BAE
6054	042260	005037	003424			CLR	CS3	:CLEAR CS3
6055	042264	000137	042304			JMP	86\$:CONTINUE
6056	042270	017737	141064	003416	87\$:	MOV	@RHBAE,BAE	:SAVE BUS ADDRESS EXTENSION
6057	042276	017737	141060	003424		MOV	@RHCS3,CS3	:SAVE RHCS3
6058	042304	017737	141030	003422	86\$:	MOV	@RHCS2,CS2	:SAVE CS2
6059	042312	017737	141024	003432		MOV	@RHST,DS1	:SAVE TESTER STATUS
6060	042320	017737	141020	003436		MOV	@RHER,ER1	:SAVE ERROR REGISTER
6061	042326	017737	141016	003442		MOV	@RHTDB,TDR	:SAVE TESTER DATA REG.
6062	042334	017737	140776	003440		MOV	@RMR2,TC	:SAVE MR2 TESTER REG.
6063	042342	017737	141002	001162		MOV	@RHTDB,\$REGO	:GET DATA
6064	042350	032777	000200	140752		BIT	#RDY,@RHCS1	:IS READY SET
6065	042356	001001				BNE	8\$:YES,CONTINUE TEST
6066	042360	104102				ERROR	102	:READY DID NOT SET
6067	042362	022777	177777	140742	8\$:	CMP	#-1,@RHWC	:DID WC INCREMENT
6068	042370	001001				BNE	3\$:YES,CONT TEST
6069	042372	104143				ERROR	143	:READFROM OPERATION DID NOT INC WC
6070	042374	022777	004002	140732	3\$:	CMP	#ODDAD,@RHBA	:DID BA INCREMENT
6071	042402	001401				BEQ	4\$:YES CONT TEST
6072	042404	104144				ERROR	144	:BA DID NOT INCREMENT AFTER AN READFROM OPERATIO
6073	042406	023777	004000	140734	4\$:	CMP	EVENAD,@RHTDB	:DID INFO READFROM TESTER
6074	042414	001401				BEQ	5\$:YES,CONT
6075	042416	104145				ERROR	145	:INFO DID NOT READFROM TESTER
6076	042420	004737	007224		5\$:	JSR	R7,WHYFO	:ARE ANY ERROR BITS SET
6077	042424	105737	001103			TSTB	\$ERFLG	:WAS THER AN ERROR
6078	042430	001402				BEQ	6\$:NO EXIT TEST
6079	042432	104146				ERROR	146	:THESE ARE THE CONTENTS OF ALL RH70 REG.
6080	042434	104170				ERROR	170	:THIS IS TO COMPLETE ERROR PRINTOUT
6081	042436	004737	006572		6\$:	JSR	R7,CLEER	:CLEER ERRORS IF ANY
6082	042442	004737	050210			JSR	R7,ERRTST	

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042446 000004
 042450 012777 000007 140662
 042456 012777 177777 140646
 042464 012777 004100 140542
 042472 012737 125252 004100
 042500 012777 000000 140642
 042506 005701
 042510 100403
 042512 012777 000000 140640
 042520 012777 000065 140602
 042526 005037 003446
 042532 032777 000200 140570
 042540 001015
 042542 005237 003446
 042546 001371
 042550 005037 003446
 042554 032777 000200 140546
 042562 001004
 042564 005237 003446
 042570 001401
 042572 000770
 042574
 042574 017737 140530 003420
 042602 017737 140524 003444
 042610 017737 140520 003414
 042616 005701
 042620 001406
 042622 005037 003416
 042626 005037 003424
 042632 000137 042652
 042636 017737 140516 003416
 042644 017737 140512 003424
 042652 017737 140462 003422
 042660 017737 140456 003432
 042666 017737 140452 003436
 042674 017737 140450 003442
 042702 017737 140430 003440
 042710 017737 140434 001162
 042716 032777 000200 140404
 042724 001003
 042726 104102
 042730 004737 007224
 042734 023777 004100 140406
 042742 001407
 042744 005777 140400
 042750 001403
 042752 104151

 :*TEST 72 WRITE OPERATIONAL TEST (NORMAL) #3
 :*THESE TESTS VERIFY ALL HEAD 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

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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
1$: MOV #WRITE4,@RHCS1 ;TELL IT TO WRITE4
CLR BITCNT ;CLEAR BIT COUNTER
18$: 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
BR 19$ ;BIT IS NOT GOING TO SET

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
6133: CMP RBUF,@RHTDB ;DID INFO GET WRITTEN OR READ
BEQ 4$ ;INFO GOT LOADED
TST @RHTDB ;DOES @RHTDB = 0
BEQ 5$ ;YES INFO DID NOT LOAD
ERROR 151 ;ALL BITS DID NOT LOAD DURING
;AN WRITE4 OPERATION
  
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6139 042754 000137 042762
6140 042760 104152
6141
6142 042762 004737 007224
6143 042766 105737 001103
6144 042772 001402
6145 042774 104146
6146 042776 104170
6147 043000 004737 006572
6148 043004 004737 050210
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6157 043010 000004
6158 043012 012777 000007 140320
6159 043020 012737 125252 004000
6160 043026 012777 000003 140320
6161 043034 012777 177777 140270
6162 043042 005701
6163 043044 100403
6164 043046 012777 000000 140304
6165 043054 012777 004000 140252
6166 043062 012777 000067 140240
6167 043070 012777 000001 140256
6168 043076 005037 003446
6169 043102 005237 003446
6170 043106 022737 000015 003446
6171 043114 001372
6172 043116 012777 000003 140230
6173 043124 012777 000001 140222
6174 043132 012777 000003 140214
6175 043140 012777 000001 140206
6176 043146 012777 000000 140200
6177 043154 005037 003446
6178 043160 032777 000200 140142
6179 043166 001015
6180 043170 005237 003446
6181 043174 001371
6182 043176 005037 003446
6183 043202 032777 000200 140120
6184 043210 001004
6185 043212 005237 003446
6186 043216 001401
6187 043220 000770
6188 043222
6189 043222 017737 140102 003420
6190 043230 017737 140076 003444
6191 043236 017737 140072 003414
6192 043244 005701
6193 043246 001406
6194 043250 005037 003416

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5$: JMP 4$ ;EXIT TEST
ERROR 152 ;WRITE4 OPERATION DID NOT WORK
;NO BITS WERE LOADED TO @RH1DB
;ANY ERRORS SET
;ANY ERRORS ?
;NO,EXIT TEST
;PRINT REGISTERS

4$: JSR R7,WHYFO ;CLEAR ERRORS
TSTB $ERFLG
BEQ 6$
ERROR 146
ERROR 170

6$: JSR R7,CLEER
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
MOV #EVENAD,@RHBA ;SETUP BA
MOV #WRITE6,@RHCS1 ;TELL IT TO WRITETO
MOV #DMD,@RHMR1 ;MANIPULATE CLOCK
CLR BITCNT ;CLEAR LOOP COUNTER
2$: INC BITCNT ;INCREMENT LOOP COUNTER
CMP #15,BITCNT ;IS IT THIRD LOOP FOR 5USEC WAIT
BNE 2$ ;NO LOOP AGAIN
MOV #DMD!MCLK,@RHMR1 ;START CHANGING CLOCK
MOV #DMD,@RHMR1 ;CHANGE CLOCK AGAIN
MOV #DMD!MCLK,@RHMR1 ;CHANGE CLOCK AGAIN
MOV #DMD,@RHMR1 ;CHANGE CLOCK AGAIN
MOV #ZERO,@RHMR1 ;GET OUT OF DIAG MODE
CLR BITCNT ;CLEAR BIT COUNTER
18$: BIT #RDY,@RHCS1 ;IS RDY SET
BNE 7$ ;BIT IS SET
INC BITCNT ;COUNT UP
BNE 18$ ;NOT FINISHED COUNTING
CLR BITCNT ;GET READY TO DO IT AGAIN
19$: BIT #RDY,@RHCS1 ;IS IT SET YET?
BNE 7$ ;YES
INC BITCNT ;COUNT UP
BEQ 7$ ;BIT IS NOT GOING TO SET
BR 19$

7$: MOV @RHCS1,CS1 ;SAVE RHCS1
MOV @RHWC,WC ;SAVE WORD COUNT
MOV @RHBA,BA ;SAVE BUS ADDRESS
TST R1 ;IS IT AN RH11
BEQ 87$ ;NO IT'S A 70
CLR BAE ;CLEAR BAE

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6195 043254 005037 003424 CLR CS3 ;CLEAR CS3
6196 043260 000137 043300 JMP 86$ ;CONTINUE
6197 043264 017737 140070 003416 87$: MOV @RHBAE,BAE ;SAVE BUS ADDRESS EXTENSION
6198 043272 017737 140064 003424 MOV @RHCS3,CS3 ;SAVE RHCS3
6199 043300 017737 140034 003422 86$: MOV @RHCS2,CS2 ;SAVE CS2
6200 043306 017737 140030 003432 MOV @RHST,DS1 ;SAVE TESTER STATUS
6201 043314 017737 140024 003436 MOV @RHER,ER1 ;SAVE ERROR REGISTER
6202 043322 017737 140022 003442 MOV @RHTDB,TDR ;SAVE TESTER DATA REG.
6203 043330 017737 140002 003440 MOV @RHMR2,TC ;SAVE MR2 TESTER REG.
6204 043336 017737 140006 001162 MOV @RHTDB,$REGO ;GET DATA
6205 043344 032777 000200 137756 BIT #RDY,@RHCS1 ;IS READY SET
6206 043352 001001 BNE 8$ ;YES,CONTINUE TEST
6207 043354 104102 ERROR 102 ;READY DID NOT SET
6208 043356 022777 177777 137746 8$: CMP #-1,@RHWC ;DID WC INCREMENT
6209 043364 001001 BNE 3$ ;YES,CONT TEST
6210 043366 104140 ERROR 140 ;WRITETO OPERATION DID NOT INC WC
6211 043370 022777 003776 137736 3$: CMP #EVENAD-2,@RHBA ;DID BA INCREMENT
6212 043376 001401 BEQ 4$ ;YES CONT TEST
6213 043400 104141 ERROR 141 ;BA DID NOT INCREMENT AFTER AN WRITETO OPERATION
6214 043402 023777 004000 137740 4$: CMP EVENAD,@RH*DB ;DID INFO WRITETO TESTER
6215 043410 001401 BEQ 5$ ;YES,CONT
6216 043412 104142 ERROR 142 ;INFO DID NOT WRITETO TESTER
6217 043414 004737 007224 5$: JSR R7,WHYFO ;ARE ANY ERROR BITS SET
6218 043420 105737 001103 TSTB $ERFLG ;WAS THER AN ERROR
6219 043424 001402 BEQ 6$ ;NO EXIT TEST
6220 043426 104146 ERROR 146 ;THESE ARE THE CONTENTS OF ALL RH70 REG.
6221 043430 104170 ERROR 170 ;THIS IS TO COMPLETE ERROR PRINTOUT
6222 043432 004737 006572 6$: JSR R7,CLEER ;CLEER ERRORS IF ANY
6223 043436 004737 050210 JSR R7,ERRTST
6224 *****
6225 ;*TEST 74 WRITE OPERATIONAL TEST (NORMAL) #4
6226 ;*THESE TESTS VERIFY ALL READ AND WRITE CODES
6227 ;*WHETHER IT BE A READ REV. OR FWD OR A WRITE REV. OR FWD
6228 ;*DURING THESE TESTS THE TESTER TIMING IS MARGINED AND
6229 ;*NO ERRORS SHOULD OCCUR
6230 *****
6231 ;*TEST 74: SCOPE
6232 043442 000004 MOV #7,@RHCS2 ;SETUP UNIT SEVEN
6233 043444 012777 000007 137666 MOV #-1,@RHWC ;FOR ONE WORD
6234 043452 012777 177777 137652 MOV #RBUF,@RHBA ;SRUP BA
6235 043460 012777 004100 137646 MOV #OAB,RBUF ;SETUP DATA
6236 043466 012737 125252 004100 MOV #ZERO,@RHTDB ;SETUP TESTER DB
6237 043474 012777 000000 137646 TST R1 ;IS IT AN 11 OR A 70
6238 043502 005701 BMI 1$ ;IT'S AN RH*1
6239 043504 100403 MOV #ZERO,@RHBAE ;ZERO BAE
6240 043506 012777 000000 137644 MOV #WRITE6,@RHCS1 ;TELL IT TO WRITE6
6241 043514 012777 000067 137606 1$: CLR BITCNT ;CLEAR BIT COUNTER
6242 043522 005037 003446 BIT #RDY,@RHCS1 ;IS RDY SET
6243 043526 032777 000200 137574 18$: BNE 2$ ;BIT IS SET
6244 043534 001015 INC BITCNT ;COUNT UP
6245 043536 005237 003446 BNE 18$ ;NOT FINISHED COUNTING
6246 043542 001371 CLR BITCNT ;GET READY TO DO IT AGAIN
6247 043544 005037 003446 BIT #RDY,@RHCS1 ;IS IT SET YET?
6248 043550 032777 000200 137552 19$: BNE 2$ ;YES
6249 043556 001004 INC BITCNT ;COUNT UP
6250 043550 005237 003446

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6251 043564 001401          BEQ      2$          ;BIT IS NOT GOING TO SET
6252 043566 000770          BR       19$
6253 043570                2$:
6254 043570 017737 137534 003420  MOV     @RHCS1,CS1    ;SAVE RHCS1
6255 043576 017737 137530 003444  MOV     @RHWC,W      ;SAVE WORD COUNT
6256 043604 017737 137524 003414  MOV     @RHBA,BA     ;SAVE BUS ADDRESS
6257 043612 005701                TST     R1           ;IS IT AN RH11
6258 043614 001406                BEQ     87$         ;NO IT'S A 70
6259 043616 005037 003416  CLR     BAE         ;CLEAR BAE
6260 043622 005037 003424  CLR     CS3        ;CLEAR CS3
6261 043626 000137 043646  JMP     86$         ;CONTINUE
6262 043632 017737 137522 003416 87$: MOV     @RHBAE,BAE   ;SAVE BUS ADDRESS EXTENSION
6263 043640 017737 137516 003424  MOV     @RHCS3,CS3  ;SAVE RHCS3
6264 043646 017737 137466 003422 86$: MOV     @RHCS2,CS2  ;SAVE CS2
6265 043654 017737 137462 003432  MOV     @RHST,DS1   ;SAVE TESTER STATUS
6266 043662 017737 137456 003436  MOV     @RHER,ER1   ;SAVE ERROR REGISTER
6267 043670 017737 137454 003442  MOV     @RHTDB,TDR  ;SAVE TESTER DATA REG.
6268 043676 017737 137434 003440  MOV     @RHMR2,TC   ;SAVE MR2 TESTER REG.
6269 043704 017737 137440 001162  MOV     @RHTDB,$REG0 ;GET DATA
6270 043712 032777 000200 137410  BIT     #RDY,@RHCS1 ;IS OR SET
6271 043720 001003                BNE     3$          ;YES RDY IS SET
6272 043722 04102                ERROR   102        ;READY DID NOT SET
6273 043724 004737 007224  JSR     R7,WHYFO    ;ARE ANY ERRORS SET
6274 043730 023777 004100 137412 3$: CMP     RBUF,@RHTDB ;DID INFO GET WRITTEN OR READ
6275 043736 001407                BEQ     4$          ;INFO GOT LOADED
6276 043740 005777 137404  TST     @RHTDB     ;DOES @RHTDB = 0
6277 043744 001403                BEQ     5$          ;YES INFO DID NOT LOAD
6278 043746 104117                ERROR   117        ;ALL BITS DID NOT LOAD DURING
6279                                ;AN WRITE6 OPERATION
6280 043750 000137 043756  JMP     4$          ;EXIT TEST
6281 043754 104101                5$: ERROR 101      ;WRITE6 OPERATION DID NOT WORK
6282                                ;NO BITS WERE LOADED TO @RHTDB
6283 043756 004737 007224 4$: JSR     R7,WHYFO  ;ANY ERRORS SET
6284 043762 105737 001103  TSTB   $ERFLG     ;ANY ERRORS ?
6285 043766 001402                BEQ     6$          ;NO,EXIT TEST
6286 043770 104146  ERROR   146        ;PRINT REGISTERS
6287 043772 104170  ERROR   170
6288 043774 004737 006572 6$: JSR     R7,CLEER  ;CLEAR ERRORS
6289 044000 004737 050210  JSR     R7,ERRTST
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6298 044004 000004                *****
6299 044006 012777 000007 137324  ;*TEST 75          RH OPERATIONAL READ TEST #4
6300 044014 012777 052525 137326  ;*THESE TESTS VERIFY ALL READ AND WRITE CODES
6301 044022 012777 000003 137324  ;*WHETHER IT BE A READ REV. OR FWD OR A WRITE REV. OR FWD
6302 044030 012777 177777 137274  ;*DURING THESE TESTS THE TESTER TIMING IS MARGINED AND
6303 044036 005701                ;*NO ERRORS SHOULD OCCUR
6304 044040 100403                *****
6305 044042 012777 000000 137310  ;*TEST 75: SCOPE
6306 044050 012777 004000 137256 1$: MOV     #7,@RHCS2  ;SETUP UNIT SEVEN
MOV     #AB,@RHTDB   ;SETUP INFORMATION
MOV     #DMD!MCLK,@RHMR1 ;SETUP DIAG. MODE
MOV     #-1,@RHWC    ;FOR ONE WORD
TST     R1           ;IS IT A 11 OR 70
BMI     1$          ;IT'S AN 11
MOV     #ZERO,@RHBAE ;ZERO BAE
MOV     #EVENAD,@RHBA ;SETUP BA

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6307	044056	012777	000077	137244		MOV	#READ6,@RHCS1	:TELL IT TO READFROM
6308	044064	012777	000001	137262		MOV	#DMD,@RHMR1	:MANIPULATE CLOCK
6309	044072	005037	003446			CLR	BITCNT	:CLEAR LOOP COUNTER
6310	044076	005237	003446		2\$:	INC	BITCNT	:INCREMENT LOOP COUNTER
6311	044102	022737	000015	003446		CMP	#15,BITCNT	:IS IT THIRD LOOP FOR 5USEC WAIT
6312	044110	001372				BNE	2\$:NO LOOP AGAIN
6313	044112	012777	000003	137234		MOV	#DMD!MCLK,@RHMR1	:START CHANGING CLOCK
6314	044120	012777	000001	137226		MOV	#DMD,@RHMR1	:CHANGE CLOCK AGAIN
6315	044126	012777	000003	137220		MOV	#DMD!MCLK,@RHMR1	:CHANGE CLOCK AGAIN
6316	044134	012777	000001	137212		MOV	#DMD,@RHMR1	:CHANGE CLOCK AGAIN
6317	044142	012777	000000	137204		MOV	#ZERO,@RHMR1	:GET OUT OF DIAG MODE
6318	044150	005037	003446			CLR	BITCNT	:CLEAR BIT COUNTER
6319	044154	032777	000200	137146	18\$:	BIT	#RDY,@RHCS1	:IS RDY SET
6320	044162	001015				BNE	7\$:BIT IS SET
6321	044164	005237	003446			INC	BITCNT	:COUNT UP
6322	044170	001371				BNE	18\$:NOT FINISHED COUNTING
6323	044172	005037	003446			CLR	BITCNT	:GET READY TO DO IT AGAIN
6324	044176	032777	000200	137124	19\$:	BIT	#RDY,@RHCS1	:IS IT SET YET?
6325	044204	001004				BNE	7\$:YES
6326	044206	005237	003446			INC	BITCNT	:COUNT UP
6327	044212	001401				BEQ	7\$:BIT IS NOT GOING TO SET
6328	044214	000770				BR	19\$	
6329	044216				7\$:			
6330	044216	017737	137106	003420		MOV	@RHCS1,CS1	:SAVE RHCS1
6331	044224	017737	137102	003444		MOV	@RHWC,WC	:SAVE WORD COUNT
6332	044232	017737	137076	003414		MOV	@RHBA,BA	:SAVE BUS ADDRESS
6333	044240	005701				TST	R1	:IS IT AN RH11
6334	044242	001406				BEQ	87\$:NO IT'S A 70
6335	044244	005037	003416			CLR	BAE	:CLEAR BAF
6336	044250	005037	003424			CLR	CS3	:CLEAR CS3
6337	044254	000137	044274			JMP	86\$:CONTINUE
6338	044260	017737	137074	003416	87\$:	MOV	@RHBAE,BAE	:SAVE BUS ADDRESS EXTENSION
6339	044266	017737	137070	003424		MOV	@RHCS3,CS3	:SAVE RHCS3
6340	044274	017737	137040	003422	86\$:	MOV	@RHCS2,CS2	:SAVE CS2
6341	044302	017737	137034	003432		MOV	@RHST,DS1	:SAVE TESTER STATUS
6342	044310	017737	137030	003436		MOV	@RHER,ER1	:SAVE ERROR REGISTER
6343	044316	017737	137026	003442		MOV	@RHTDB,TDR	:SAVE TESTER DATA REG.
6344	044324	017737	137006	003440		MOV	@RHMR2,TC	:SAVE MR2 TESTER REG.
6345	044332	017737	137012	001162		MOV	@RHTDB,\$REGO	:GET DATA
6346	044340	032777	000200	136762		BIT	#RDY,@RHCS1	:IS READY SET
6347	044346	001001				BNE	8\$:YES,CONTINUE TEST
6348	044350	104102				ERROR	102	:READY DID NOT SET
6349	044352	022777	177777	136752	8\$:	CMP	#-1,@RHWC	:DID WC INCREMENT
6350	044360	001001				BNE	3\$:YES,CONT TEST
6351	044362	104143				ERROR	143	:READFROM OPERATION DID NOT INC WC
6352	044364	022777	003776	136742	3\$:	CMP	#EVENAD-2,@RHBA	:DID BA INCREMENT
6353	044372	001401				BEQ	4\$:YES CONT TEST
6354	044374	104144				ERROR	144	:BA DID NOT INCREMENT AFTER AN READFROM OPERATIO
6355	044376	023777	004000	136744	4\$:	CMP	EVENAD,@RHTDB	:DID INFO READFROM TESTER
6356	044404	001401				BEQ	5\$:YES,CONT
6357	044406	104145				ERROR	145	:INFO DID NOT READFROM TESTER
6358	044410	004737	007224		5\$:	JSR	R7,WHYFO	:ARE ANY ERROR BITS SET
6359	044414	105737	0011C3			TSTB	\$ERFLG	:WAS THER AN ERROR
6360	044420	001402				BEQ	6\$:NO EXIT TEST
6361	044422	104146				ERROR	146	:THESE ARE THE CONTENTS OF ALL RH70 REG.
6362	044424	10417C				ERROR	170	:THIS IS TO COMPLETE ERROR PRINTOUT

6363	044426	004737	006572			68:	JSR	R7,CLEER		:CLEAR ERRORS IF ANY
6364	044432	004737	0502'0				JSR	R7,ERRTST		
6365							:*****			
6366						17:	TEST 76	LARGE TRANSFER TEST		
6367								:THIS TEST DOES A 4K (OCTAL) WORD TRANSFER		
6368								:THE SECOND TIME THROUGH THE TEST SYNC CLOCK		
6369								:IS MARGINED TO MAKE SURE NO ERRORS OCCUR		
6370							:*****			
6371	044436	000004				18:	TEST 76:	SCOPE		
6372										
6373										
6374	044440	012777	000007	136672			MOV	#7,@RHCS2		
6375	044446	005037	177776				CLR	@PSW		
6376	044452	005037	003452				CLR	PASS		
6377	044456	005037	003450			BLITZ:	CLR	LOOPCNT		:CLEAR THE LOOP COUNTER
6378	044462	005701				IN:	TST	R1		:IS IT AN 11 OR 70
6379	044464	100403					BMI	1\$:IT IS AN 11
6380	044466	012777	000000	136664			MOV	#ZERO,@RHBAE		:IT'S A 70 ZERO THE BAE
6381	044474	012777	005000	136632		1\$:	MOV	#5000,@RHBA		:SET THE BUS ADDRESS
6382	044502	012777	174000	136622			MOV	#-4000,@RHWC		
6383	044510	012777	050334	136670			MOV	#BLKTST,@VECAD		:USE IT IN INTERRUPT MODE
6384										
6385	044516	005701					TST	R1		
6386	044520	001412					BEQ	BLIP		
6387	044522	005737	003452				TST	PASS		
6388	044526	001407					BEQ	BLIP		
6389	044530	032737	000002	177570			BIT	#BIT1,@177570		
6390	044536	001571					BEQ	BOTTOM		
6391	044540	004737	047624				JSR	R7,DUPORT		
6392	044544	000434					BR	RHNINT		
6393	044546	012777	000161	136554		BLIP:	MOV	#WRITED.IE,@RHCS1		:SET INTERRUPT AND TELL IT TO WRITE
6394										
6395	044554	005037	003446				CLR	BITCNT		:CLEAR BIT COUNTER
6396	044560	032777	000200	136542		18\$:	BIT	#RDY,@RHCS1		:IS RDY SET
6397	044566	001015					BNE	2\$:BIT IS SET
6398	044570	005237	003446				INC	BITCNT		:COUNT UP
6399	044574	001371					BNE	18\$:NOT FINISHED COUNTING
6400	044576	005037	003446				CLR	BITCNT		:GET READY TO DO IT AGAIN
6401	044602	032777	000200	136520		19\$:	BIT	#RDY,@RHCS1		:IS IT SET YET?
6402	044610	001004					BNE	2\$:YES
6403	044612	005237	003446				INC	BITCNT		:COUNT UP
6404	044616	001401					BEQ	2\$:BIT IS NOT GOING TO SET
6405	044620	000770					BR	19\$		
6406	044622					2\$:				
6407	044622	032777	000200	136500			BIT	#RDY,@RHCS1		:DID READY SET
6408	044630	001001					BNE	25\$:YES READY SET
6409	044632	104102					ERROR	102		:READY DID NOT SET
6410	044634	104205				25\$:	ERROR	205		:IT DID NOT INTERRUPT
6411	044636					RHNINT:				
6412	044636	017737	136466	003420			MOV	@RHCS1,CS1		:SAVE RHCS1
6413	044644	017737	136462	003444			MOV	@RHWC,WC		:SAVE WORD COUNT
6414	044652	017737	136456	003414			MOV	@RHBA,BA		:SAVE BUS ADDRESS
6415	044660	005701					TST	R1		:IS IT AN RH11
6416	044662	001406					BEQ	87\$:NO IT'S A 7C
6417	044664	005037	003416				CLR	BAE		:CLEAR BAE
6418	044670	005037	003424				CLR	CS3		:CLEAR CS3

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6419 044674 000137 044714          JMP      86$          ;CONTINUE
6420 044700 017737 136454 003416 87$:  MOV     @RHBAE,BAE    ;SAVE BUS ADDRESS EXTENSION
6421 044706 017737 136450 003424    MOV     @RHCS3,CS3   ;SAVE RHCS3
6422 044714 017737 136420 003422 86$:  MOV     @RHCS2,CS2   ;SAVE CS2
6423 044722 017737 136414 003432    MOV     @RHST,DS1    ;SAVE TESTER STATUS
6424 044730 017737 136410 003436    MOV     @RHER,ER1    ;SAVE ERROR REGISTER
6425 044736 017737 136406 003442    MOV     @RHTDB,TDR   ;SAVE TESTER DATA REG.
6426 044744 017737 136366 003440    MOV     @RHMR2,TC    ;SAVE MR2 TESTER REG.
6427 044752 032777 140000 136362 9$:   BIT     #ATA!ERR,@RHST ;IS ATTEN OR ERROR SET
6428 044760 001033          BNE     3$          ;YES THERE WAS A PROBLEM
6429 044762 032777 000200 136340    BIT     #RDY,@RHCS1 ;DID RDY SET
6430 044770 001001          BNE     4$          ;YES IT SET
6431 044772 104102          ERROR   102         ;RDY DID NOT SET
6432 044774 022777 015000 136332 4$:   CMP     #5000+<4000*2>,@RHBA ;DID BA INC PROPERLY
6433 045002 001401          BEQ     5$          ;YES
6434 045004 104203          ERROR   203         ;BA DID NOT INC PROPERLY
6435 045006 023777 014776 136334 5$:   CMP     @14776,@RHTDB ;WAS CORRECT INFO WRITTEN
6436 045014 001401          BEQ     6$          ;YES
6437 045016 104204          ERROR   204         ;CORRECT INFO NOT IN RHTDB
6438 045020 005777 136306    6$:   TST     @RHWC       ;IS WC 0
6439 045024 001401          BEQ     7$          ;YES
6440 045026 104206          ERROR   206         ;RHWC IS NOT ZERO
6441 045030 105737 001103    7$:   TSTB   $ERFLG      ;WAS THERE ANY ERRORS
6442 045034 001407          BEQ     8$          ;NO
6443 045036 032777 002000 136264    BIT     #PSEL,@RHCS1
6444 045044 001401          BEQ     3$          ;
6445 045046 104207          ERROR   207         ;OUTPUT THE REGISTERS
6446 045050 104146    3$:   ERROR   146         ;
6447 045052 104170          ERROR   170         ;
6448 045054 005737 003450    8$:   TST     LOOCNT     ;IS IT FIRST PASS IN TEST
6449 045060 001007          BNE     11$         ;NO
6450 045062 005237 003450          INC     LOOCNT     ;MAKE IT SECOND PASS
6451 045066 012777 000017 136242    MOV     #SCLK!7,@RHMR2
6452          ;SET THE SYNC CLOCK BIT AND 441 BLK SIZE
6453 045074 000137 044462          JMP     IN         ;DO THE TEST AGAIN
6454 045100 005037 003450    11$:  CLR     LOOCNT     ;CLEAR THE COUNTER
6455 045104 005737 003452          TST     PASS
6456 045110 001004          BNE     BOTTOM
6457 045112 005237 003452          INC     PASS
6458 045116 000137 044456          JMP     BLITZ
6459 045122 004737 007224  BOTTOM: JSR     R7,WHYFO ;TO SEE WHY IT DIED
6460 045126 004737 006572          JSR     R7,CLEER  ;CLEAR THE REGISTERS
6461 045132 004737 050210          JSR     R7,ERRST  ;UNDERLINE ERROR MESGES
6462          ;IF NEEDED
6463          ;*****
6464          ;*TEST 77  HERE IS WHERE I HANDLE 4 RH'S
6465          ;*THIS IS THE ROUTINE THAT ALLOWS THE
6466          ;*THE DIAGNOSTIC TO TEST FOUR RH'S
6467          ;*****
6468 045136 000004  TEST77: SCOPE
6469
6470 045140 005237 003376  ENDPAS: INC     DEVCNT ;INCREMENT THE DEVICE COUNT
6471 045144 022737 000001 003376    CMP     #1,DEVCNT ;IS IT DEVICE 2
6472 045152 001552          BEQ     CLEVER     ;YES
6473 045154 022737 000002 003376    CMP     #2,DEVCNT ;IS IT DEVICE 3
6474 045162 001002          BNE     1$

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6475 045164 000137 045604          JMP      ROTEEN                :YES
6476 045170 022737 000003 003376 18:  CMP      #3,DEV CNT          :IS IT DEVICE 4
6477 045176 001002                    BNE     28                    :NO,CONTINUE SEARCH
6478 045200 000137 045710          JMP      IS                     :YES
6479 045204 022737 000004 003376 28:  CMP      #4,DEV CNT          :HAVE WE TESTED ALL 4 RM'S
6480 045212 001470                    BEQ     RESTAT                :YES
6481 045214 104401 045222          TYPE    ,65$                 ::TYPE ASCIZ STRING
6482 045220 000421                    BR      64$                 ::GET OVER THE ASCIZ
6483                                     ::65$: .ASCIZ <15><12>/PROGRAM ERROR ON TESTING 4 RM'S/
6484 045264                                     64$:
6485 045264 104401 045272          TYPE    ,67$                 ::TYPE ASCIZ STRING
6486 045270 000426                    BR      66$                 ::GET OVER THE ASCIZ
6487                                     ::67$: .ASCIZ <15><12>/RESTARTING TO TEST RH #1 AT BASE ADDRESS /
6488 045346                                     66$:
6489 045346 013746 003366          MOV     DEVIC1,-(SP)         ::SAVE DEVIC1 FOR TYPEOUT
6490 045352 104402                    TYPOC  ::GO TYPE--OCTAL ASCII(ALL DIGITS)
6491 045354 013737 003366 003400  MOV     DEVIC1,DEVIC5        :FOR REG. ADDRESS CREATION
6492 045362 012737 005246 003410  MOV     #GIGO,RETAIN        :GET ADDRESS ERROR RETURN
6493 045370 000137 046014          JMP     CORREG              :CORRECT REG. ADDRESSES
6494 045374 005037 003376          RESTAT: CLR    DEV CNT      :CLEAR DEVICE COUNTER
6495 045400 005726                    TST    (SP)+                :CORRECT STACK
6496 045402 013737 003366 003400  MOV     DEVIC1,DEVIC5        :SET UP TO CREATE ADDRESSES
6497 045410 104401 045416          TYPE    ,65$                 ::TYPE ASCIZ STRING
6498 045414 000421                    BR      64$                 ::GET OVER THE ASCIZ
6499                                     ::65$: .ASCIZ <15><12>/TESTING RH #1 AT BASE ADDRESS /
6500 045460                                     64$:
6501 045460 013746 003366          MOV     DEVIC1,-(SP)         ::SAVE DEVIC1 FOR TYPEOUT
6502 045464 104402                    TYPOC  ::GO TYPE--OCTAL ASCII(ALL DIGITS)
6503 045466 012737 005246 003410  MOV     #GIGO,RETAIN        :SAVE RETURN ADDRESS
6504 045474 000137 046014          JMP     CORREG              :GO CREATE ADDRESSES
6505 045500 005737 003370          CLEVER: TST    DEVIC2        :IS IT 0
6506 045504 001733                    BEQ     RESTAT              :YES,END PASS
6507 045506 013737 003370 003400  MOV     DEVIC2,DEVIC5        :GET READY TO CONSTRUCT
6508 045514 012737 005422 003410  MOV     #GIGO1,RETAIN       :SAVE RETURN ERROR ADDRESS
6509 045522 104401 045530          TYPE    ,65$                 ::TYPE ASCIZ STRING
6510 045526 000421                    BR      64$                 ::GET OVER THE ASCIZ
6511                                     ::65$: .ASCIZ <15><12>/TESTING RH #2 AT BASE ADDRESS /
6512 045572                                     64$:
6513 045572 013746 003370          MOV     DEVIC2,-(SP)         ::SAVE DEVIC2 FOR TYPEOUT
6514 045576 104402                    TYPOC  ::GO TYPE--OCTAL ASCII(ALL DIGITS)
6515 045600 000137 046014          JMP     CORREG              :CREATE REG. ADDRESSES
6516 045604 005737 003372          ROTEEN: TST    DEVIC3        :IS IT 0
6517 045610 001671                    BEQ     RESTAT              :YES,END PASS
6518 045612 013737 003372 003400  MOV     DEVIC3,DEVIC5        :GET BASE ADDRESS
6519 045620 012737 005562 003410  MOV     #GIGO2,RETAIN       :SAVE RETURN ADDRESS
6520 045626 104401 045634          TYPE    ,65$                 ::TYPE ASCIZ STRING
6521 045632 000421                    BR      64$                 ::GET OVER THE ASCIZ
6522                                     ::65$: .ASCIZ <15><12>/TESTING RH #3 AT BASE ADDRESS /
6523 045676                                     64$:
6524 045676 013746 003372          MOV     DEVIC3,-(SP)         ::SAVE DEVIC3 FOR TYPEOUT
6525 045702 104402                    TYPOC  ::GO TYPE--OCTAL ASCII(ALL DIGITS)
6526 045704 000137 046014          JMP     CORREG              :CORRECT REG. ADDRESSES
6527 045710 005737 003374          IS:    TST    DEVIC4        :IS IT 0
6528 045714 001627                    BEQ     RESTAT              :YES,END PASS
6529 045716 013737 003374 003400  MOV     DEVIC4,DEVIC5        :GET BASE ADDRESS
6530 045724 012737 005722 003410  MOV     #GIGO3,RETAIN       :SAVE RETURN ADDRESS

```

6531 045732 104401 045740
6532 045736 000421
6533
6534 046002
6535 046002 013746 003374
6536 046006 104402
6537 046010 000137 046014
6538 046014 013737 003400 003402
6539 046022 012702 003330
6540 046026 013722 003402
6541 046032 022702 003360
6542 046036 001405
6543 046040 062737 000002 003402
6544 046046 000137 046026
6545 046052 013737 003400 003402
6546 046060 063737 003404 003402
6547 046066 013737 003402 003360
6548 046074 062737 000002 003402
6549 046102 013737 003402 003362
6550 046110 013737 003330 003364
6551 046116 005237 003364
6552 046122 005037 001102
6553 046126 005237 001102
6554 046132 012737 000001 001212
6555 046140 005737 003376
6556 046144 001402
6557 046146 000137 006252
6558
6559
6560
6561
6562
6563
6564
6565
6566
6567 046152
6568 046152 000004
6569 046154 005037 001102
6570 046160 005037 001212
6571 046164 005237 001100
6572 046170 042737 100000 001100
6573 046176 005327
6574 046200 000001
6575 046202 003063
6576 046204 012737
6577 046206 000001
6578 046210 046200
6579 046212 104401 046220
6580 046216 000407
6581
6582 046236
6583 046236 013746 001100
6584
6585 046242 104405
6586 046244 104401 046252

```
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
TYPDC              ;;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 WF 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
$EOPCT
TYPE .65$          ;;TYPE ASCIZ STRING
BR 64$            ;;GET OVER THE ASCIZ
;;65$: .ASCIZ <12><15>/END PASS #/
64$:
MOV $PASS,-(SP)   ;;SAVE $PASS FOR TYPEOUT
TYPDS             ;;TYPE PASS NUMBER
TYPE .67$         ;;GO TYPE--DECIMAL ASCII WITH SIGN
TYPE .67$         ;;TYPE ASCIZ STRING
```

```
6587 046250 000421
6588
6589 046314
6590 046314 013746 001112
6591
6592 046320 104405
6593 046322 104401 001223
6594 046326 005037 001112
6595 046332 013700 000042
6596 046336 001405
6597 046340 000005
6598 046342 004710
6599 046344 000240
6600 046346 000240
6601 046350 000240
6602 046352
6603 046352 000137
6604 046354 004166
6605 046356 377 377 000
6606 046362
6607
6608
6609
6610
6611
6612 046362 032737 020000 177570
6613 046370 001155
6614
6615 046372 032737 000400 177570
6616
6617 046400 001151
6618
6619 046402 032737 000001 177570
6620
6621 046410 001145
6622 046412 005037 003446
6623 046416 013737 001162 001202
6624 046424 013737 001200 001204
6625 046432 043737 001162 001204
6626 046440 005737 001204
6627 046444 001447
6628 046446 104401 046454
6629 046452 000427
6630
6631 046532
6632 046532 032737 000001 001204
6633 046540 001076
6634 046542 006037 001204
6635 046546 022737 000017 003446
6636 046554 001403
6637 046556 005237 003446
6638 046562 000763
6639 046564 005037 003446
6640 046570 043737 001200 001202
6641 046576 005737 001202
6642 046602 001446

        BR      66$          ;;GET OVER THE ASCIZ
        ;;67$: .ASCIZ / TOTAL ERRORS SINCE LAST REPORT /
        66$:
        MOV     $ERTTL,-(SP)  ;;SAVE $ERTTL FOR TYPEOUT
        TYPDS   ;;TOTAL NUMBER OF ERRORS
        TYPE    .,SCLRF      ;;GO TYPE--DECIMAL ASCII WITH SIGN
        CLR     $ERTTL      ;;TYPE CARRIAGE RETURN, LINE FEED
        $GET42: MOV     @42,R0 ;;CLEAR ERROR TOTAL
        BEQ     $DOAGN      ;;GET MONITOR ADDRESS
        RESET   ;;BRANCH IF NO MONITOR
        $ENDAD: JSR     PC,(R0) ;;CLEAR THE WORLD
        NOP     ;;GO TO MONITOR
        NOP     ;;SAVE ROOM
        NOP     ;;FOR
        NOP     ;;ACT11
        $DOAGN: JMP     @PC+   ;;RETURN
        $RTNAD: .WGRD  BEGIN2
        $ENULL: .BYTE  -1,-1,0 ;;NULL CHARACTER STRING
        .EVEN

        ;;*****
        ;;          :THIS IS THE WATBIT PROGRAM
        ;;*****
        WATBIT: BIT     #SW13,@#177570  ;;SKIP ERROR PRINTOUT ?
        BNE     RITURN          ;;YES
        ;;*****
        CHGE2: BIT     #BIT8,@#177570
        BNE     RITURN
        ;;*****
        CHGE3: BIT     #BIT0,@#177570
        BNE     RITURN
        ;;*****
        CLR     BITCNT          ;;CLEAR BIT COUNTER
        MOV     $REGO,$TMP2     ;;SAVE GOOD DATA IN $REGO
        MOV     $TMP1,$TMP3     ;;SAVE CONTENTS OF BAD DATA
        BIC     $REGO,$TMP3     ;;WHERE EXTRA BITS SET ?
        TST    $TMP3           ;;FIND OUT
        BEQ     NEXTST         ;;NO,FIND OUT WHAT BITS WHERE NOT SET
        TYPE   .65$           ;;TYPE ASCIZ STRING
        BR      64$           ;;GET OVER THE ASCIZ
        ;;65$: .ASCIZ <15><12>/THESE ARE THE BIT NO. OF THE EXTRA BITS./<15><12>
        64$:
        MOAR: BIT     #ONE,$TMP3  ;;FIND THE EXTRA
        BNE     PRIBIT         ;;GO TO PRINT BIT NO.
        MOOR: ROR     $TMP3      ;;SETUP FOR NEXT BIT
        CMP     #17,BITCNT     ;;IS IT BIT 15 LAST TESTED
        BEQ     NEXTST         ;;YES,SEE IF ANY BITS WHER NOT SET
        INC    BITCNT         ;;NO NOT LAST BIT YET
        BR     MOAR           ;;GO TO TEST NEXT BIT
        NEXTST: CLR    BITCNT    ;;ZERO BIT COUNTER
        BIC    $TMP1,$TMP2     ;;FIND WHAT BITS WHER NOT SET
        TST   $TMP2           ;;WAS ALL BITS SET THAT SHOULD HAVE BEEN
        BEQ   RETURN         ;;YES,AND TEST FINISHED
```

6643 046604 104401 046612
6644 046610 000426
6645
6646 046666
6647 046666 032737 000001 001202
6648 046674 001014
6649 046676 006037 001202
6650 046702 022737 000017 003446
6651 046710 001403
6652 04672 005237 003446
6653 046716 000763
6654 046720 104401 001223
6655 046724 000207
6656 046726
6657 046726 013746 003446
6658 046732 104405
6659 046734 000760
6660 046736
6661 046736 013746 003446
6662 046742 104405
6663 046744 000676
6664
6665
6666
6667
6668 046746
6669 046746 104401 046754
6670 046752 000434
6671
6672 047044
6673 047044 104401 047052
6674 047050 000422
6675
6676 047116
6677 047116 012637 001206
6678 047122 162737 000002 001206
6679 047130 013746 001206
6680 047134 104402
6681 047136 104401 047144
6682 047142 000406
6683
6684 047160
6685 047160 012637 001206
6686 047164 013746 001206
6687 047170 104402
6688 047172 013716 001106
6689 047176 000002
6690
6691
6692
6693
6694
6695 047200
6696 047200 104401 047206
6697 047204 000422
6698

```
TYPE .65$          ;;TYPE ASCIZ STRING  
BR 64$            ;;GET OVER THE ASCIZ  
;;65$: .ASCIZ <15><12>/BIT NO. OF THE BITS THAT WHERE NOT SET/<15><12>  
64$:  
MORE2: BIT #ONE,$TMP2      ;FIND BIT NOT SET  
      BNE PRTBIT          ;ERROR BIT FOUND  
      ROR $TMP2           ;SETUP TO FIND MORE  
      CMP #17,BITCNT      ;WAS LAST BIT BIT 15  
      BEQ RETURN          ;YES AND TEST FINISHED  
      INC BITCNT          ;NO SETUP FOR NEXT BIT  
      BR MORE2            ;CONTINUE TEST  
RETURN: TYPE $CRLF  
RITURN: RTS R7          ;RETURN TO MAIN PROG.  
PRTBIT:  
      MOV BITCNT,-(SP)    ;;SAVE BITCNT FOR TYPEOUT  
      TYPDS                ;;GO TYPE--DECIMAL ASCII WITH SIGN  
      BR MORE             ;LOOK FOR MORE  
PRIBIT:  
      MOV BITCNT,-(SP)    ;;SAVE BITCNT FOR TYPEOUT  
      TYPDS                ;;GO TYPE--DECIMAL ASCII WITH SIGN  
      BR MOOR             ;LOOK FOR MORE  
;*****  
;THIS ROUTINE HANDLES TIMEOUT ERRORS  
;*****  
TIMEOUT:  
      TYPE .65$          ;;TYPE ASCIZ STRING  
      BR 64$            ;;GET OVER THE ASCIZ  
;;65$: .ASCIZ <15><12><12>/PROGRAM INSTRUCTION OR ADDRESS HAS CREATED A TIMEOUT/  
64$:  
      TYPE .67$          ;;TYPE ASCIZ STRING  
      BR 66$            ;;GET OVER THE ASCIZ  
;;67$: .ASCIZ <15><12>/ADDRESS WHICH CAUSED TIMEOUT WAS /  
66$:  
      MOV (SP)+,$TMP4      ;MOVE ADDRESS TO STORAGE  
      SUB #TWO,$TMP4      ;CORRECT ADDRESS  
      MOV $TMP4,-(SP)     ;;SAVE $TMP4 FOR TYPEOUT  
      TYPOC                ;;GO TYPE--OCTAL ASCII(ALL DIGITS)  
      TYPE .69$          ;;TYPE ASCIZ STRING  
      BR 68$            ;;GET OVER THE ASCIZ  
;;69$: .ASCIZ <15><12>/PSW WAS /  
68$:  
      MOV (SP)+,$TMP4      ;GET OLD PSW  
      MOV $TMP4,-(SP)     ;;SAVE $TMP4 FOR TYPEOUT  
      TYPOC                ;;GO TYPE--OCTAL ASCII(ALL DIGITS)  
      MOV $LPADR,(SP)     ;FAKE RETURN  
      RTI  
;*****  
;THIS ROUTINE HANDLES PARITY ERRORS  
;*****  
PARITY:  
      TYPE .65$          ;;TYPE ASLIZ STRING  
      BR 64$            ;;GET OVER THE ASCIZ  
;;65$: .ASCIZ <15><12>/PARITY TRAP TO VECTOR ADDRESS 114/
```



```

6699 047252
6700 047252 104401 047260
6701 047256 000420
6702
6703 047320
6704 047320 012637 004100
6705 047324 162737 000002 004100
6706 047332 013746 004100
6707 047336 104402
6708 047340 104401 047346
6709 047344 000406
6710
6711 047362
6712 047362 012637 004100
6713 047366 013746 004100
6714 047372 104402
6715 047374 005701
6716 047376 00507
6717 047400 104401 047406
6718 047404 000417
6719
6720 047444
6721 047444 013737 177742 004100
6722 047452 013746 004100
6723 047456 104402
6724 047460 104401 047466
6725 047464 000416
6726
6727 047522
6728 047522 013737 177740 004100
6729 047530 013746 004100
6730 047534 104402
6731 047536 104401 047544
6732 047542 000417
6733
6734 047602
6735 047602 013737 177744 004100
6736 047610 013746 004100
6737 047614 104402
6738 047616 013716 001106
6739 047622 000002
6740
6741
6742
6743
6744 047624 012777 002161 133476
6745 047632 005037 003446
6746 047636 032777 000200 133464
6747 047644 001015
6748 047646 005237 003446
6749 047652 001371
6750 047654 005037 003446
6751 047660 032777 000200 133442
6752 047666 001004
6753 047670 005237 003446
6754 047674 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 #WRITE!PSEL.IE,@RHCS1
CLR BITCNT       ;:CLEAR BIT COUNTER
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
BIT #RDY,@RHCS1 ;:IS IT SET YET?
BNE BULL        ;:YES
INC BITCNT      ;:COUNT UP
BEQ BULL        ;:BIT IS NOT GOING TO SET
  
```

6755 047676 00C770
6756 047700
6757 047700 032777 000200 133422
6758 047706 001001
6759 047710 104102
6760 047712 000207
6761
6762
6763
6764
6765 047714 012737 000000 001162
6766 047722 017737 133402 001200
6767 047730 042737 007777 001200
6768
6769 047736 000207
6770 047740 012737 000000 001162
6771 047746 017737 133366 001200
6772 047754 042737 000377 001200
6773
6774 047762 000207
6775 047764 012737 000000 001162
6776 047772 017737 133346 001200
6777 050000 042737 000000 001200
6778
6779 050006 000207
6780 050010 012737 000000 001162
6781 050016 017737 133320 001200
6782 050024 042737 030600 001200
6783
6784 050032 000207
6785 050034 012737 000007 001162
6786 050042 017737 133272 001200
6787 050050 042737 177770 001200
6788
6789 050056 000207
6790 050060 012737 000000 001162
6791 050066 017737 133270 001200
6792 050074 042737 000117 001200
6793
6794 050102 000207
6795
6796
6797
6798
6799
6800 050104 013737 001102 003454
6801 050112 105037 003455
6802 050116 032737 020000 177570
6803 050124 001026
6804 050126 122737 000001 001103
6805 050134 001022
6806 050136 013737 003454 003456
6807 050144 006137 003456
6808 050150 012737 072412 003460
6809 050156 063737 003456 003460
6810 050164 017737 133270 050200

BULL: BR 19\$
BIT #RDY,@RHCS1
BNE CUTE
ERROR 102
CUTE: RTS PC
:*****
:THESE ARE THE CLEARS ROUTINES
:*****
FINDIT: MOV #0,\$REGO ;GET READY TO FIND ERROR
MOV @RHCS1,\$TMP1 ;GET COMPARE READY
BIC #READ6.GO!IE!RDY!A16.A17!PSEL!DVA,\$TMP1
RTS R7 ;CLEAR BITS NOT NEEDED
;RETURN TO PROGRAM
LOOKFO: MOV #0,\$REGO ;GET READY TO FIND ERROR
MOV @RHCS2,\$TMP1 ;GET COMPARE READY
BIC #US1.US2!US4.BAI.PAT!CLR!IR!OR,\$TMP1
RTS R7 ;CLEAR BITS NOT NEEDED
;RETURN TO PROGRAM
LOOKED: MOV #0,\$REGO ;GET READY TO FIND ERROR
MOV @RHER,\$TMP1 ;GET COMPARE READY
BIC #ZERO,\$TMP1
RTS R7 ;CLEAR BITS NOT NEEDED
;RETURN TO PROGRAM
FIND: MOV #0,\$REGO ;GET READY TO FIND ERROR
MOV @RHST,\$TMP1 ;GET COMPARE READY
BIC #DRY!DPR!MOL!PIP,\$TMP1
RTS R7 ;CLEAR BITS NOT NEEDED
;RETURN TO PROGRAM
FOUND: MOV #7,\$REGO ;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
RTS R7 ;CLEAR BITS NOT NEEDED
;RETURN TO PROGRAM
CS3ERR: MOV #0,\$REGO ;GET READY TO FIND ERROR
MOV @RHCS3,\$TMP1 ;GET COMPARE READY
BIC #IE3!IPCK0!IPCK1!IPCK2!IPCK3,\$TMP1
RTS R7 ;CLEAR BITS NOT NEEDED
;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

6811 050172 104401 001223
6812 050176 104401
6813 050200 000000
6814 050202 004737 074130
6815 050206 000207
6816
6817
6818
6819
6820
6821
6822 050210 105737 001103
6823 050214 001446
6824 050216 032737 020000 177570
6825 050224 001042
6826 050226 013737 001102 003454
6827 050234 105037 003455
6828 050240 104401 050246
6829 050244 000406
6830
6831 050262
6832 050262 013746 003454
6833 050266 104402
6834 050270 104401 050276
6835 050274 000416
6836
6837 050332
6838 050332 000207
6839
6840
6841
6842
6843
6844
6845 050334 012716 044636
6846 050340 000002

```
TYPE      ,SCLF
TYPE
MEDADD: 0
TSTNMA: JSR      R7,@#SERRTYP      ;GO TO ERROR TYPE ROUTINE
        RTS      R7                ;RETURN TO ERROR ROUTINE

;:*****
;:THIS PROGRAM WILL DEVIDE THE ERROR
;:PRINTOUT BETWEEN TESTS
;:*****

ERRRST: 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
```

6847
6848
6849
6850
6851 050342 044122 040440 042104
6852 050350 042522 051523 042040
6853 050356 041505 042117 020105
6854 050364 042524 052123 024040
6855 050372 042524 052123 030440
6856 050400 000051
6857 050402 046103 040505 020122
6858 050410 052040 051505 020124
6859 050416 052050 051505 020124
6860 050424 024462 000
6861 050427 124 051505 042524
6862 050434 020122 047503 047116
6863 050442 041505 042524 020104
6864 050450 042524 052123 024040
6865 050456 042524 052123 031440
6866 050464 000051
6867 050466 047527 042122 041440
6868 050474 052517 052116 041440
6869 050502 042514 051101 052040
6870 050510 051505 020124 052050
6871 050516 051505 020124 024464
6872 050524 000
6873 050525 122 041110 020101
6874 050532 046103 040505 020122
6875 050540 042524 052123 024040
6876 050546 042524 052123 032440
6877 050554 000051
6878 050556 044122 040502 020105
6879 050564 046103 040505 020122
6880 050572 042524 052123 024040
6881 050600 042524 052123 033040
6882 050606 000051
6883 050610 044122 041104 041440
6884 050616 042514 051101 052040
6885 050624 051505 020124 052050
6886 050632 051505 020124 024467
6887 050640 000
6888 050641 120 047522 020115
6889 050646 042522 044507 052123
6890 050654 051105 042040 041505
6891 050662 042117 020105 042524
6892 050670 052123 024040 042524
6893 050676 052123 030440 024460
6894 050704 000
6895 050705 122 041510 031523
6896 050712 041040 052111 052040
6897 050720 051505 020124 052050
6898 050726 051505 020124 030461
6899 050734 000051
6900 050736 044122 041527 041040
6901 050744 052111 052040 051505
6902 050752 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)/

Line No	Address	Value	Address	Value	Description
6903	050760	020124	031061	000051	
6904	050766	044122	040502	020105	HED13: .ASCIZ/RHBAE BIT TEST (TEST 13)/
6905	050774	044502	020124	042524	
6906	051002	052123	024040	042524	
6907	051010	052123	030440	024463	
6908	051016	000			
6909	051017	122	041110	020101	HED14: .ASCIZ/RHBA BIT TEST (TEST 14)/
6910	051024	044502	020124	042524	
6911	051032	052123	024040	042524	
6912	051040	052123	030440	024464	
6913	051046	000			
6914	051047	122	042110	020102	HED15: .ASCIZ/RHDB BIT TEST (TEST 15)/
6915	051054	044502	020124	042524	
6916	051062	052123	024040	042524	
6917	051070	052123	030440	024465	
6918	051076	000			
6919	051077	122	053510	020103	HED16: .ASCIZ/RHWC OPERATIONAL TEST (TEST 16)/
6920	051104	050117	051105	052101	
6921	051112	047511	040516	020114	
6922	051120	042524	052123	024040	
6923	051126	042524	052123	030440	
6924	051134	024466	000		
6925	051137	122	041110	020101	HED17: .ASCIZ/RHBA OPERATIONAL TEST (TEST 17)/
6926	051144	050117	051105	052101	
6927	051152	047511	040516	020114	
6928	051160	042524	052123	024040	
6929	051166	042524	052123	030440	
6930	051174	024467	000		
6931	051177	116	046505	052054	HED20: .ASCIZ/NEM,TRE AND SC BIT TEST (TEST 20)/
6932	051204	042522	040440	042116	
6933	051212	051440	020103	044502	
6934	051220	020124	042524	052123	
6935	051226	024040	042524	052123	
6936	051234	031040	024460	000	
6937	051241	127	042503	052054	HED21: .ASCIZ/WCE,TRE AND SC BIT TEST (TEST 21)/
6938	051246	042522	040440	042116	
6939	051254	051440	020103	044502	
6940	051262	020124	042524	052123	
6941	051270	024040	042524	052123	
6942	051276	031040	024461	000	
6943	051303	115	050104	026105	HED22: .ASCIZ/MDPE,TRE AND SC BIT TEST (TEST 22)/
6944	051310	051124	020105	047101	
6945	051316	020104	041523	041040	
6946	051324	052111	052040	051505	
6947	051332	020124	052050	051505	
6948	051340	020124	031062	000051	
6949	051346	050125	026105	051124	HED23: .ASCIZ/UPE,TRE AND SC BIT TEST (TEST 23) RH11 ONLY/
6950	051354	020105	047101	020104	
6951	051362	041523	041040	052111	
6952	051370	052040	051505	020124	
6953	051376	052050	051505	020124	
6954	051404	031462	020051	044122	
6955	051412	030461	047440	046116	
6956	051420	000131			
6957	051422	050125	026105	051124	HED24: .ASCIZ/UPE,TRE AND SC BIT TEST (TEST 24)/
6958	051430	020105	047101	020104	

6959	051436	041523	041040	052111	
6960	051444	052040	051505	020124	
6961	051452	052050	051505	020124	
6962	051460	032062	000051		
6963	051464	042516	026104	051124	HED25: .ASCIZ/NED,TRE AND SC BIT TEST (TEST 25)/
6964	051472	020105	047101	020104	
6965	051500	041523	041040	052111	
6966	051506	052040	051505	020124	
6967	051514	052050	051505	020124	
6968	051522	032462	000051		
6969	051526	054115	026106	051124	HED26: .ASCIZ/MXF,TRE AND SC BIT TEST (TEST 26)/
6970	051534	020105	047101	020104	
6971	051542	041523	041040	052111	
6972	051550	052040	051505	020124	
6973	051556	052050	051505	020124	
6974	051564	033062	000051		
6975	051570	043520	020105	051124	HED27: .ASCIZ/PGE TRE AND SC BIT TEST (TEST 27)/
6976	051576	020105	047101	020104	
6977	051604	041523	041040	052111	
6978	051612	052040	051505	020124	
6979	051620	052050	051505	020124	
6980	051626	033462	000051		
6981	051632	054115	026106	051124	HED30: .ASCIZ/MXF,TRE AND SC BIT TEST (TEST 30)/
6982	051640	020105	047101	020104	
6983	051646	041523	041040	052111	
6984	051654	052040	051505	020124	
6985	051662	052050	051505	020124	
6986	051670	030063	000051		
6987	051674	041515	042520	040440	HED31: .ASCIZ/MCPE AND SC ERROR BIT TEST (TEST 31)/
6988	051702	042116	051440	020103	
6989	051710	051105	047522	020122	
6990	051716	044502	020124	042524	
6991	051724	052123	024040	042524	
6992	051732	052123	031440	024461	
6993	051740	000			
6994	051741	104	046102	052040	HED32: .ASCIZ/DBL TEST,1 WORD FROM A BASE 4 ADDRESS (TEST 32)/
6995	051746	051505	026124	020061	
6996	051754	047527	042122	043040	
6997	051762	047522	020115	020101	
6998	051770	040502	042523	032040	
6999	051776	040440	042104	042522	
7000	052004	051523	024040	042524	
7001	052012	052123	031440	024462	
7002	052020	000			
7003	052021	104	046102	052040	HED33: .ASCIZ/DBL TEST,2 WORD FROM A BASE 4 ADD. (TEST 33)/
7004	052026	051505	026124	020062	
7005	052034	047527	042122	043040	
7006	052042	047522	020115	020101	
7007	052050	040502	042523	032040	
7008	052056	040440	042104	020056	
7009	052064	052050	051505	020124	
7010	052072	031463	000051		
7011	052076	041104	020114	042524	HED34: .ASCIZ/DBL TEST,3 WORD FROM A BASE 4 ADD. (TEST 34)/
7012	052104	052123	031454	053440	
7013	052112	051117	020104	051106	
7014	052120	046517	040440	041040	

7015	052126	051501	020105	020064
7016	052134	042101	027104	024040
7017	052142	042524	052123	031440
7018	052150	024464	000	
7019	052153	104	046102	052040
7020	052160	051505	026124	020064
7021	052166	047527	042122	020123
7022	052174	051106	046517	040440
7023	052202	041040	051501	020105
7024	052210	020064	042101	027104
7025	052216	024040	042524	052123
7026	052224	031440	024465	000
7027	052231	104	046102	052040
7028	052236	051505	026124	020061
7029	052244	047527	042122	043040
7030	052252	047522	020115	020101
7031	052260	040502	042523	032040
7032	052266	040440	042104	024056
7033	052274	042524	052123	031440
7034	052302	024466	000	
7035	052305	104	046102	052040
7036	052312	051505	026124	020062
7037	052320	047527	042122	043040
7038	052326	047522	020115	020101
7039	052334	040502	042523	032040
7040	052342	040440	042104	020056
7041	052350	044527	044124	041040
7042	052356	044501	051440	052105
7043	052364	024040	042524	052123
7044	052372	031440	024467	000
7045	052377	104	046102	052040
7046	052404	051505	026124	020062
7047	052412	047527	042122	053440
7048	052420	052111	020110	040502
7049	052426	020111	042523	020124
7050	052434	047101	020104	051127
7051	052442	052111	020105	042522
7052	052450	020126	052051	051505
7053	052456	020124	030064	000051
7054	052464	041104	020114	042524
7055	052472	052123	047054	052117
7056	052500	040440	041040	051501
7057	052506	020105	020064	042101
7058	052514	020104	052050	051505
7059	052522	020124	030464	000051
7060	052530	041104	020114	042524
7061	052536	052123	041040	051501
7062	052544	020105	020064	042101
7063	052552	027104	053440	044522
7064	052560	042524	043040	042127
7065	052566	024040	042524	052123
7066	052574	032040	024462	000
7067	052601	104	046102	052040
7068	052606	051505	020124	031054
7069	052614	053440	051117	020104
7070	052622	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)/

7071	052630	041040	051501	020105
7072	052636	020064	042101	027104
7073	052644	024040	042524	052123
7074	052652	032040	024463	000
7075	052657	104	046102	052040
7076	052664	051505	026124	020063
7077	052672	047527	042122	026040
7078	052700	047516	020124	020101
7079	052706	040502	042523	032040
7080	052714	040440	042104	026056
7081	052722	051127	052111	020105
7082	052730	042522	020126	052050
7083	052736	051505	020124	032064
7084	052744	000051		
7085	052746	041104	020114	042524
7086	052754	052123	031054	053440
7087	052762	051117	020104	042522
7088	052770	042101	043040	042127
7089	052776	024040	042524	052123
7090	053004	032040	024465	000
7091	053011	104	046102	052040
7092	053016	051505	026124	020062
7093	053024	047527	042122	051040
7094	053032	040505	020104	053506
7095	053040	026104	047516	020124
7096	053046	020101	040502	042523
7097	053054	032040	040440	042104
7098	053062	020056	052050	051505
7099	053070	020124	033064	000051
7100	053076	041104	020114	042524
7101	053104	052123	031054	053440
7102	053112	051117	020104	042522
7103	053120	042101	051040	053105
7104	053126	041054	051501	020105
7105	053134	020064	042101	027104
7106	053142	024040	042524	052123
7107	053150	032040	024467	000
7108	053155	104	046102	052040
7109	053162	051505	026124	020062
7110	053170	047527	042122	051040
7111	053176	040505	020104	042522
7112	053204	026126	047516	020124
7113	053212	020101	040502	042523
7114	053220	032040	040440	042104
7115	053226	020056	052050	051505
7116	053234	020124	030065	000051
7117	053242	041104	020114	042524
7118	053250	052123	031454	053440
7119	053256	051117	020104	042522
7120	053264	042101	043040	042127
7121	053272	041054	051501	020105
7122	053300	020064	042101	027104
7123	053306	024040	042524	052123
7124	053314	032440	024461	000
7125	053321	104	046102	052040
7126	053326	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)/

7127	053334	047527	042122	051040	
7128	053342	040505	020104	042522	
7129	053350	026126	040502	042523	
7130	053356	032040	040440	042104	
7131	053364	020056	052050	051505	
7132	053372	020124	031065	000051	
7133	053400	041527	020105	053505	HED53: .ASCIZ/WCE EW ERROR TEST 'WCELO' (TEST 53)/
7134	053406	042440	051122	051117	
7135	053414	052040	051505	020124	
7136	053422	053442	042503	047514	
7137	053430	020042	052050	051505	
7138	053436	020124	031465	000051	
7139	053444	041527	020105	053517	HED54: .ASCIZ/WCE OW ERROR TEST 'WCEHI' (TEST 54)/
7140	053452	042440	051122	051117	
7141	053460	052040	051505	020124	
7142	053466	053442	042503	044510	
7143	053474	020042	052050	051505	
7144	053502	020124	032065	000051	
7145	053510	047111	042524	052522	HED55: .ASCIZ/INTERUPT ENABLE TEST (TEST 55)/
7146	053516	052120	042440	040516	
7147	053524	046102	020105	042524	
7148	053532	052123	024040	042524	
7149	053540	052123	032440	024465	
7150	053546	000			
7151	053547	122	040505	020104	HED56: .ASCIZ/READ OPERATIONAL TEST (NORMAL #1) (TEST 56)/
7152	053554	050117	051105	052101	
7153	053562	047511	040516	020114	
7154	053570	042524	052123	024040	
7155	053576	047516	046522	046101	
7156	053604	021440	024461	024040	
7157	053612	042524	052123	032440	
7158	053620	024466	000		
7159	053623	122	020110	050117	HED57: .ASCIZ/RH OPERATIONAL WRITE TEST #1 (TEST 57)/
7160	053630	051105	052101	047511	
7161	053636	040516	020114	051127	
7162	053644	052111	020105	042524	
7163	053652	052123	021440	020061	
7164	053660	052050	051505	020124	
7165	053666	033465	000051		
7166	053672	042522	042101	047440	HED60: .ASCIZ/READ OPERATIONAL TEST (NORMAL #2)(TEST 60)/
7167	053700	042520	040522	044524	
7168	053706	047117	046101	052040	
7169	053714	051505	020124	047050	
7170	053722	051117	040515	020114	
7171	053730	031043	024051	042524	
7172	053736	052123	033040	024460	
7173	053744	000			
7174	053745	122	020110	050117	HED61: .ASCIZ/RH OPERATIONAL READ TEST #1 (TEST 61)/
7175	053752	051105	052101	047511	
7176	053760	040516	020114	042522	
7177	053766	042101	052040	051505	
7178	053774	020124	030443	024040	
7179	054002	042524	052123	033040	
7180	054010	024461	000		
7181	054013	122	040505	020104	HED62: .ASCIZ/READ OPERATIONAL TEST (NORMAL #3)(TEST 62)/
7182	054020	050117	051105	052101	

7183	054026	047511	040516	020114
7184	054034	042524	052123	024040
7185	054042	047516	046522	046101
7186	054050	021440	024463	052050
7187	054056	051505	020124	031066
7188	054064	000051		
7189	054066	044122	047440	042520
7190	054074	040522	044524	047117
7191	054102	046101	053440	044522
7192	054110	042524	052040	051505
7193	054116	020124	031043	024040
7194	054124	042524	052123	033040
7195	054132	024463	000	
7196	054135	122	040505	020104
7197	054142	050117	051105	052101
7198	054150	047511	040516	020114
7199	054156	042524	052123	024040
7200	054164	047516	046522	046101
7201	054172	021440	024464	052050
7202	054200	051505	020124	032066
7203	054206	000051		
7204	054210	044122	047440	042520
7205	054216	040522	044524	047117
7206	054224	046101	051040	040505
7207	054232	020104	042524	052123
7208	054240	021440	020062	052050
7209	054246	051505	020124	032466
7210	054254	000051		
7211	054256	051127	052111	020105
7212	054264	050117	051105	052101
7213	054272	047511	040516	020114
7214	054300	042524	052123	024040
7215	054306	047516	046522	046101
7216	054314	021440	024461	052050
7217	054322	051505	020124	033066
7218	054330	000051		
7219	054332	044122	047440	042520
7220	054340	040522	044524	047117
7221	054346	046101	053440	044522
7222	054354	042524	052040	051505
7223	054362	020124	031443	024040
7224	054370	042524	052123	033040
7225	054376	024467	000	
7226	054401	127	044522	042524
7227	054406	047440	042520	040522
7228	054414	044524	047117	046101
7229	054422	052040	051505	020124
7230	054430	047050	051117	040515
7231	054436	020114	031443	024051
7232	054444	042524	052123	033440
7233	054452	024460	000	
7234	054455	122	020110	050117
7235	054462	051105	052101	047511
7236	054470	040516	020114	042522
7237	054476	042101	052040	051505
7238	054504	020124	031443	024040

HED63: .ASCIZ/RH OPERATIONAL WRITE TEST #2 (TEST 63)/

HED64: .ASCIZ/READ OPERATIONAL TEST (NORMAL #4)(TEST 64)/

HED65: .ASCIZ/RH OPERATIONAL READ TEST #2 (TEST 65)/

HED66: .ASCIZ/WRITE OPERATIONAL TEST (NORMAL #1)(TEST 66)/

HED67: .ASCIZ/RH OPERATIONAL WRITE TEST #3 (TEST 67)/

HED70: .ASCIZ/WRITE OPERATIONAL TEST (NORMAL #3)(TEST 70)/

HED71: .ASCIZ/RH OPERATIONAL READ TEST #3 (TEST 71)/

7239	054512	042524	052123	033440	
7240	054520	024461	000		
7241	054523	127	044522	042524	HED72: .ASCIZ/WRITE OPERATIONAL TEST (NORMAL #3)(TEST 72)/
7242	054530	047440	042520	040522	
7243	054536	044524	047117	046101	
7244	054544	052040	051505	020124	
7245	054552	047050	051117	040515	
7246	054560	020114	031443	024051	
7247	054566	042524	052123	033440	
7248	054574	024462	000		
7249	054577	122	020110	050117	HED73: .ASCIZ/RH OPERATIONAL WRITE TEST #4 (TEST 73)/
7250	054604	051105	052101	047511	
7251	054612	040516	020114	051127	
7252	054620	052111	020105	042524	
7253	054626	052123	021440	020064	
7254	054634	052050	051505	020124	
7255	054642	031467	000051		
7256	054646	051127	052111	020105	HED74: .ASCIZ/WRITE OPERATIONAL TEST (NORMAL #4)(TEST 74)/
7257	054654	050117	051105	052101	
7258	054662	047511	040516	020114	
7259	054670	042524	052123	024040	
7260	054676	047516	046522	046101	
7261	054704	021440	024464	052050	
7262	054712	051505	020124	032067	
7263	054720	000051			
7264	054722	044122	047440	042520	HED75: .ASCIZ/RH OPERATIONAL READ TEST #4 (TEST 75)/
7265	054730	040522	044524	047117	
7266	054736	046101	051040	040505	
7267	054744	020104	042524	052123	
7268	054752	021440	020064	052050	
7269	054760	051505	020124	032467	
7270	054766	000051			
7271	054770	040514	043522	020105	HED76: .ASCIZ/LARGE TRANSFER TEST 671 WORDS (TEST 76)/
7272	054776	051124	047101	043123	
7273	055004	051105	052040	051505	
7274	055012	020124	033466	020064	
7275	055020	047527	042122	020123	
7276	055026	052050	051505	020124	
7277	055034	033067	000051		

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055040 047503 051122 041505
055046 020124 044502 020124
055054 044504 020104 047516
055062 020124 042523 020124
055070 047111 051040 053510
055076 000103
055100 047503 051122 041505
055106 020124 044502 020124
055114 044504 020104 047516
055122 020124 042523 020124
055130 047111 051040 041110
055136 000101
055140 047503 051122 041505
055146 020124 044502 020124
055154 044504 020104 047516
055162 020124 042523 020124
055170 047111 041040 051525
055176 040440 042104 042522
055204 051523 051040 043505
055212 000056
055214 047503 051122 041505
055222 020124 044502 020124
055230 044504 020104 047516
055236 020124 042523 020124
055244 047111 051040 042110
055252 000102
055254 047516 026516 054105
055262 051511 040524 052116
055270 046440 046505 051117
055276 020131 044504 020104
055304 047516 020124 042523
055312 020124 047111 051040
055320 041510 031123 000
055325 040 047514 044507
055332 020103 047524 051440
055340 052105 052040 042522
055346 041040 052111 044440
055354 020116 044122 051503
055362 020061 042522 044507
055370 052123 051105 005015
055376 051511 047040 052117
055404 053440 051117 044513
055412 043516 043454 020117
055420 047524 024040 051503
055426 041122 020051 051120
055434 047111 051524 044440
055442 020106 044122 030461
055450 005015
055452 051117 024040 051503
055460 041124 020051 051120

::*****
:ERROR MESSAGES
:*****

.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/

7334	055466	047111	051524	044440	
7335	055474	020106	044122	030067	
7336	055502	044440	020116	047514	
7337	055510	040503	044524	047117	
7338	055516	041040	020067	047117	
7339	055524	041040	052117	020110	
7340	055532	051120	047111	051524	
7341	055540	000			
7342	055541	116	046505	041040	EM7: .ASCIZ/NEM BIT DOES NOT READ AS SET IN RHCS2/
7343	055546	052111	042040	042517	
7344	055554	020123	047516	020124	
7345	055562	042522	042101	040440	
7346	055570	020123	042523	020124	
7347	055576	047111	051040	041510	
7348	055604	031123	000		
7349	055607	116	046505	040440	EM10: .ASCIZ/NEM AND SC NOT SET IN RHCS1/
7350	055614	042116	051440	020103	
7351	055622	047516	020124	042523	
7352	055630	020124	047111	051040	
7353	055636	041510	030523	000	
7354	055643	123	020103	044502	EM11: .ASCIZ/SC BIT SET BY ATTN OR MCPE ERROR/
7355	055650	020124	042523	020124	
7356	055656	054502	040440	052124	
7357	055664	020116	051117	046440	
7358	055672	050103	020105	051105	
7359	055700	047522	000122		
7360	055704	051440	020103	044504	EM12: .ASCIZ/ SC DID NOT SET/
7361	055712	020104	047516	020124	
7362	055720	042523	000124		
7363	055724	051124	020105	044502	EM13: .ASCIZ/TRE BIT IS SET BUT SC READS AS CLEARED/
7364	055732	020124	051511	051440	
7365	055740	052105	041040	052125	
7366	055746	051440	020103	042522	
7367	055754	042101	020123	051501	
7368	055762	041440	042514	051101	
7369	055770	042105	000		
7370	055773	127	042503	041040	EM14: .ASCIZ/WCE BIT DID NOT SET/
7371	056000	052111	042040	042111	
7372	056006	047040	052117	051440	
7373	056014	052105	000		
7374	056017	127	042503	041040	EM15: .ASCIZ/WCE BIT DID NOT SET/
7375	056024	052111	042040	042111	
7376	056032	047040	052117	051440	
7377	056040	052105	000		
7378	056043	124	042522	041040	EM16: .ASCIZ/TRE BIT NOT SET/
7379	056050	052111	047040	052117	
7380	056056	051440	052105	000	
7381	056063	127	042503	040440	EM17: .ASCIZ/WCE AND TRE ARE SET BUT SC BIT NOT SET/
7382	056070	042116	052040	042522	
7383	056074	040440	042522	051440	
7384	056104	052105	041040	052125	
7385	056112	051440	020103	044502	
7386	056120	020124	047516	020124	
7387	056126	042523	000124		
7388	056132	050125	020105	044504	EM20: .ASCIZ/JPE DID NOT SET IN RHCS2/
7389	056140	020104	047516	020124	

7390	056146	042523	020124	047111	
7391	056154	051040	041510	031123	
7392	056162	000			
7393	056163	124	042522	040440	EM21: .ASCII/TRE AND SC BITS ARE SET/
7394	056170	042116	051440	020103	
7395	056176	044502	051524	040440	
7396	056204	042522	051440	052105	
7397	056212	050125	020105	047101	EM22: .ASCIZ/UPE AND SC BIT DID NOT SET/
7398	056220	020104	041523	041040	
7399	056226	052111	042040	042111	
7400	056234	047040	052117	051440	
7401	056242	052105	000		
7402	056245	123	020103	044502	EM23: .ASCIZ/SC BIT, NOT SET/
7403	056252	020124	047516	020124	
7404	056260	042523	000124		
7405	056264	042516	020104	044504	EM24: .ASCIZ/NED DID NOT SET IN RHCS2/
7406	056272	020104	047516	020124	
7407	056300	042523	020124	047111	
7408	056306	051040	041510	031123	
7409	056314	000			
7410	056315	124	042522	040440	EM25: .ASCIZ/TRE AND SC SHOULD NOT SET/
7411	056322	042116	051440	020103	
7412	056330	044123	052517	042114	
7413	056336	047040	052117	051440	
7414	056344	052105	000		
7415	056347	124	042522	051440	EM26: .ASCII/TRE SHOULD NOT BE SET/
7416	056354	047510	046125	020104	
7417	056362	047516	020124	042502	
7418	056370	051440	052105	000	
7419	056375	124	042522	041040	EM27: .ASCIZ/TRE BIT WAS NOT SET BY NED/
7420	056402	052111	053440	051501	
7421	056410	047040	052117	051440	
7422	056416	052105	041040	020131	
7423	056424	042516	000104		
7424	056430	054115	020106	044502	EM30: .ASCIZ/MXF BIT DID NOT SET IN RHCS2/
7425	056436	020124	044504	020104	
7426	056444	047516	020124	042523	
7427	056452	020124	047111	051040	
7428	056460	041510	031123	000	
7429	056465	115	043130	041040	EM31: .ASCIZ/MXF BIT SHOULD BE SET IN RHCS2/
7430	056472	052111	051440	047510	
7431	056500	046125	020104	042502	
7432	056506	051440	052105	044440	
7433	056514	020116	044122	051503	
7434	056522	000062			
7435	056524	054115	020106	047101	EM32: .ASCIZ/MXF AND SC ARE NOT SET/
7436	056532	020104	041523	040440	
7437	056540	042522	047040	052117	
7438	056546	051440	052105	000	
7439	056553	124	042522	051040	EM33: .ASCIZ/TRE READS AS CLEARED, MXF AND SC ARE SET/
7440	056560	040505	051504	040440	
7441	056566	020123	046103	040505	
7442	056574	042522	026104	054115	
7443	056602	020106	047101	020104	
7444	056610	041523	040440	042522	
7445	056616	051440	052105	000	

7446	056623	124	051505	042524
7447	056630	020122	047504	051505
7448	056636	047040	052117	051040
7449	056644	040505	020104	051501
7450	056652	041040	044505	043516
7451	056660	041440	047117	042516
7452	056666	052103	042105	000
7453	056673	102	052111	044440
7454	056700	020116	044122	051503
7455	056706	020063	044527	046114
7456	056714	047040	052117	051440
7457	056722	052105	000	
7458	056725	122	020110	044504
7459	056732	020104	047516	020124
7460	056740	042522	050123	047117
7461	056746	020104	047524	040440
7462	056754	042104	042522	051523
7463	056762	000		
7464	056763	104	052114	042040
7465	056770	042111	047040	052117
7466	056776	051440	052105	044440
7467	057004	020116	044122	051503
7468	057012	000062		
7469	057014	046104	020124	051511
7470	057022	047040	052117	051440
7471	057030	052105	044440	020116
7472	057036	044122	051503	026062
7473	057044	052502	020124	051124
7474	057052	020105	047101	020104
7475	057060	041523	040440	042522
7476	057066	051440	052105	005015
7477	057074	051124	020105	047101
7478	057102	020104	041523	041440
7479	057110	052517	042114	044040
7480	057116	053101	020105	042502
7481	057124	047105	051440	052105
7482	057132	041040	020131	047101
7483	057140	052117	042510	020122
7484	057146	051105	047522	000122
7485	057154	052517	050124	052125
7486	057162	051040	040505	054504
7487	057170	042040	042111	047040
7488	057176	052117	051440	052105
7489	057204	053440	042510	020116
7490	057212	047111	047506	053440
7491	057220	051501	046040	040517
7492	057226	042504	020104	047111
7493	057234	047524	052040	042510
7494	057242	042040	052101	020101
7495	057250	052502	043106	051105
7496	057256	000		
7497	057257	101	046114	041040
7498	057264	052111	020123	044504
7499	057272	020104	047516	020124
7500	057300	047514	042101	044440
7501	057306	052116	020117	044122

EM34: .ASCIZ/TESTER DOES NOT READ AS BEING CONNECTED/

EM35: .ASCIZ/BIT IN RHCS3 WILL NOT SET/

EM36: .ASCIZ/RH DID NOT RESPOND TO ADDRESS/

EM37: .ASCIZ/DLT DID NOT SET IN RHCS2/

EM40: .ASCII/DLT IS NOT SET IN RHCS2,BUT TRE AND SC ARE SET/<15><12>

.ASCIZ/TRE AND SC COULD HAVE BEEN SET BY ANOTHER ERROR/

EM41: .ASCIZ/OUTPUT READY DID NOT SET WHEN INFO WAS LOADED INTO THE DATA BUFFER/

EM42: .ASCIZ/ALL BITS DID NOT LOAD INTO RHWC (177777)/

7502	057314	041527	024040	033461
7503	057322	033467	033467	000051
7504	057330	044122	041527	042040
7505	057336	042111	047040	052117
7506	057344	046040	040517	020104
7507	057352	047101	020131	044502
7508	057360	051524	024040	033461
7509	057366	033467	033467	000051
7510	057374	047523	042515	041040
7511	057402	052111	020123	046103
7512	057410	040505	042522	020104
7513	057416	047111	051040	053510
7514	057424	020103	043101	042524
7515	057432	020122	046103	020122
7516	057440	040527	020123	047514
7517	057446	042101	042105	044440
7518	057454	052116	020117	044122
7519	057462	051503	000062	
7520	057466	047516	026516	054105
7521	057474	051511	040524	052116
7522	057502	046440	046505	051117
7523	057510	020131	044502	020124
7524	057516	042523	020124	047111
7525	057524	051040	041510	031123
7526	057532	024040	042516	024515
7527	057540	000		
7528	057541	122	041110	020101
7529	057546	044504	020104	047516
7530	057554	020124	046103	020122
7531	057562	043101	042524	020122
7532	057570	046103	020122	040527
7533	057576	020123	047514	042101
7534	057604	042105	044440	052116
7535	057612	020117	044122	051503
7536	057620	000062		
7537	057622	046101	020114	044502
7538	057630	051524	042040	042111
7539	057636	047040	052117	046040
7540	057644	040517	020104	047111
7541	057652	047524	051040	041110
7542	057660	020101	030450	033467
7543	057666	033467	024466	000
7544	057673	114	040517	044504
7545	057700	043516	052040	042522
7546	057706	040440	052106	051105
7547	057714	044440	051524	051440
7548	057722	052105	042040	042517
7549	057730	020123	047516	020124
7550	057736	046103	040505	020122
7551	057744	051105	047522	000122
7552	057752	043520	020105	044504
7553	057760	020104	047516	020124
7554	057766	042523	020124	047111
7555	057774	051040	041510	031123
7556	060002	000		
7557	060003	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 !N RHCS2/

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

7558	060010	047522	020115	044127
7559	060016	046111	020105	041501
7560	060024	042503	051523	047111
7561	060032	020107	020101	042522
7562	060040	044507	052123	051105
7563	060046	005015		
7564	060050	044127	041511	020110
7565	060056	047531	051125	052040
7566	060064	051505	042524	020122
7567	060072	040503	047116	052117
7568	060100	051440	050125	046120
7569	060106	020131	047111	047506
7570	060114	046522	052101	0475 1
7571	060122	006516	012	
7572	060125	106	051117	051440
7573	060132	054501	020123	047111
7574	060140	047506	044440	020123
7575	060146	051120	051505	047105
7576	060154	000124		
7577	060156	044122	051503	000061
7578	060164	044122	041527	000
7579	060171	122	041110	000101
7580	060176	044122	051115	000062
7581	060204	044122	051503	000062
7582	060212	044122	052123	000
7583	060217	122	042510	000122
7584	060224	044122	051501	000
7585	060231	122	052110	041104
7586	060236	000		
7587	060237	122	042110	000123
7588	060244	044122	051115	000061
7589	060252	044122	052104	000
7590	060257	122	041110	042501
7591	060264	000		
7592	060265	122	041510	031523
7593	060272	000		
7594	060273	104	053105	041511
7595	060300	020105	052516	041115
7596	060306	051105	044440	020116
7597	060314	044122	051115	020062
7598	060322	047504	051505	047040
7599	060330	052117	042440	052521
7600	060336	046101	040440	033440
7601	060344	043101	042524	020122
7602	060352	020101	046103	040505
7603	060360	000122		
7604	060362	044122	051503	020061
7605	060370	040510	020123	047101
7606	060376	042440	051122	051117
7607	060404	041040	052111	051440
7608	060412	052105	005015	000
7609	060417	105	051122	051117
7610	060424	041040	052111	051440
7611	060432	052105	044440	020116
7612	060440	044122	051503	000062
7613	060446	051105	047522	020122

.ASCII/WHICH YOUR *ESTER 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/

7614	060454	044502	020124	042523
7615	060462	020124	047111	051040
7616	060470	042510	000122	
7617	060474	051105	047522	020122
7618	060502	044502	020124	042523
7619	060510	020124	047111	051040
7620	060516	051510	006524	000012
7621	060524	044122	040502	044440
7622	060532	041516	042522	042515
7623	060540	052116	042105	041040
7624	060546	052125	044440	020124
7625	060554	044504	020104	047516
7626	060562	020124	040503	051122
7627	060570	020131	053117	051105
7628	060576	052040	020117	044122
7629	060604	040502	026105	044122
7630	060612	040502	020105	044123
7631	060620	052517	042114	036440
7632	060626	030064	000	
7633	060631	122	054504	042040
7634	060636	042111	047040	052117
7635	060644	051440	052105	040454
7636	060652	042116	053440	051117
7637	060660	020104	047503	047125
7638	060666	020124	044504	020104
7639	060674	047516	020124	047111
7640	060702	051103	046505	047105
7641	060710	006524	012	
7642	060713	104	044517	043516
7643	060720	040440	053440	044522
7644	060726	042524	047440	042520
7645	060734	040522	044524	047117
7646	060742	000		
7647	060743	122	041110	042501
7648	060750	042040	042111	047040
7649	060756	052117	041440	042514
7650	060764	051101	040440	052106
7651	060772	051105	041440	051114
7652	061000	053440	051501	046040
7653	061006	040517	042504	006504
7654	061014	012		
7655	061015	111	052116	020117
7656	061022	044122	051503	000062
7657	061030	051127	052111	020105
7658	061036	042522	042526	051522
7659	061044	020105	050117	051105
7660	061052	052101	047511	020116
7661	061060	044504	020104	047516
7662	061066	020124	047527	045522
7663	061074	000		
7664				
7665	061075	122	054504	042040
7666	061102	042111	047040	052117
7667	061110	051440	052105	044440
7668	061116	020116	044122	051503
7669	061124	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/

7670	061126	052504	044522	043516
7671	061134	040440	053440	044522
7672	061142	042524	047440	042520
7673	061150	040522	044524	047117
7674	061156	051040	054504	042040
7675	061164	042111	047040	052117
7676	061172	051440	052105	005015
7677	061200	047527	042122	041440
7678	061206	052517	052116	042040
7679	061214	042111	047040	052117
7680	061222	044440	041516	042522
7681	061230	042515	052116	041054
7682	061236	052125	044440	043116
7683	061244	051117	040515	044524
7684	061252	047117	005015	
7685	061256	040527	020123	051127
7686	061264	052111	042524	020116
7687	061272	047524	052040	051505
7688	061300	042524	000122	
7689	061304	052504	044522	043516
7690	061312	040440	053440	044522
7691	061320	042524	047440	042520
7692	061326	040522	044524	047117
7693	061334	051040	054504	042040
7694	061342	042111	047040	052117
7695	061350	051440	052105	005015
7696	061356	047527	042122	041440
7697	061364	052517	052116	042040
7698	061372	042111	047040	052117
7699	061400	044440	041516	042522
7700	061406	042515	052116	040454
7701	061414	042116	044440	043116
7702	061422	051117	040515	044524
7703	061430	047117	005015	
7704	061434	040527	020123	047516
7705	061442	020124	051124	047101
7706	061450	043123	051105	042105
7707	061456	052040	020117	044124
7708	061464	020105	042524	052123
7709	061472	051105	000	
7710	061475	102	042501	044440
7711	061502	020123	042515	051523
7712	061510	042105	052440	026120
7713	061516	052111	051440	047510
7714	061524	046125	020104	050505
7715	061532	040525	020114	030064
7716	061540	000054		
7717	061542	040502	020105	044504
7718	061550	020104	047516	020124
7719	061556	047111	051103	046505
7720	061564	047105	000124	
7721	061570	042522	042101	051040
7722	061576	053105	047440	042520
7723	061604	040522	044524	047117
7724	061612	042040	042111	047040
7725	061620	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)/

7726	061626	020104	051106	046517
7727	061634	052040	051505	042524
7728	061642	020122	047524	051440
7729	061650	047524	040522	042507
7730	061656	046040	041517	052101
7731	061664	047511	020116	051050
7732	061672	052502	024506	000
7733	061677	122	041110	042501
7734	061704	042440	052521	046101
7735	061712	020123	026060	052111
7736	061720	051440	047510	046125
7737	061726	020104	050505	040525
7738	061734	020114	030064	005015
7739	061742	043101	042524	020122
7740	061750	020101	047117	020105
7741	061756	047527	042122	053440
7742	061764	044522	042524	000
7743	061771	101	033461	042040
7744	061776	042111	047040	052117
7745	062004	051440	052105	040440
7746	062012	052106	051105	041040
7747	062020	020101	040527	020123
7748	062026	047111	051103	046505
7749	062034	047105	042524	006504
7750	062042	000012		
7751	062044	040502	042040	042111
7752	062052	047040	052117	044440
7753	062060	041516	042522	042515
7754	062066	052116	000	
7755	062071	102	020101	047111
7756	062076	051103	046505	047105
7757	062104	042524	020104	052502
7758	062112	020124	052111	042040
7759	062120	042111	047040	052117
7760	062126	041440	051101	054522
7761	062134	052040	006517	012
7762	062141	101	033061	040440
7763	062146	042116	040440	033461
7764	062154	044440	020116	044122
7765	062162	051503	000061	
7766	062166	052517	050124	052125
7767	062174	051040	040505	054504
7768	062202	053440	051501	047040
7769	062210	052117	047040	043505
7770	062216	052101	042105	040440
7771	062224	052106	051105	041440
7772	062232	051114	053440	051501
7773	062240	005015		
7774	062242	047514	042101	042105
7775	062250	044440	052116	020117
7776	062256	044122	051503	000062
7777	062264	046101	020114	044502
7778	062272	051524	042040	042111
7779	062300	047040	052117	051040
7780	062306	040505	020104	047524
7781	062314	051440	047524	040522

EM110: .ASCII/RHBAF EQUALS 0,IT SHOULD EQUAL 40/<15><12>

.ASCIZ/AFTER A ONE WORD WRITE/

EM111: .ASCIZ/A17 DID NOT SET AFTER BA WAS INCREMENTED/<15><12>

EM112: .ASCIZ/BA DID NOT INCREMENT/

EM113: .ASCII/BA INCREMENTED BUT IT DID NOT CARRY TO/<15><12>

.ASCIZ/A16 AND A17 IN RHCS1/

EM114: .ASCII/OUTPUT READY WAS NOT NEGATED AFTER CLR WAS/<15><12>

.ASCIZ/LOADED INTO RHCS2/

EM115: .ASCIZ/ALL BITS DID NOT READ TO STORAGE LOC. (RBUF) DURING A READ REV. OPERATION

7782 062322 042507 046040 041517
7783 062330 020056 051050 052502
7784 062336 024506 042040 051125
7785 062344 047111 020107 020101
7786 062352 042522 042101 051040
7787 062360 053105 020056 050117
7788 062366 051105 052101 047511
7789 062374 000116
7790 062376 042115 042520 042040
7791 062404 042111 047040 052117
7792 062412 051440 052105 044440
7793 062420 020116 044122 051503
7794 062426 000062
7795 062430 047111 047506 042040
7796 062436 042111 047040 052117
7797 062444 053440 044522 042524
7798 062452 052040 020117 042524
7799 062460 052123 051105 042040
7800 062466 044517 043516 040440
7801 062474 005015
7802 062476 051127 052111 020105
7803 062504 042522 042526 051522
7804 062512 020105 050117 051105
7805 062520 052101 047511 000116
7806 062526 051124 020105 047101
7807 062534 020104 041523 053440
7808 062542 042510 042522 047040
7809 062550 052117 051440 052105
7810 062556 041040 020131 042115
7811 062564 042520 000
7812 062567 124 042522 044440
7813 062574 020123 042523 020124
7814 062602 047111 051040 041510
7815 062610 030523 046454 050104
7816 062616 020105 047101 020104
7817 062624 041523 000
7818 062627 123 047510 046125
7819 062634 020104 046101 047523
7820 062642 041040 020105 042523
7821 062650 000124
7822 062652 042115 042520 040440
7823 062660 042116 051440 020103
7824 062666 044123 052517 042114
7825 062674 041040 020105 042523
7826 062702 000124
7827 062704 051124 020105 047101
7828 062712 020104 041523 040440
7829 062720 042522 051440 052105
7830 062726 020054 043520 020105
7831 062734 044123 052517 042114
7832 062742 040440 051514 020117
7833 062750 042502 051440 052105
7834 062756 000
7835 062757 104 046102 042040
7836 062764 042111 047040 052117
7837 062772 051440 052105 040440

EM116: .ASCIZ/MDPE DID NOT SET IN RHCS2/

EM117: .ASCII/INFO DID NOT WRITE TO TESTER DOING A/<15><12>

.ASCIZ/WRITE REVERSE OPERATION/

EM120: .ASCIZ/TRE AND SC WHERE NOT SET BY MDPE/

EM121: .ASCIZ/TRE IS SET IN RHCS1,MDPE AND S:/

.ASCIZ/SHOULD ALSO BE SET/

EM122: .ASCIZ/MDPE AND SC SHOULD BE SET/

EM123: .ASCIZ/TRE AND SC ARE SET, PGE SHOULD ALSO BE SET/

EM124: .ASCII/DBL DID NOT SET AFTER A 4 WORD WRITE FROM/<15><12>

7838	063000	052106	051105	040440
7839	063006	032040	053440	051117
7840	063014	020104	051127	052111
7841	063022	020105	051106	046517
7842	063030	005015		
7843	063032	047101	042440	042526
7844	063040	020116	042101	051104
7845	063046	051505	000123	
7846	063052	041104	020114	042523
7847	063060	020124	047111	051040
7848	063066	041510	031523	042040
7849	063074	044517	043516	040440
7850	063102	030440	053440	051117
7851	063110	020104	051127	052111
7852	063116	020105	051106	046517
7853	063124	005015		
7854	063126	047101	042440	042526
7855	063134	020116	042101	051104
7856	063142	051505	000123	
7857	063146	041104	020114	042523
7858	063154	020124	047111	051040
7859	063162	041510	031523	047440
7860	063170	020116	020101	020063
7861	063176	047527	042122	053440
7862	063204	044522	042524	043040
7863	063212	047522	006515	012
7864	063217	101	020116	053105
7865	063224	047105	040440	042104
7866	063232	042522	051523	000
7867	063237	104	046102	042040
7868	063244	042111	047040	052117
7869	063252	051440	052105	044440
7870	063260	020116	044122	051503
7871	063266	020063	043101	042524
7872	063274	020122	020101	020062
7873	063302	047527	042122	005015
7874	063310	051106	046517	040440
7875	063316	020116	053105	047105
7876	063324	040440	042104	042522
7877	063332	051523	000	
7878	063335	115	050103	020105
7879	063342	042523	020124	047111
7880	063350	051040	041510	030523
7881	063356	041040	052125	051440
7882	063364	020103	042522	042101
7883	063372	020123	051501	041440
7884	063400	042514	051101	042105
7885	063406	000		
7886	063407	115	050103	020105
7887	063414	044504	020104	047516
7888	063422	020124	042523	020124
7889	063430	047111	051040	041510
7890	063436	030523	000	
7891	063441	127	042503	046040
7892	063446	020117	047111	051040
7893	063454	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/

7894	063462	042111	047040	052117
7895	063470	051440	052105	000
7896	063475	127	042503	046040
7897	063502	020117	044123	052517
7898	063510	042114	047440	046116
7899	063516	020131	042502	051440
7900	063524	052105	044440	020116
7901	063532	044122	051503	020063
7902	063540	052502	006524	012
7903	063545	127	042503	044040
7904	063552	020111	046101	047523
7905	063560	051040	040505	051504
7906	063566	040440	020123	042523
7907	063574	000124		
7908	063576	041527	020105	047514
7909	063604	051440	052105	044440
7910	063612	020116	044122	051503
7911	063620	020063	052502	020124
7912	063626	041527	020105	044504
7913	063634	020104	047516	020124
7914	063642	042523	020124	047111
7915	063650	051040	041510	031123
7916	063656	000		
7917	063657	127	042503	044040
7918	063664	020111	044504	020104
7919	063672	047516	020124	042523
7920	063700	020124	047111	051040
7921	063706	041510	031523	000
7922	063713	127	042503	044040
7923	063720	020111	042523	020124
7924	063726	047111	051040	041510
7925	063734	031523	041040	052125
7926	063742	053440	042503	042040
7927	063750	042111	047040	052117
7928	063756	051440	052105	044440
7929	063764	020116	044122	051503
7930	063772	000062		
7931	063774	041527	020105	044510
7932	064002	051440	047510	046125
7933	064010	020104	047117	054514
7934	064016	041040	020105	042523
7935	064024	020124	047111	051040
7936	064032	041510	031523	041040
7937	064040	052125	005015	
7938	064044	041527	020105	047514
7939	064052	040440	051514	020117
7940	064060	042522	042101	020123
7941	064066	051501	051440	052105
7942	064074	000		
7943	064075	127	044522	042524
7944	064102	047440	042520	040522
7945	064110	044524	047117	042040
7946	064116	042111	047040	052117
7947	064124	044440	041516	042522
7948	064132	042515	052116	053440
7949	064140	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 LO ALSO READS AS SET/

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

7950	064146	047125	000124		
7951	064152	052502	020123	042101	EM141: .ASCIZ/BUS ADDRESS DID NOT INCREMENT AFTER A WRITE/
7952	064160	051104	051505	020123	
7953	064166	044504	020104	047516	
7954	064174	020124	047111	051103	
7955	064202	046505	047105	020124	
7956	064210	043101	042524	020122	
7957	064216	020101	051127	052111	
7958	064224	000105			
7959	064226	047111	047506	046522	EM142: .ASCIZ/INFORMATION DID NOT GET WRITTEN TO TESTER/
7960	064234	052101	047511	020116	
7961	064242	044504	020104	047516	
7962	064250	020124	042507	020124	
7963	064256	051127	052111	042524	
7964	064264	020116	047524	052040	
7965	064272	051505	042524	000122	
7966	064300	042522	042101	047440	EM143: .ASCIZ/READ OPERATION DID NOT INCREMENT WORD COUNT/
7967	064306	042520	040522	044524	
7968	064314	047117	042040	042111	
7969	064322	047040	052117	044440	
7970	064330	041516	042522	042515	
7971	064336	052116	053440	051117	
7972	064344	020104	047503	047125	
7973	064352	000124			
7974	064354	052502	020123	042101	EM144: .ASCII/BUS ADDRESS DID NOT INCREMENT AFTER A READ/<15><12>
7975	064362	051104	051505	020123	
7976	064370	044504	020104	047516	
7977	064376	020124	047111	051103	
7978	064404	046505	047105	020124	
7979	064412	043101	042524	020122	
7980	064420	020101	042522	042101	
7981	064426	005015			
7982	064430	050117	051105	052101	.ASCIZ/OPERATION/
7983	064436	047511	000116		
7984	064442	047111	047506	046522	EM145: .ASCIZ/INFORMATION DID NOT READ FROM TESTER/
7985	064450	052101	047511	020116	
7986	064456	044504	020104	047516	
7987	064464	020124	042522	042101	
7988	064472	043040	047522	020115	
7989	064500	042524	052123	051105	
7990	064506	000			
7991	064507	124	044510	020123	EM146: .ASCIZ/THIS IS THE CONTENTS OF THE RH REGISTERS/
7992	064514	051511	052040	042510	
7993	064522	041440	047117	042524	
7994	064530	052116	020123	043117	
7995	064536	052040	042510	051040	
7996	064544	020110	042522	044507	
7997	064552	052123	051105	000123	
7998	064560	046101	020114	044502	EM147: .ASCII/ALL BITS DID NOT GET TRANSFERED DURING A/<15><12>
7999	064566	051524	042040	042111	
8000	064574	047040	052117	043440	
8001	064602	052105	052040	040522	
8002	064610	051516	042506	042522	
8003	064616	020104	052504	044522	
8004	064624	043516	040440	005015	
8005	064632	042522	042101	047440	.ASCIZ/READ OPERATION/

8006	064640	042520	040522	044524
8007	064646	047117	000	
8008	064651	122	040505	020104
8009	064656	050117	051105	052101
8010	064664	047511	020106	044504
8011	064672	020104	047516	020124
8012	064700	042523	046505	052040
8013	064706	020117	047527	045522
8014	064714	047054	020117	005015
8015	064722	047111	047506	046522
8016	064730	052101	047511	020116
8017	064736	040527	020123	051124
8018	064744	047101	043123	051105
8019	064752	042105	052040	020117
8020	064760	052123	051117	043501
8021	064766	020105	047514	027103
8022	064774	051050	052502	024506
8023	065002	000		
8024	065003	101	046114	041040
8025	065010	052111	020123	044127
8026	065016	051105	020105	047516
8027	065024	020124	051124	047101
8028	065032	043123	051105	042105
8029	065040	052040	020117	042524
8030	065046	052123	051105	005015
8031	065054	052504	044522	043516
8032	065062	040440	053440	044522
8033	065070	042524	047440	042520
8034	065076	040522	044524	047117
8035	065104	000		
8036	065105	127	044522	042524
8037	065112	047440	042520	040522
8038	065120	044524	047117	042040
8039	065126	042111	047040	052117
8040	065134	053440	044522	042524
8041	065142	052040	020117	042524
8042	065150	052123	051105	000
8043	065155	104	046102	051440
8044	065162	052105	047440	020116
8045	065170	020101	020062	047527
8046	065176	042122	052040	040522
8047	065204	051516	042506	020122
8048	065212	044527	044124	041040
8049	065220	044501	005015	
8050	065224	042523	020124	047111
8051	065232	051040	041510	031123
8052	065240	000		
8053	065241	104	046102	051440
8054	065246	052105	044440	020116
8055	065254	044122	051503	020063
8056	065262	047117	040440	030440
8057	065270	053440	051117	020104
8058	065276	042522	042101	043040
8059	065304	047522	006515	000012
8060	065312	047101	042440	042526
8061	065320	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 BA1/<15><12>

.ASCIZ/SET IN RHCS2/

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

.ASCIZ/AN EVEN ADDRESS/

8062	065326	051505	000123	
8063	065332	041104	020114	042523
8064	065340	020124	047117	040440
8065	065346	031040	053440	051117
8066	065354	020104	051127	052111
8067	065362	020105	042522	027126
8068	065370	053440	052111	020110
8069	065376	040502	020111	042523
8070	065404	006524	012	
8071	065407	111	020116	044122
8072	065414	051503	000062	
8073	065420	041104	020114	042523
8074	065426	020124	047117	040440
8075	065434	031040	053440	051117
8076	065442	020104	051124	047101
8077	065450	043123	051105	053450
8078	065456	044522	042524	006451
8079	065464	012		
8080	065465	106	047522	020115
8081	065472	047101	047440	042104
8082	065500	040440	042104	042522
8083	065506	051523	000	
8084	065511	104	046102	042040
8085	065516	042111	047040	052117
8086	065524	051440	052105	047440
8087	065532	020116	020101	020062
8088	065540	047527	042122	053440
8089	065546	044522	042524	051040
8090	065554	053105	043056	047522
8091	065562	020115	047101	042440
8092	065570	042526	006516	012
8093	065575	101	042104	042522
8094	065602	051523	000	
8095	065605	104	046102	051440
8096	065612	052105	047440	020116
8097	065620	020101	020062	047527
8098	065626	042122	053440	044522
8099	065634	042524	051040	053105
8100	065642	051105	042523	005015
8101	065650	051106	046517	040440
8102	065656	020116	042117	020104
8103	065664	042101	051104	051505
8104	065672	000123		
8105	065674	041104	020114	042523
8106	065702	020124	047117	040440
8107	065710	031440	053440	051117
8108	065716	020104	051127	052111
8109	065724	020105	042522	042526
8110	065732	051522	006505	012
8111	065737	106	047522	020115
8112	065744	047101	047440	042104
8113	065752	040440	042104	042522
8114	065760	051523	000	
8115	065763	104	046102	042040
8116	065770	042111	047040	052117
8117	065776	051440	052105	047440

EM155: .ASCII/DBL SET ON A 2 WORD WRITE REV. WITH BAI SET/<15><12>

.ASCIZ/IN RHCS2/

EM156: .ASCII/DBL SET ON A 2 WORD TRANSFER(WRITE)/<15><12>

.ASCIZ/FROM AN ODD ADDRESS/

EM157: .ASCII/DBL DID NOT SET ON A 2 WORD WRITE REV.FROM AN EVEN/<15><12>

.ASCIZ/ADDRESS/

EM160: .ASCII/DBL SET ON A 2 WORD WRITE REVERSE/<15><12>

.ASCIZ/FROM AN ODD ADDRESS/

EM161: .ASCII/DBL SET ON A 3 WORD WRITE REVERSE/<15><12>

.ASCIZ/FROM AN ODD ADDRESS/

EM162: .ASCII/DBL DID NOT SET ON A 2 WORD READ FROM AN/<15><12>

8118	066004	020116	020101	020062	
8119	066012	047527	042122	051040	
8120	066020	040505	020104	051106	
8121	066026	046517	040440	006516	
8122	066034	012			
8123	066035	105	042526	020116	.ASCIZ/EVEN ADDRESS/
8124	066042	042101	051104	051505	
8125	066050	000123			
8126	066052	041104	020114	042523	EM163: .ASCII/DBL SET ON A 2 WORD READ FROM/<15><12>
8127	066060	020124	047117	040440	
8128	066066	031040	053440	051117	
8129	066074	020104	042522	042101	
8130	066102	043040	047522	006515	
8131	066110	012			
8132	066111	101	020116	042117	.ASCIZ/AN ODD ADDRESS/
8133	066116	020104	042101	051104	
8134	066124	051505	000123		
8135	066130	041104	020114	042523	EM164: .ASCII/DBL SET ON A 2 WORD READ REVERSE/<15><12>
8136	066136	020124	047117	040440	
8137	066144	031040	053440	051117	
8138	066152	020104	042522	042101	
8139	066160	051040	053105	051105	
8140	066166	042523	005015		
8141	066172	051106	046517	040440	.ASCIZ/FROM AN EVEN ADDRESS/
8142	066200	020116	053105	047105	
8143	066206	040440	042104	042522	
8144	066214	051523	000		
8145	066217	104	046102	042040	EM165: .ASCII/DBL DID NOT SET ON A 2 WORD READ REVERSE/<15><12>
8146	066224	042111	047040	052117	
8147	066232	051440	052105	047440	
8148	066240	020116	020101	020062	
8149	066246	047527	042122	051040	
8150	066254	040505	020104	042522	
8151	066262	042526	051522	006505	
8152	066270	012			
8153	066271	106	047522	020115	.ASCIZ/FROM AN ODD ADDRESS/
8154	066276	047101	047440	042104	
8155	066304	040440	042104	042522	
8156	066312	051523	000		
8157	066315	104	046102	051440	EM166: .ASCII/DBL SET ON A 3 WORD READ FROM/<15><12>
8158	066322	052105	047440	020116	
8159	066330	020101	020063	047527	
8160	066336	042122	051040	040505	
8161	066344	020104	051106	046517	
8162	066352	005015			
8163	066354	047101	042440	042526	.ASCIZ/AN EVEN ADDRESS/
8164	066362	020116	042101	051104	
8165	066370	051505	000123		
8166	066374	041104	020114	044504	EM167: .ASCII/DBL DID NOT SET ON A 3 WORD READ REVERSE/<15><12>
8167	066402	020104	047516	020124	
8168	066410	042523	020124	047117	
8169	066416	040440	031440	053440	
8170	066424	051117	020104	042522	
8171	066432	042101	051040	053105	
8172	066440	051105	042523	005015	
8173	066446	051106	046517	040440	.ASCIZ/FROM AN EVEN ADDRESS/

8174	066454	020116	053105	047105	
8175	066462	040440	042104	042522	
8176	066470	051523	000		
8177	066473	124	042522	051040	EM171: .ASCIZ/TRE READS AS SET PGE AND SC SHOULD BE SET/
8178	066500	040505	051504	040440	
8179	066506	020123	042523	020124	
8180	066514	043520	020105	047101	
3181	066522	020104	041523	051440	
8182	066530	047510	046125	020104	
8183	066536	042502	051440	052105	
8184	066544	000			
8185	066545	123	020103	044123	EM172: .ASCIZ/SC SHOULD BE SET/
8186	066552	052517	042114	041040	
8187	066560	020105	042523	000124	
8188	066566	042122	020131	047111	EM173: .ASCIZ/RDY IN RHCS1 DID NOT CAUSE AN INTERRUPT WITH IE SET/
8189	066574	051040	041510	030523	
8190	066602	042040	042111	047040	
8191	066610	052117	041440	052501	
8192	066616	042523	040440	020116	
8193	066624	047111	042524	051122	
8194	066632	050125	020124	044527	
8195	066640	044124	044440	020105	
8196	066646	042523	000124		
8197	066652	042511	053440	046111	EM174: .ASCIZ/IE WILL NOT SET IN RHCS1/
8198	066660	020114	047516	020124	
8199	066666	042523	020124	047111	
8200	066674	051040	041510	030523	
8201	066702	000			
8202	066703	111	020105	040510	EM175: .ASCIZ/IE HAS AN OPEN GOING TO THE BUS/
8203	066710	020123	047101	047440	
8204	066716	042520	020116	047507	
8205	066724	047111	020107	047524	
8206	066732	052040	042510	041040	
8207	066740	051525	000		
8208	066743	122	041510	031523	EM176: .ASCIZ/RHCS3 HAS AN ERROR BIT SET/
8209	066750	044040	051501	040440	
8210	066756	020116	051105	047522	
8211	066764	020122	044502	020124	
8212	066772	042523	000124		
8213	066776	046104	020124	047101	EM177: .ASCIZ/DLT AND TRE ARE SET,SC SHOULD BE SET/
8214	067004	020104	051124	020105	
8215	067012	051101	020105	042523	
8216	067020	026124	041523	051440	
8217	067026	047510	046125	020104	
8218	067034	042502	051440	052105	
8219	067042	000			
8220	067043	110	041111	052131	EM200: .ASCIZ/HIBYTE ,LOBYTE GATE FOR RHWC NOT WORKING PROPERLY/
8221	067050	020105	046054	041117	
8222	067056	052131	020105	040507	
8223	067064	042524	043040	051117	
8224	067072	051040	053510	020103	
8225	067100	047516	020124	047527	
8226	067106	045522	047111	020107	
8227	067114	051120	050117	051105	
8228	067122	054514	000		
8229	067125	110	041111	052131	EM201: .ASCIZ/HIBYTE ,LOBYTE GATE FOR RHDB NOT WORKING PROPERLY/

30	067132	020105	046054	041117	
8231	067140	052131	020105	040507	
8232	067146	042524	043040	051117	
8233	067154	051040	042110	020102	
8234	067162	047516	020124	047527	
8235	067170	045522	047111	020107	
8236	067176	051120	050117	051105	
8237	067204	054514	000		
8238	067207	110	041111	052131	EM202: .ASCIZ/HIBYTE ,LOBYTE GATE FOR RHBA NOT WORKING PROPERLY/
8239	067214	020105	046054	041117	
8240	067222	052131	020105	040507	
8241	067230	042524	043040	051117	
8242	067236	051040	041110	020101	
8243	067244	047516	020124	047527	
8244	067252	045522	047111	020107	
8245	067260	051120	050117	051105	
8246	067266	054514	000		
8247	067271	124	042510	041040	EM203: .ASCIZ/THE BUS ADDRESS IS INCORRECT IT SHOULD BE 15000/
8248	067276	051525	040440	042104	
8249	067304	042522	051523	044440	
8250	067312	020123	047111	047503	
8251	067320	051122	041505	020124	
8252	067326	052111	051440	047510	
8253	067334	046125	020104	042502	
8254	067342	030440	030065	030060	
8255	067350	000			
8256	067351	124	051505	042524	EM204: .ASCIZ/TESTER DATA BUFFER DOES NOT CONTAIN THE CORRECT INFO/
8257	067356	020122	040504	040524	
8258	067364	041040	043125	042506	
8259	067372	020122	047504	051505	
8260	067400	047040	052117	041440	
8261	067406	047117	040524	047111	
8262	067414	052040	042510	041440	
8263	067422	051117	042522	052103	
8264	067430	044440	043116	000117	
8265	067436	044122	042040	042111	EM205: .ASCIZ/RH DID NOT INTERRUPT LOOK AT CS1 TO SEE IF IE IS SET/
8266	067444	047040	052117	044440	
8267	067452	052116	051105	050125	
8268	067460	020124	047514	045517	
8269	067466	040440	020124	051503	
8270	067474	020061	047524	051440	
8271	067502	042505	044440	020106	
8272	067510	042511	044440	020123	
8273	067516	042523	000124		
8274	067522	044122	041527	051440	EM206: .ASCIZ/RHWC SHOULD BE ZERO/
8275	067530	047510	046125	020104	
8276	067536	042502	055040	051105	
8277	067544	000117			
8278					
8279	067546	051124	047101	043123	EM207: .ASCIZ/TRANSFER WAS DONE ON PORT B/
8280	067554	051105	053440	051501	
8281	067562	042040	047117	020105	
8282	067570	047117	050040	051117	
8283	067576	020124	000102		
8284	067602	041520	020040	020040	DH1: .ASCII/PC TEST RHWC CONTENTS RHWC/<15><12>
8285	067610	020040	042524	052123	

8286	067616	020040	020040	044122				
8287	067624	041527	020040	020040				
8288	067632	047503	052116	047105				
8289	067640	051524	051040	053510				
8290	067646	006503	012					
8291	067651	040	020040	020040	.ASCIIZ/	NO.		SHOULD HAVE BEEN/
8292	067656	020040	047040	027117				
8293	067664	020040	020040	020040				
8294	067672	020040	020040	020040				
8295	067700	051440	047510	046125				
8296	067706	020104	040510	042526				
8297	067714	041040	042505	000116				
8298	067722	041520	020040	020040	DH2: .ASCII/PC	TEST	RHBAE	CONTENTS RHBAE/<15><12>
8299	067730	020040	042524	052123				
8300	067736	020040	020040	044122				
8301	067744	040502	020105	020040				
8302	067752	047503	052116	047105				
8303	067760	051524	051040	041110				
8304	067766	042501	005015					
8305	067772	020040	020040	020040	.ASCIIZ/	NO.		SHOULD HAVE BEEN/
8306	070000	020040	047516	020056				
8307	070006	020040	020040	020040				
8308	070014	020040	020040	020040				
8309	070022	044123	052517	042114				
8310	070030	044040	053101	020105				
8311	070036	042502	047105	000				
8312	070043	120	020103	020040	DH3: .ASCII/PC	TEST	RHBA	CONTENTS RHBA/<15><12>
8313	070050	020040	052040	051505				
8314	070056	020124	020040	051040				
8315	070064	041110	020101	020040				
8316	070072	041440	047117	042524				
8317	070100	052116	020123	044122				
8318	070106	040502	005015					
8319	070112	020040	020040	020040	.ASCIIZ/	NO.		SHO'LD HAVE BEEN/
8320	070120	020040	047516	020056				
8321	070126	020040	020040	020040				
8322	070134	020040	020040	020040				
8323	070142	044123	052517	042114				
8324	070150	044040	053101	020105				
8325	070156	042502	047105	000				
8326	070163	120	020103	020040	DH4: .ASCII/PC	TEST	RHDB	CONTENTS RHDB/<15><12>
8327	070170	020040	052040	051505				
8328	070176	020124	020040	051040				
8329	070204	042110	020102	020040				
8330	070212	041440	047117	042524				
8331	070220	052116	020123	044122				
8332	070226	041104	005015					
8333	070232	020040	020040	020040	.ASCIIZ/	NO.		SHOULD HAVE BEEN/
8334	070240	020040	047516	020056				
8335	070246	020040	020040	020040				
8336	070254	020040	020040	020040				
8337	070262	044123	052517	042114				
8338	070270	044040	053101	020105				
8339	070276	042502	047105	000				
8340	070303	120	020103	020040	DH5: .ASCII/PC	TEST	RHCS2	TRE AND SC/<15><12>
8341	070310	020040	052040	051505				

Address	Code	Code	Code	Code	Label	Format	Test	Content
8342	070316	020124	020040	051040				
8343	070324	041510	031123	020040				
8344	070332	052040	042522	040440				
8345	070340	042116	051440	006503				
8346	070346	012						
8347	070347	040	020040	020040		.ASCIZ/	NO.	BITS/
8348	070354	020040	047040	027117				
8349	070362	020040	020040	020040				
8350	070370	020040	020040	020040				
8351	070376	020040	020040	041040				
8352	070404	052111	000123					
8353	070410	041520	020040	020040	DH11:	.ASCII/PC	TEST	CONTENTS OF/<15><12>
8354	070416	020040	042524	052123				
8355	070424	020040	020040	047503				
8356	070432	052116	047105	051524				
8357	070440	047440	006506	012				
8358	070445	040	020040	020040		.ASCIZ/	NO.	RHCS2/
8359	070452	020040	047040	027117				
8360	070460	020040	020040	020040				
8361	070466	020040	044122	051503				
8362	070474	000062						
8363	070476	041520	020040	020040	DH34:	.ASCII/PC	TEST	DEVICE/<15><12>
8364	070504	020040	042524	052123				
8365	070512	020040	020040	042504				
8366	070520	044526	042503	005015				
8367	070526	020040	020040	020040		.ASCIZ/	NO.	CODE/
8368	070534	020040	047516	020056				
8369	070542	020040	020040	047503				
8370	070550	042504	000					
8371	070553	120	000103		DH35:	.ASCIZ/PC/		
8372	070556	041520	020040	020040	DH36:	.ASCII/PC	TEST	FAILING/<15><12>
8373	070564	020040	042524	052123				
8374	070572	020040	020040	040506				
8375	070600	046111	047111	006507				
8376	070606	012						
8377	070607	040	020040	020040		.ASCIZ/	NO.	ADDRESS/
8378	070614	020040	047040	027117				
8379	070622	020040	020040	040440				
8380	070630	042104	042522	051523				
8381	070636	000						
8382	070637	120	020103	020040	DH41:	.ASCIZ/PC	TEST	NUMBER/
8383	070644	020040	052040	051505				
8384	070652	020124	052516	041115				
8385	070660	051105	000					
8386	070663	120	020103	020040	DH52:	.ASCII/PC	TEST	ADDRESS DATA RHAS/<15><12>
8387	070670	020040	052040	051505				
8388	070676	020124	020040	040440				
8389	070704	042104	042522	051523				
8390	070712	020040	040504	040524				
8391	070720	020040	051040	040510				
8392	070726	006523	012					
8393	070731	040	020040	020040		.ASCIZ/	NO.	CONTENTS/
8394	070736	020040	047040	027117				
8395	070744	020040	020040	041440				
8396	070752	047117	042524	052116				
8397	070760	000123						

8398	070762	041520	020040	020040	DH71:	.ASCII/PC	TEST	DEVICE/<15><12>
8399	070770	020040	042524	052123				
8400	070776	020040	020040	042504				
8401	071004	044526	042503	005015				
8402	071012	020040	020040	020040		.ASCIIZ/	NO.	NUMBER/
8403	071020	020040	047516	020056				
8404	071026	020040	020040	052516				
8405	071034	041115	051105	000				
8406	071041	120	020103	020040	DH72:	.ASCII/PC	TEST	CONTENTS OF/<15><12>
8407	071046	020040	052040	051505				
8408	071054	020124	020040	041440				
8409	071062	047117	042524	052116				
8410	071070	020123	043117	005015				
8411	071076	020040	020040	020040		.ASCIIZ/	NO.	REGISTER/
8412	071104	020040	047516	020056				
8413	071112	020040	020040	051040				
8414	071120	043505	051511	042524				
8415	071126	000122						
8416	071130	041520	020040	020040	DH76:	.ASCIIZ/PC	TEST NO.	RHBAE RHBA/
8417	071136	052040	051505	020124				
8418	071144	047516	020056	051040				
8419	071152	041110	042501	020040				
8420	071160	051040	041110	000101				
8421	071166	041520	020040	020040	DH105:	.ASCIIZ/PC	TEST NO.	RHBAE RHBA RHWC/
8422	071174	052040	051505	020124				
8423	071202	047516	020056	044122				
8424	071210	040502	020105	020040				
8425	071216	044122	040502	020040				
8426	071224	020040	044122	041527				
8427	071232	000						
8428	071233	120	020103	020040	DH111:	.ASCIIZ/PC	TEST NO.	RHCS1 RHBA RHWC/
8429	071240	020040	042524	052123				
8430	071246	047040	027117	051040				
8431	071254	041510	030523	020040				
8432	071262	051040	041110	020101				
8433	071270	020040	051040	053510				
8434	071276	000103						
8435	071300	041520	020040	020040	DH121:	.ASCIIZ/PC	TEST NO.	RHCS1 RHCS2/
8436	071306	052040	051505	020124				
8437	071314	047516	020056	044122				
8438	071322	051503	020061	020040				
8439	071330	044122	051503	000062				
8440	071336	041520	020040	020040	DH130:	.ASCIIZ/PC	TEST NO.	RHCS1/
8441	071344	052040	051505	020124				
8442	071352	047516	020056	044122				
8443	071360	051503	000061					
8444	071364	041520	020040	020040	DH132:	.ASCIIZ/PC	TEST NO.	RHBAE RHBA RHCS2 RHCS3/
8445	071372	052040	051505	020124				
8446	071400	047516	020056	044122				
8447	071406	040502	020105	020040				
8448	071414	044122	040502	020040				
8449	071422	020040	044122	051503				
8450	071430	020062	020040	044122				
8451	071436	051503	000063					
8452	071442	041520	020040	020040	DH142:	.ASCIIZ/PC	TEST NO.	EVENAD RHTDB/
8453	071450	052040	051505	020124				

8454	071456	047516	020056	053105					
8455	071464	047105	042101	020040					
8456	071472	044122	042124	000102					
8457	071500	041520	020040	020040	DH146:	.ASCIZ/PC	TEST NO.	RHCS1	RHCS2 RHWC/
8458	071506	052040	051505	020124					
8459	071514	047516	020056	044122					
8460	071522	051503	020061	020040					
8461	071530	044122	051503	020062					
8462	071536	020040	044122	041527					
8463	071544	000							
8464	071545	120	020103	020040	DH147:	.ASCIZ/PC	TEST NO.	RBUF	RHTDB/
8465	071552	020040	042524	052123					
8466	071560	047040	027117	051040					
8467	071566	052502	020106	020040					
8468	071574	051040	052110	041104					
8469	071602	000							
8470	071603	122	041110	042501	DH170:	.ASCIZ/RHBAE	RHBA	RHCS3/	
8471	071610	020040	051040	041110					
8472	071616	020101	020040	051040					
8473	071624	041510	031523	000					
8474	071631	120	020103	020040	DH171:	.ASCIZ/PC	TEST NO.	RHCS3/	
8475	071636	020040	042524	052123					
8476	071644	047040	027117	051040					
8477	071652	041510	031523	000					
8478	071657	120	020103	020040	DH172:	.ASCII/PC	TEST	DEVICE	RHCS2/<15><12>
8479	071664	020040	052040	051505					
8480	071672	020124	020040	042040					
8481	071700	053105	041511	020105					
8482	071706	051040	041510	031123					
8483	071714	005015							
8484	071716	020040	020040	020040		.ASCIZ/	NO.	NUMBER	/
8485	071724	020040	047516	020056					
8486	071732	020040	020040	052516					
8487	071740	041115	051105	020040					
8488	071746	000							
8489		071750				.EVEN			
8490	071750	001116	003454	003444	DT1:	.WORD	\$ERRPC,	TSTNM,	WC,\$REGO,0
8491	071756	001162	000000						
8492	071762	001116	003454	003416	DT2:	.WORD	\$ERRPC,	TSTNM,	BAE,\$REGO,0
8493	071770	001162	000000						
8494	071774	001116	003454	003414	DT3:	.WORD	\$ERRPC,	TSTNM,	BA,\$REGO,0
8495	072002	001162	000000						
8496	072006	001116	003454	003426	DT4:	.WORD	\$ERRPC,	TSTNM,	DB,\$REGO,0
8497	072014	001162	000000						
8498	072020	001116	003454	003422	DT5:	.WORD	\$ERRPC,	TSTNM,	CS2,\$REGO,0
8499	072026	001162	000000						
8500	072032	001116	003454	003422	DT11:	.WORD	\$ERRPC,	TSTNM,	CS2,0
8501	072040	000000							
8502	072042	001116	003454	003434	DT34:	.WORD	\$ERRPC,	TSTNM,	DT,0
8503	072050	000000							
8504	072052	001116	000000		DT35:	.WORD	\$ERRPC,0		
8505	072056	001116	003454	003330	DT36:	.WORD	\$ERRPC,	TSTNM,	RHCS1,0
8506	072064	000000							
8507	072066	001116	003454	000000	DT41:	.WORD	\$ERRPC,	TSTNM,0	
8508	072074	001116	003454	003416	DT52:	.WORD	\$ERRPC,	TSTNM,	BAE,\$REGO,AS,0
8509	072102	001162	003412	000000					

8510	072110	001116	003454	004100	DT71:	.WORD	\$ERRPC,TSTNM,RBUF,0
8511	072116	000000					
8512	072120	001116	003454	003416	DT76:	.WORD	\$ERRPC,TSTNM,BAE,BA,0
8513	072126	003414	000000				
8514	072132	001116	003454	003416	DT105:	.WORD	\$ERRPC,TSTNM,BAE,BA,WC,0
8515	072140	003414	003444	000000			
8516	072146	001116	003454	003420	DT111:	.WORD	\$ERRPC,TSTNM,CS1,BA,WC,0
8517	072154	003414	003444	000000			
8518	072162	001116	003454	003420	DT121:	.WORD	\$ERRPC,TSTNM,CS1,CS2,0
8519	072170	003422	000000				
8520	072174	001116	003454	003420	DT130:	.WORD	\$ERRPC,TSTNM,CS1,0
8521	072202	000000					
8522	072204	001116	003454	003416	DT132:	.WORD	\$ERRPC,TSTNM,BAE,BA,CS2,CS3,0
8523	072212	003414	003422	003424			
8524	072220	000000					
8525	072222	001116	003454	004000	DT142:	.WORD	\$ERRPC,TSTNM,EVENAD,\$REGO,0
8526	072230	001162	000000				
8527	072234	001116	003454	003420	DT146:	.WORD	\$ERRPC,TSTNM,CS1,CS2,WC,0
8528	072242	003422	003444	000000			
8529	072250	001116	003454	004100	DT147:	.WORD	\$ERRPC,TSTNM,RBUF,\$REGO,0
8530	072256	001162	000000				
8531	072262	003416	003414	003424	DT170:	.WORD	BAE,BA,CS3,0
8532	072270	000000					
8533	072272	001116	003454	003424	DT171:	.WORD	\$ERRPC,TSTNM,CS3,0
8534	072300	000000					
8535	072302	001116	003454	004100	DT172:	.WORD	\$ERRPC,TSTNM,RBUF,CS2,0
8536	072310	003422	000000				
8537					.EVEN		
8538	072314	000	000	000	DF1:	.BYTE	0,0,0,0
8539	072317	000					
8540	072320	000	000	000	DF2:	.BYTE	0,0,0,0
8541	072323	000					
8542	072324	000	000	000	DF3:	.BYTE	0,0,0,0
8543	072327	000					
8544	072330	000	000	000	DF4:	.BYTE	0,0,0,0
8545	072333	000					
8546	072334	000	000	000	DF5:	.BYTE	0,0,0,0
8547	072337	000					
8548	072340	000	000	000	DF11:	.BYTE	0,0,0
8549	072343	000	000	000	DF34:	.BYTE	0,0,0
8550	072346	000			DF35:	.BYTE	0
8551	072347	000	000	000	DF36:	.BYTE	0,0,0
8552	072352	000	000		DF41:	.BYTE	0,0
8553	072354	000	000	000	DF52:	.BYTE	0,0,0,0,0
8554	072357	000	000				
8555	072361	000	000	000	DF71:	.BYTE	0,0,0
8556	072364	000	000	000	DF76:	.BYTE	0,0,0,0
8557	072367	000					
8558	072370	000	000	000	DF105:	.BYTE	0,0,0,0,0
8559	072373	000	000				
8560	072375	000	000	000	DF132:	.BYTE	0,0,0,0,0,0
8561	072400	000	000	000			
8562	072403	000	000	000	DF170:	.BYTE	0,0,0
8563	072406	000	000	000	DF172:	.BYTE	0,0,0,0
8564	072411	000					
8565					.EVEN		

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8567 072412 000000
8568 072414 050342
8569 072416 050402
8570 072420 050427
8571 072422 050466
8572 072424 050525
P573 072426 050556
8574 072430 050610
8575 072432 050641
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8578 072440 050766
8579 072442 051017
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8587 072462 051422
8588 072464 051464
8589 072466 051526
8590 072470 051570
8591 072472 051632
8592 072474 051674
8593 072476 051741
8594 072500 052021
8595 072502 052076
8596 072504 052153
8597 072506 052231
8598 072510 052305
8599 072512 052377
8600 072514 052464
8601 072516 052530
8602 072520 052601
8603 072522 052657
8604 072524 052746
8605 072526 053011
8606 072530 053076
8607 072532 053155
8608 072534 053242
8609 072536 053321
8610 072540 053400
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8612 072544 053510
8613 072546 053547
8614 072550 053623
8615 072552 053672
8616 072554 053745
8617 072556 054013
8618 072560 054066
8619 072562 054135
8620 072564 054210
8621 072566 054256

HEADER: 0
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END OF PASS ROUTINE

H 13

SEQ 0163

8622	072570	054332
8623	072572	054401
8624	072574	054455
8625	072576	054523
8626	072600	054577
8627	072602	054646
8628	072604	054722
8629	072606	054770

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8644 072610
8645 072610 032777 040000 106322
8646 072616 001111
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8648 072620 000416
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8650 072622 013746 000004
8651 072626 012737 072646 000004
8652 072634 005737 177060
8653 072640 012637 000004
8654 072644 000463
8655 072646 022626
8656 072650 012637 000004
8657 072654 000423
8658 072656
8659 072656 032777 000400 106254
8660 072664 001404
8661 072666 127737 106246 001102
8662 072674 001462
8663 072676 105737 001103
8664 072702 001421
8665 072704 123737 001115 001103
8666 072712 101015
8667 072714 032777 001000 106216
8668 072722 001404
8669 072724 013737 001110 001106
8670 072732 000443
8671 072734 105037 001103
8672 072740 005037 001212
8673 072744 000415
8674 072746 032777 004000 106164
8675 072754 001011
8676 072756 005737 001100
8677 072762 001406
8678 072764 005237 001104
8679 072770 023737 001212 001104
8680 072776 002021
8681 073000 012737 000001 001104
8682 073006 013737 073056 001212
8683 073014 105237 001102
8684 073020 011637 001106
8685 073024 011637 001110

```
.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

$SCOPE:
1$: BIT #BIT14,@SWR ;;LOOP ON PRESENT TEST?
   BNE $OVER ;;YES IF SW14=1
:####START OF CODE FOR THE XOR TESTER####
$XTSTR: BR 6$ ;;IF RUNNING ON THE 'XOR' TESTER CHANGE
   ;;THIS INSTRUCTION TO A 'NOP' (NOP-240)
   MOV @#ERRVEC,-(SP) ;;SAVE THE CONTENTS OF THE ERROR VECTOR
   MOV #5$,@#ERRVEC ;;SET FOR TIMEOUT
   TST @#177060 ;;TIME OUT ON XOR?
   MOV (SP)+,@#ERRVEC ;;RESTORE THE ERROR VECTOR
   BR $SVLAD ;;GO TO THE NEXT TEST
5$: CMP (SP)+,(SP)+ ;;CLEAR THE STACK AFTER A TIME OUT
   MOV (SP)+,@#ERRVEC ;;RESTORE THE ERROR VECTOR
   BR 7$ ;;LOOP ON THE PRESENT TEST
6$:;####END OF CODE FOR THE XOR TESTER####
   BIT #BIT08,@SWR ;;LOOP ON SPEC. TEST?
   BEQ 2$ ;;BR IF NO
   CMPB @SWR,$TSTNM ;;ON THE RIGHT TEST? SWR<7:0>
   BEQ $OVER ;;BR IF YES
2$: 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
   MOV (SP),$LPERR ;;SAVE ERROR LOOP ADDRESS
```

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8686 073030 005037 001214          CLR      $ESCAPE          ;; CLEAR THE ESCAPE FROM ERROR ADDRESS
8687 073034 112737 000001 001115    MOV      #1,$ERMAX       ;; ONLY ALLOW ONE(1) ERROR ON NEXT TEST
8688 073042 013777 001102 106072    $OVER:  MOV      $STNM,@DISPLAY ;; DISPLAY TEST NUMBER
8689 073050 013716 001106          MOV      $LPADR,(SP)     ;; FUDGE RETURN ADDRESS
8690 073054 000002          RTI                      ;; FIXES PS
8691 073056 000100    $MXCNT: 100             ;; MAX. NUMBER OF ITERATIONS
8692                                     .SBTTL POWER DOWN AND UP ROUTINES
8693
8694                                     ;*****
8695                                     ;POWER DOWN ROUTINE
8696 073060 012737 073220 000024    $PWRDN: MOV      #$ILLUP,@PWRVEC ;; SET FOR FAST UP
8697 073066 012737 000340 000026    MOV      #340,@PWRVEC+2 ;; PRIO:7
8698 073074 010046          MOV      R0,-(SP)       ;; PUSH R0 ON STACK
8699 073076 010146          MOV      R1,-(SP)       ;; PUSH R1 ON STACK
8700 073100 010246          MOV      R2,-(SP)       ;; PUSH R2 ON STACK
8701 073102 010346          MOV      R3,-(SP)       ;; PUSH R3 ON STACK
8702 073104 010446          MOV      R4,-(SP)       ;; PUSH R4 ON STACK
8703 073106 010546          MOV      R5,-(SP)       ;; PUSH R5 ON STACK
8704 073110 017746 106024          MOV      @SWR,-(SP)     ;; PUSH @SWR ON STACK
8705 073114 010637 073224          MOV      SP,$SAVR6     ;; SAVE SP
8706 073120 012737 073132 000024    MOV      #$PWRUP,@PWRVEC ;; SET UP VECTOR
8707 073126 000000          HALT
8708 073130 000776          BR      .-2            ;; HANG UP
8709
8710                                     ;*****
8711                                     ;POWER UP ROUTINE
8712 073132 012737 073220 000024    $PWRUP: MOV      #$ILLUP,@PWRVEC ;; SET FOR FAST DOWN
8713 073140 013706 073224          MOV      $SAVR6,SP     ;; GET SP
8714 073144 005037 073224          CLR      $SAVR6       ;; WAIT LOOP FOR THE TTY
8715 073150 005237 073224    1$:   INC      $SAVR6     ;; WAIT FOR THE INC
8716 073154 001375          BNE     1$            ;; OF WORD
8717 073156 012677 105756          MOV      (SP)+,@SWR    ;; POP STACK INTO @SWR
8718 073162 012605          MOV      (SP)+,R5     ;; POP STACK INTO R5
8719 073164 012604          MOV      (SP)+,R4     ;; POP STACK INTO R4
8720 073166 012603          MOV      (SP)+,R3     ;; POP STACK INTO R3
8721 073170 012602          MOV      (SP)+,R2     ;; POP STACK INTO R2
8722 073172 012601          MOV      (SP)+,R1     ;; POP STACK INTO R1
8723 073174 012600          MOV      (SP)+,R0     ;; POP STACK INTO R0
8724 073176 012737 073060 000024    MOV      #$PWRDN,@PWRVEC ;; SET UP THE POWER DOWN VECTOR
8725 073204 012737 000340 000026    MOV      #340,@PWRVEC+2 ;; PRIO:7
8726 073212 104401          TYPE     $POWER       ;; REPORT THE POWER FAILURE
8727 073214 073226    $PWRMG: .WORD    $POWER ;; POWER FAIL MESSAGE POINTER
8728 073216 000002          RTI
8729 073220 000000    $ILLUP: HALT          ;; THE POWER UP SEQUENCE WAS STARTED
8730 073222 000776          BR      .-2            ;; BEFORE THE POWER DOWN WAS COMPLETE
8731 073224 000000    $SAVR6: 0              ;; PUT THE SP HERE
8732 073226 005015 047520 042527    $POWER: .ASCIZ  <15><12>'POWER'
8733 073234 000122          .EVEN
8734

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8752 073236 105737 001157
8753 073242 100002
8754 073244 000000
8755 073246 000407
8756 073250 010046
8757 073252 017600 000002
8758 073256 112046
8759 073260 001005
8760 073262 005726
8761 073264 012600
8762 073266 062716 000002
8763 073272 000002
8764 073274 122716 000011
8765 073300 001430
8766 073302 122716 000200
8767 073306 001006
8768 073310 005726
8769 073312 104401
8770 073314 001223
8771 073316 105037 073452
8772 073322 000755
8773 073324 004737 073406
8774 073330 123726 001156
8775 073334 001350
8776 073336 013746 001154
8777
8778 073342 105366 000001
8779 073346 002770
8780 073350 004737 073406
8781 073354 105337 073452
8782 073360 000770
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8786 073362 112716 000040
8787 073366 004737 073406
8788 073372 132737 000007 073452
8789 073400 001372
8790 073402 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 \$TPFLC ;:IS THERE A TERMINAL?
BPL 1\$;:BR IF YES
HALT ;:HALT HERE IF NO TERMINAL
BR 3\$;:LEAVE
1\$: MOV R0,-(SP) ;:SAVE R0
MOV @2(SP),R0 ;:GET ADDRESS OF ASCIZ STRING
2\$: MOVB (R0)+,-(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)+,R0 ;:RESTORE R0
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 ;:TYPE A CR AND LF
\$CRLF
CLRB \$CHARCNT ;:CLEAR CHARACTER COUNT
BR 2\$;:GET NEXT CHARACTER
5\$: JSR PC,\$TYPEC ;: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.
7\$: DECB 1(SP) ;:DOES A NULL NEED TO BE TYPED?
BLT 6\$;:BR IF NO--GO POP THE NULL OFF OF STACK
JSR PC,\$TYPEC ;:GO TYPE A NULL
DECB \$CHARCNT ;:DO NOT COUNT AS A COUNT
BR 7\$;:LOOP

:HORIZONTAL TAB PROCESSOR

8\$: MOVB #' ,(SP) ;:REPLACE TAB WITH SPACE
9\$: JSR PC,\$TYPEC ;:TYPE A SPACE
BITB #7,\$CHARCNT ;:BRANCH IF NOT AT
BNE 9\$;:TAB STOP
TST (SP)+ ;:POP SPACE OFF STACK

8791	073404	000724				BR	2\$::GET NEXT CHARACTER
8792	073406	105777	105536			\$TYPEC: TSTB	@\$TPS	::WAIT UNTIL PRINTER IS READY
8793	073412	100375				BPL	\$TYPEC	
8794	073414	116677	000002	105530		MOVB	2(SP),@\$TPB	::LOAD CHAR TO BE TYPED INTO DATA REG.
8795	073422	122766	000015	000002		(MPB	#CR,2(SP)	::IS CHARACTER A CARRIAGE RETURN?
8796	073430	001003				BNE	1\$::BRANCH IF NO
8797	073432	105037	073452			(LRB	\$CHARCNT	::YES--CLEAR CHARACTER COUNT
8798	073436	000406				BR	\$TYPEX	::EXIT
8799	073440	122766	000012	000002	1\$:	(MPB	#LF,2(SP)	::IS CHARACTER A LINE FEED?
8800	073446	001402				BEQ	\$TYPEX	::BRANCH IF YES
8801	073450	105227				INCB	(PC)+	::COUNT THE CHARACTER
8802	073452	000000				\$CHARCNT: WORD	0	::CHARACTER COUNT STORAGE
8803	073454	000207				\$TYPEX: RTS	PC	
8804								


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8805      .SBTTL  BINARY TO OCTAL (ASCII) AND TYPE
8806
8807      ;*****
8808      ;*THIS ROUTINE IS USED TO CHANGE A 16-BIT BINARY NUMBER TO A 6-DIGIT
8809      ;*OCTAL (ASCII) NUMBER AND TYPE IT.
8810      ;*$TYPOS---ENTER HERE TO SETUP SUPPRESS ZEROS AND NUMBER OF DIGITS TO TYPE
8811      ;*CALL:
8812      ;*      MOV      NUM,-(SP)      ;;NUMBER TO BE TYPED
8813      ;*      TYPOS      ;;CALL FOR TYPEOUT
8814      ;*      .BYTE  N      ;;N-1 TO 6 FOR NUMBER OF DIGITS TO TYPE
8815      ;*      .BYTE  M      ;;M=1 OR 0
8816      ;*                               ;;1-TYPE LEADING ZEROS
8817      ;*                               ;;0-SUPPRESS LEADING ZEROS
8818
8819      ;*$TYPON---ENTER HERE TO TYPE OUT WITH THE SAME PARAMETERS AS THE LAST
8820      ;*$TYPOS OR $TYPOC
8821      ;*CALL:
8822      ;*      MOV      NUM,-(SP)      ;;NUMBER TO BE TYPED
8823      ;*      TYPON      ;;CALL FOR TYPEOUT
8824
8825      ;*$TYPOC---ENTER HERE FOR TYPEOUT OF A 16 BIT NUMBER
8826      ;*CALL:
8827      ;*      MOV      NUM,-(SP)      ;;NUMBER TO BE TYPED
8828      ;*      TYPOC      ;;CALL FOR TYPEOUT
8829
8830      073456 017646 000000      $TYPOS: MOV      @ (SP),-(SP)      ;;PICKUP THE MODE
8831      073462 116637 000001 073701  MOVB     1(SP), $OFILL      ;;LOAD ZERO FILL SWITCH
8832      073470 112637 073703      MOVB     (SP)+, $OMODE+1    ;;NUMBER OF DIGITS TO TYPE
8833      073474 062716 000002      ADD      #2, (SP)        ;;ADJUST RETURN ADDRESS
8834      073500 000406      BR      $TYPON
8835      073502 112737 000001 073701  $TYPOC: MOVB     #1, $OFILL      ;;SET THE ZERO FILL SWITCH
8836      073510 112737 000006 073703  MOVB     #6, $OMODE+1    ;;SET FOR SIX(6) DIGITS
8837      073516 112737 000005 073700  $TYPON: MOVB     #5, $OCNT      ;;SET THE ITERATION COUNT
8838      073524 010346      MOV      R3,-(SP)        ;;SAVE R3
8839      073526 010446      MOV      R4,-(SP)        ;;SAVE R4
8840      073530 010546      MOV      R5,-(SP)        ;;SAVE R5
8841      073532 113704 073703      MOVB     $OMODE+1,R4     ;;GET THE NUMBER OF DIGITS TO TYPE
8842      073536 005404      NEG      R4
8843      073540 062704 000006      ADD      #6,R4           ;;SUBTRACT IT FOR MAX. ALLOWED
8844      073544 110437 073702      MOVB     R4, $OMODE      ;;SAVE IT FOR USE
8845      073550 113704 073701      MOVB     $OFILL,R4      ;;GET THE ZERO FILL SWITCH
8846      073554 016605 000012      MOV      12(SP),R5      ;;PICKUP THE INPUT NUMBER
8847      073560 005003      CLR      R3             ;;CLEAR THE OUTPUT WORD
8848      073562 006105      1$:     ROL      R5       ;;ROTATE MSB INTO 'C'
8849      073564 000404      BR      3$             ;;GO DO MSB
8850      073566 006105      2$:     ROL      R5       ;;FORM THIS DIGIT
8851      073570 006105      ROL      R5
8852      073572 006105      ROL      R5
8853      073574 010503      MOV      R5,R3
8854      073576 006103      3$:     ROL      R3       ;;GET LSB OF THIS DIGIT
8855      073600 105337 073702      DECR     $OMODE         ;;TYPE THIS DIGIT?
8856      073604 100016      BPL      7$             ;;BR IF NO
8857      073606 042703 177770      BIC      #177770,R3     ;;GET RID OF JUNK
8858      073612 001002      BNE      4$             ;;TEST FOR 0
8859      073614 005704      TST      R4            ;;SUPPRESS THIS 0?
8860      073616 001403      BEQ      5$             ;;BR IF YES

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8861	073620	005204		4\$:	INC	R4		::DON'T SUPPRESS ANYMORE 0'S
8862	073622	052703	000060		BIS	#'0,R3		::MAKE THIS DIGIT ASCII
8863	073626	052703	000040	5\$:	BIS	#',R3		::MAKE ASCII IF NOT ALREADY
8864	073632	110337	073676		MOVB	R3,8\$::SAVE FOR TYPING
8865	073636	104401	073676		TYPE	,8\$::GO TYPE THIS DIGIT
8866	073642	105337	073700	7\$:	DECB	\$OCNT		::COUNT BY 1
8867	073646	003347			BGT	2\$::BR IF MORE TO DO
8868	073650	002402			BLT	6\$::BR IF DONE
8869	073652	005204			INC	R4		::INSURE LAST DIGIT ISN'T A BLANK
8870	073654	000744			BR	2\$::GO DO THE LAST DIGIT
8871	073656	012605		6\$:	MOV	(SP)+,R5		::RESTORE R5
8872	073660	012604			MOV	(SP)+,R4		::RESTORE R4
8873	073662	012603			MOV	(SP)+,R3		::RESTORE R3
8874	073664	016666	000002 000004		MOV	2(SP),4(SP)		::SET THE STACK FOR RETURNING
8875	073672	012616			MOV	(SP)+,(SP)		
8876	073674	000002			RTI			::RETURN
8877	073676	000		8\$:	.BYTE	0		::STORAGE FOR ASCII DIGIT
8878	073677	000			.BYTE	0		::TERMINATOR FOR TYPE ROUTINE
8879	073700	000		\$OCNT:	.BYTE	0		::OCTAL DIGIT COUNTER
8880	073701	000		\$OFILL:	.BYTE	0		::ZERO FILL SWITCH
8881	073702	000000		\$OMODE:	.WORD	0		::NUMBER OF DIGITS TO TYPE

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8897 073710 010246
8898 073712 010346
8899 073714 010546
8900 073716 012746 020200
8901 073722 016605 000020
8902 073726 100004
8903 073730 005405
8904 073732 112766 000055 000001
8905 073740 005000
8906 073742 012703 074120
8907 073746 112723 000040
8908 073752 005002
8909 073754 016001 074110
8910 073760 160105
8911 073762 002402
8912 073764 005202
8913 073766 000774
8914 073770 060105
8915 073772 005702
8916 073774 001002
8917 073776 1057'5
8918 074000 10040'
8919 074002 106316
8920 074004 103003
8921 074006 116663 000001 177777
8922 074014 052702 000060
8923 074020 052702 000040
8924 074024 110223
8925 074026 005720
8926 074030 020027 000010
8927 074034 002746
8928 074036 003002
8929 074040 010502
8930 074042 000764
8931 074044 105726
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8933 074050 116663 177777 177776
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.SBTTL CONVERT BINARY TO DECIMAL AND TYPE ROUTINE

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

$TYPDS:
MOV      R0,-(SP)      ;;PUSH R0 ON STACK
MOV      R1,-(SP)      ;;PUSH R1 ON STACK
MOV      R2,-(SP)      ;;PUSH R2 ON STACK
MOV      R3,-(SP)      ;;PUSH R3 ON STACK
MOV      R5,-(SP)      ;;PUSH R5 ON STACK
MOV      #20200,-(SP)    ;;SET BLANK SWITCH AND SIGN
MOV      20(SP),R5      ;;GET THE INPUT NUMBER
BPL      1$            ;;BR IF INPUT IS POS.
NEG      R5            ;;MAKE THE BINARY NUMBER POS.
MOVB    #'-,1(SP)      ;;MAKE THE ASCII NUMBER NEG.
1$:      CLR      R0      ;;ZERO THE CONSTANTS INDEX
MOV      #$DBLK,R3      ;;SETUP THE OUTPUT POINTER
MOVB    #' ,(R3)+      ;;SET THE FIRST CHARACTER TO A BLANK
2$:      CLR      R2      ;;CLEAR THE BCD NUMBER
MOV      $DTBL(R0),R1    ;;GET THE CONSTANT
3$:      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
6$:      BIS      #'0,R2      ;;MAKE THE BCD DIGIT ASCII
7$:      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
9$:      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

```

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CONVERT BINARY TO DECIMAL AND TYPE ROUTINE

SEQ 0171

8938	074066	012601			MOV	(SP)+,R1	::POP STACK INTO R1
8939	074070	012600			MOV	(SP)+,R0	::POP STACK INTO R0
8940	074072	104401	074120		TYPE	,SDBLK	::NOW TYPE THE NUMBER
8941	074076	016666	000002	000004	MOV	2(SP),4(SP)	::ADJUST THE STACK
8942	074104	012616			MOV	(SP)+,(SP)	
8943	074106	000002			RTI		::RETURN TO USER
8944	074110	023420			\$DTBL:	10000.	
8945	074112	001750				1000.	
8946	074114	000144				100.	
8947	074116	000012				10.	
8948	074120	000004			\$DBLK:	.BLKW 4	

```

8949
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8956 074130
8957 074130 104401 00 223
8958 074134 010046
8959 074136 005000
8960 074140 153700 001114
8961 074144 001004
8962
8963 074146 013746 001116
8964
8965 074152 104402
8966 074154 000426
8967 074156 005300
8968 074160 006300
8969 074162 006300
8970 074164 006300
8971 074166 062700 001226
8972 074172 012037 074202
8973 074176 001404
8974 074200 104401
8975 074202 000000
8976 074204 104401 001223
8977 074210 012037 074220
8978 074214 001404
8979 074216 104401
8980 074220 000000
8981 074222 104401 001223
8982 074226 011000
8983 074230 001004
8984 074232 012600
8985 074234 104401 001223
8986 074240 000207
8987 074242
8988 074242 013046
8989 074244 104402
8990 074246 005710
8991 074250 001770
8992 074252 104401 074260
8993 074256 000771
8994 074260 020040 000
8995 074264

```

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

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 9010 074264
 9011 074264 105237 001103
 9012 074270 001775
 9013 074272 013777 001102 104642
 9014 074300 032777 002000 104632
 9015 074306 001402
 9016 074310 104401 001216
 9017 074314 005237 001112
 9018 074320 011637 001116
 9019 074324 162737 000002 001116
 9020 074332 117737 104560 001114
 9021 074340 032777 020000 104572
 9022 074346 001004
 9023 074350 004737 050104
 9024 074354 104401 001223
 9025 074360
 9026 074360 005777 104554
 9027 074364 100001
 9028 074366 000000
 9029 074370 032777 001000 104542
 9030 074376 001402
 9031 074400 013716 001110
 9032 074404 005737 001214
 9033 074410 001402
 9034 074412 013716 001214
 9035 074416
 9036 074416 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

$ERROR:
7$:      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
1$:      INC      $ERTTL          ;;COUNT THE NUMBER OF ERRORS
        MOV      (SP), $ERRPC      ;;GET ADDRESS OF ERROR INSTRUCTION
        SUB      #2, $ERRPC
        MOVB     @ $ERRPC, $IFMB    ;;STRIP AND SAVE THE ERROR ITEM CODE
        BIT      #BIT13,@SWR      ;;SKIP TYPEOUT IF SET
        BNE     20$              ;;SKIP TYPEOUTS
        JSR     PC, TSTNMB         ;;GO TO USER ERROR ROUTINE
        TYPE     , $CRLF

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

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074420 011646
 074422 016666 000004 000002
 074430 105777 104510
 074434 100375
 074436 117766 104504 000004
 074444 042766 177600 000004
 074452 026627 000004 000023
 074460 001013
 074462 105777 104456
 074466 100375
 074470 117746 104452
 074474 042716 177600
 074500 022627 000021
 074504 001366
 074506 000750
 074510 026627 000004 000140
 074516 002407
 074520 026627 000004 000175
 074526 003003
 074530 042766 000040 000004
 074536 000002
 074540 010346
 074542 012703 074646
 074546 022703 074656
 074552 101405
 074554 104406
 074556 112613
 074560 122713 000177
 074564 001003
 074566 104401 001222
 074572 000763
 074574 111337 074644
 074600 104401 074644

```

.SBTTL TTY INPUT ROUTINE
*****
.ENABLE LSB
.DSABL LSB
*****
*THIS ROUTINE WILL INPUT A SINGLE CHARACTER FROM THE TTY
*CALL:
*      RDCHR          ;;INPUT A SINGLE CHARACTER FROM THE TTY
*      RETURN HERE   ;;CHARACTER IS ON THE STACK
*                  ;;WITH PARITY BIT STRIPPED OFF
*
$RDCHR: MOV      (SP),-(SP)      ;;PUSH DOWN THE PC
        MOV      4(SP),2(SP)    ;;SAVE THE PS
1$:     TSTB     @STKS          ;;WAIT FOR
        BPL      1$             ;;A CHARACTER
        MCVB     @STKB,4(SP)    ;;READ THE TTY
        BIC      #'C<177>,4(SP) ;;GET RID OF JUNK IF ANY
        CMP      4(SP),#23      ;;IS IT A CONTROL-S?
        BNE      3$            ;;BRANCH IF NO
        TSTB     @STKS          ;;WAIT FOR A CHARACTER
        BPL      2$            ;;LOOP UNTIL ITS THERE
        MOVB     @STKB,-(SP)    ;;GET CHARACTER
        BIC      #'C177,(SP)   ;;MAKE IT 7-BIT ASCII
        CMP      (SP)+,#21      ;;IS IT A CONTROL-Q?
        BNE      2$            ;;IF NOT DISCARD IT
        BR       1$            ;;YES, RESUME
        CMP      4(SP),#140     ;;IS IT UPPER CASE?
        BLT      4$            ;;BRANCH IF YES
        CMV      4(SP),#175     ;;IS IT A SPECIAL CHAR?
        BGT      4$            ;;BRANCH IF YES
        BIC      #40,4(SP)     ;;MAKE IT UPPER CASE
        RTI                    ;;GO BACK TO USER
4$:
*****
*THIS ROUTINE WILL INPUT A STRING FROM THE TTY
*CALL:
*      RDLIN         ;;INPUT A STRING FROM THE TTY
*      RETURN HERE   ;;ADDRESS OF FIRST CHARACTER WILL BE ON THE STACK
*                  ;;TERMINATOR WILL BE A BYTE OF ALL 0'S
*
$RDLIN: MOV      R3,-(SP)      ;;SAVE R3
1$:     MOV      #STYIN,R3     ;;GET ADDRESS
2$:     CMP      #STYIN+8.,R3   ;;BUFFER FULL?
        BLOS     4$            ;;BR IF YES
        RDCHR    ;;GO READ ONE CHARACTER FROM THE TTY
        MOVB     (SP)+,(R3)    ;;GET CHARACTER
        CMPB     #177,(R3)    ;;IS IT A RUBOUT
        BNE     3$            ;;SKIP IF NOT
        TYPE     ,SQUES       ;;TYPE A '?'
        BR       1$          ;;CLEAR THE BUFFER AND LOOP
3$:     MOVB     (R3),9$      ;;ECHO THE CHARACTER
        TYPE     ,9$

```



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9121 074712 011646
9122 074714 016666 000004 000002
9123 074722 010046
9124 074724 010146
9125 074726 010246
9126 074730 104407
9127 074732 012600
9128 074734 005001
9129 074736 005002
9130 074740 112046
9131 074742 001412
9132 074744 006301
9133 074746 006102
9134 074750 006301
9135 074752 006102
9136 074754 006301
9137 074756 006102
9138 074760 042716 177770
9139 074764 062601
9140 074766 000764
9141 074770 005726
9142 074772 010166 000012
9143 074776 010237 075012
9144 075002 012602
9145 075004 012601
9146 075006 012600
9147 075010 000002
9148 075012 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          ::READ AN OCTAL NUMBER
      *      RETURN HERE   ::LOW ORDER BITS ARE ON TOP OF THE STACK
      *                    ::HIGH ORDER BITS ARE IN $HI OCT

$RDOCT: MOV      (SP),-(SP)      ::PROVIDE SPACE FOR THE
      MOV      4(SP),2(SP)      ::INPUT NUMBER
      MOV      R0,-(SP)         ::PUSH R0 ON STACK
      MOV      R1,-(SP)         ::PUSH R1 ON STACK
      MOV      R2,-(SP)         ::PUSH R2 ON STACK
1$:  RDLIN          ::READ AN ASCII LINE
      MOV      (SP)+,R0         ::GET ADDRESS OF 1ST CHARACTER
      CLR      R1              ::CLEAR DATA WORD
      CLR      R2
2$:  MOVB      (R0)+,-(SP)      ::PICKUP THIS CHARACTER
      BEQ      3$              ::IF ZERO GET OUT
      ASL      R1              ::*2
      ROL      R2
      ASL      R1              ::*4
      ROL      R2
      ASL      R1              ::*8
      ROL      R2
      BIC      #^C,(SP)        ::STRIP THE ASCII JUNK
      ADD      (SP)+,R1        ::ADD IN THIS DIGIT
      BR       2$              ::LOOP
3$:  TST      (SP)+            ::CLEAN TERMINATOR FROM STACK
      MOV      R1,12(SP)       ::SAVE THE RESULT
      MOV      R2,$HI OCT
      MOV      (SP)+,R2        ::POP STACK INTO R2
      MOV      (SP)+,R1        ::POP STACK INTO R1
      MOV      (SP)+,R0        ::POP STACK INTO R0
      RTI                      ::RETURN
$HI OCT: .WORD 0              ::HIGH ORDER BITS GO HERE
  
```

```

9149      .SBTTL  TRAP DECODER
9150
9151      ;*****
9152      ;*THIS ROUTINE WILL PICKUP THE LOWER BYTE OF THE "TRAP" INSTRUCTION
9153      ;*AND USE IT TO INDEX THROUGH THE TRAP TABLE FOR THE STARTING ADDRESS
9154      ;*OF THE DESIRED ROUTINE. THEN USING THE ADDRESS OBTAINED IT WILL
9155      ;*GO TO THAT ROUTINE.
9156
9157      075014 010046      $TRAP:  MOV    R0,-(SP)      ;;SAVE R0
9158      075016 016600 000002      MOV    2(SP),R0      ;;GET TRAP ADDRESS
9159      075022 005740      TST    -(R0)         ;;BACKUP BY 2
9160      075024 111000      MOVB   (R0),R0       ;;GET RIGHT BYTE OF TRAP
9161      075026 006300      ASL    R0            ;;POSITION FOR INDEXING
9162      075030 016000 075050      MOV    $TRPAD(R0),R0 ;;INDEX TO TABLE
9163      075034 000200      RTS    R0            ;;GO TO ROUTINE
9164
9165
9166      ;;THIS IS USE TO HANDLE THE "GETPRI" MACRO
9167
9168      075036 011646      $TRAP2: MOV   (SP),-(SP)  ;;MOVE THE PC DOWN
9169      075040 016666 000004 000002  MOV   4(SP),2(SP)  ;;MOVE THE PSW DOWN
9170      075046 000002      RTI                    ;;RESTORE THE PSW
9171
9172      .SBTJL  TRAP TABLE
9173
9174      ;*THIS TABLE CONTAINS THE STARTING ADDRESSES OF THE ROUTINES CALLED
9175      ;*BY THE "TRAP" INSTRUCTION.
9176
9177      :          ROUTINE
9178      :          -----
9179      075050 075036      $TRPAD: .WORD  $TRAP2
9180      075052 073236      $TYPE   ;;CALL=TYPE      TRAP+1(104401)  TTY TYPEOUT ROUTINE
9181      075054 073502      $TYPOC  ;;CALL=TYPOC     TRAP+2(104402)  TYPE OCTAL NUMBER (WITH LEADING ZEROS)
9182      075056 073456      $TYPOS  ;;CALL=TYPOS     TRAP+3(104403)  TYPE OCTAL NUMBER (NO LEADING ZEROS)
9183      075060 073516      $TYPON  ;;CALL=TYPON     TRAP+4(104404)  TYPE OCTAL NUMBER (AS PER LAST CALL)
9184      075062 073704      $TYPDS  ;;CALL=TYPDS     TRAP+5(104405)  TYPE DECIMAL NUMBER (WITH SIGN)
9185
9186
9187      075064 074420      $RDCHR  ;;CALL=RDCHR     TRAP+6(104406)  TTY TYPEIN CHARACTER ROUTINE
9188      075066 074540      $RDLIN  ;;CALL=RDLIN     TRAP+7(104407)  TTY TYPEIN STRING ROUTINE
9189      075070 074712      $RDOCT  ;;CALL=RDOCT     TRAP+10(104410) READ AN OCTAL NUMBER FROM TTY
9190      000001
9190      .END
  
```


EMTVEC=	000030	465#	*807*	1808*
EM1	055040	607	7284#	
EM10	055607	650	7349#	
EM100	060743	1095	7647#	
EM101	061030	1101	7657#	
EM102	061075	1106	7665#	
EM103	061126	1111	7670#	
EM104	061304	1118	7689#	
EM105	061475	1126	7710#	
EM106	061542	1133	7717#	
EM107	061570	1138	7721#	
EM11	055643	656	7354#	
EM110	061677	1143	7733#	
EM111	061771	1149	7743#	
EM112	062044	1154	7751#	
EM113	062071	1159	7755#	
EM114	062166	1165	7766#	
EM115	062264	1171	7777#	
EM116	062376	1176	7790#	
EM117	062430	1181	7795#	
EM12	055704	663	7360#	
EM120	062526	1187	7806#	
EM121	062567	1193	7812#	
EM122	062652	1199	7822#	
EM123	062704	1204	7827#	
EM124	062757	1211	7835#	
EM125	063052	1217	7846#	
EM126	063146	1223	7857#	
EM127	063237	1229	7867#	
EM13	055724	671	7363#	
EM130	063335	1235	7878#	
EM131	063407	1240	7886#	
EM132	063441	1245	7891#	
EM133	063475	1250	7896#	
EM134	063576	1256	7908#	
EM135	063657	1262	7917#	
EM136	063713	1267	7922#	
EM137	063774	1272	7931#	
EM14	055773	681	7370#	
EM140	064075	1277	7943#	
EM141	064152	1282	7951#	
EM142	064226	1287	7959#	
EM143	064300	1292	7966#	
EM144	064354	1297	7974#	
EM145	064442	1302	7984#	
EM146	064507	1307	7991#	
EM147	064560	1313	7998#	
EM15	056017	689	7374#	
EM150	064651	1319	8008#	
EM151	065003	1324	8024#	
EM152	065105	1329	8036#	
EM153	065155	1335	8043#	
EM154	065241	1341	8053#	
EM155	065332	1347	8063#	
EM156	065420	1353	8073#	
EM157	065511	1359	8084#	

EM16	056043	698	7378#
EM160	065605	1365	8095#
EM161	065674	1371	8105#
EM162	065763	1377	8115#
EM163	066052	1382	8126#
EM164	066130	1388	8135#
EM165	066217	1394	8145#
EM166	066315	1400	8157#
EM167	066374	1406	8166#
EM17	056063	708	7381#
EM171	066473	1417	8177#
EM172	066545	1424	8185#
EM173	066566	1430	8188#
EM174	066652	1436	8197#
EM175	066703	1441	8202#
EM176	066743	1446	8208#
EM177	066776	1451	8213#
EM2	055100	613	7290#
EM20	056132	721	7388#
EM200	067043	1456	8220#
EM201	067125	1461	8229#
EM202	067207	1466	8238#
EM203	067271	1471	8247#
EM204	067351	1476	8256#
EM205	067436	1481	8265#
EM206	067522	1486	8274#
EM207	067546	1491	8279#
EM21	056163	728	7393#
EM22	056212	738	7397#
EM23	056245	747	7402#
EM24	056264	757	7405#
EM25	056315	764	7410#
EM26	056347	774	7415#
EM27	056375	787	7419#
EM3	055140	620	7296#
EM30	056430	794	7424#
EM31	056465	802	7429#
EM32	056524	812	7435#
EM33	056553	820	7439#
EM34	056623	831	7446#
EM35	056673	841	7453#
EM36	056725	849	7458#
EM37	056763	858	7464#
EM4	055214	626	7304#
EM40	057014	867	7469#
EM41	057154	876	7485#
EM42	057257	887	7497#
EM43	057330	895	7504#
EM44	057374	901	7510#
EM45	057466	909	7520#
EM46	057541	916	7528#
EM47	057622	923	7537#
EM5	055254	632	7310#
EM50	057673	930	7544#
EM51	057752	937	7552#
EM52	060003	943	7557#

EM53	060156	955	7577#											
EM54	060164	961	7578#											
EM55	060171	967	7579#											
EM56	060176	973	7580#											
EM57	060204	979	7581#											
EM6	055325	638	7317#											
EM60	060212	985	7582#											
EM61	060217	991	7583#											
EM62	060224	997	7584#											
EM63	060231	1003	7585#											
EM64	060237	1009	7587#											
EM65	060244	1015	7588#											
EM66	060252	1021	7589#											
EM67	060257	1027	7590#											
EM7	055541	645	7342#											
EM70	060265	1033	7592#											
EM71	060273	1039	7594#											
EM72	060362	1049	7604#											
EM73	060417	1059	7609#											
EM74	060446	1068	7613#											
EM75	060474	1076	7617#											
EM76	060524	1083	7621#											
EM77	060631	1089	7633#											
ENDPAS	045140	6470#												
ENPS	- 004000	1596#												
ERPIP	025474	4227	4230#											
ERR	= 040000	1570#	2128	6427										
ERRIP	025456	4223	4226#											
ERRTST	050210	2071	2177	2190	2240	2280	2320	2383	2449	2495	2592	2634	2735	2884
		2963	3057	3165	3307	3412	3502	3609	3714	3817	3918	4019	4080	4132
		4181	4231	4281	4336	4389	4447	4495	4548	4601	4654	4707	4760	4813
		4866	4919	4972	5073	5175	5236	5302	5377	5443	5518	5584	5659	5725
		5800	5866	5941	6007	6082	6148	6223	6289	6364	6461	6822#		
ERRVER=	000004	458#	1820	1821*	1832*	1859*	1860*	1892*	1895*	1898*	1901*	1904*	1908*	1912*
		2022	2023*	2037*	2040*	2043	2044*	2047*	2055	2056*	2061*	2070*	8650	8651*
		8653*	8656*											
ERR1	006546	2068	2071#											
ERR10	013246	2702	2722#											
ERR11	014424	2879	2883#											
ERR2	007232	2141	2163	2177#										
ERR29	025752	4277	4280#											
ERR3	011116	2395	2399	2411	2449#									
ERR30	024446	4071	4076	4079#										
ERR4	007274	2188	2190#											
ERR5	011404	2476	2495#											
ERR6	012152	2560	2580#											
ERR7	012464	2630	2633#											
ERTIP	034062	5159	5162#											
ER1	003436	1676#	2216*	2265*	2305*	2352*	2490*	2525*	2552*	2576*	2625*	2665*	2693*	2717*
		2776*	2832*	2871*	2926*	3010*	3105*	3247*	3352*	3442*	3549*	3654*	3757*	3858*
		3959*	4055*	4120*	4169*	4219*	4269*	4324*	4377*	4430*	4483*	4536*	4589*	4642*
		4695*	4748*	4801*	4854*	4907*	4960*	5018*	5053*	5115*	5155*	5220*	5279*	5355*
		5420*	5496*	5561*	5637*	5702*	5778*	5843*	5919*	5984*	6060*	6125*	6201*	6266*
		6342*	6424*											
ER1R	025216	4177	4180#											
EVENAD	004000	1752#	3825	4092	4143	4193	4243	4296	4349	4402	4508	4667	4773	4879

HED22	051303	6943#	8585
HED23	051346	6949#	8586
HED24	051422	6957#	8587
HED25	051464	6963#	8588
HED26	051526	6969#	8589
HED27	051570	6975#	8590
HED3	050427	6861#	8570
HED30	051632	6981#	8591
HED31	051674	6987#	8592
HED32	051741	6994#	8593
HED33	052021	7003#	8594
HED34	052076	7011#	8595
HED35	052153	7019#	8596
HED36	052231	7027#	8597
HED37	052305	7035#	8598
HED4	050466	6867#	8571
HED40	052377	7045#	8599
HED41	052464	7054#	8600
HED42	052530	7060#	8601
HED43	052601	7067#	8602
HED44	052657	7075#	8603
HED45	052746	7085#	8604
HED46	053011	7091#	8605
HED47	053076	7100#	8606
HED5	050525	6873#	8572
HED50	053155	7108#	8607
HED51	053242	7117#	8608
HED52	053321	7125#	8609
HED53	053400	7133#	8610
HED54	053444	7139#	8611
HED55	053510	7145#	8612
HED56	053547	7151#	8613
HED57	053623	7159#	8614
HED6	050556	6878#	8573
HED60	053672	7166#	8615
HED61	053745	7174#	8616
HED62	054013	7181#	8617
HED63	054066	7189#	8618
HED64	054135	7196#	8619
HED65	054210	7204#	8620
HED66	054250	7211#	8621
HED67	054332	7219#	8622
HED7	050610	6883#	8574
HED70	054401	7226#	8623
HED71	054455	7234#	8624
HED72	054523	7241#	8625
HED73	054577	7249#	8626
HED74	054646	7256#	8627
HED75	054722	7264#	8628
HED76	054770	7271#	8629
HERADD-	177742	1656#	6721
HERE	007326	2203#	2229
HIBYTE	012206	2584	2586#
HT =	000011	368#	8764
HURTS	010462	2356	2358#
ICPA -	000010	1588#	4028

8805

MORE	046676	6649#	6659																
MORE2	046666	6647#	6653																
MPE	= 000400	1521#	2120	3125	3267	3359	3408	3462	3569	3674	3777	3878	3979	4067					
		6787																	
MPETST	024356	4059	4062#																
MXF	= 001000	1522#	2120	3125	3267	3372	3462	3569	3674	3764	3813	3878	3931	3933					
		3938	3966	4015	4067	6787													
MYSTIC	014244	2858#																	
NEBL	= 000100	1591#																	
NED	= 010000	1525#	2120	3125	3267	3372	3462	3569	3661	3710	3777	3878	3979	4067					
		6787																	
NEDERR	021330	3622	3624#																
NEM	= 004000	1524#	2120	3112	3161	3267	3372	3462	3569	3674	3777	3878	3979	4067					
		6787																	
NEXTST	046564	6627	6636	6639#															
NOGP	= 000001	1694#																	
OAB	= 125252	1686#	2556	2698	2844	3217	5250	5313	5391	5532	5595	5673	5813	5877					
		5954	6095	6159	6236														
OABTST	014244	2848	2853	2855	2857#														
ODDAD	004002	1753#	4455	4561	4614	4720	4826	4990*	5089	5127*	5365	5506	5647	5788					
		5929	6070																
OFFSET	003456	1746#	6806*	6807*	6809														
OFF11	003402	1654#	2008*	2010	2011*	2015*	2016*	2017	2018*	2019	6538*	6540	6543*	6545*					
		6546*	6547	6548*	6549														
ONE	= 000001	1688#	2507	2675	2750	2795	2802	6632	6647										
OPI	= 020000	1581#	2135	3128	3780	3881													
OR	= 000200	1520#	2329	2334	2355	2360	2365	2373	2377	2783	2809	2814	2835	2847					
		2852	2874	6772	6787														
ORSET	013606	2784	2787#																
OUTOF	050332	6823	6825	6838#															
PARITY	047200	1856	6695#																
PASS	003452	1739#	6376*	6387	6455	6457*													
PAT	= 000020	1517#	3323	3725	6772	6787													
PGE	= 002000	1523#	2120	3125	3267	3372	3462	3569	3674	3777	3865	3914	3979	4067					
		6787																	
PGETST	022734	3833	3838	3840	3842#														
PIP	= 020000	1569#	6782																
PIRQ	= 177772	375#																	
PIRQVE	= 000240	469#																	
PLACE	020544	3515	3517#																
PRIBIT	046736	6633	6660#																
PRIBIT	046726	6648	6656#																
PRO	= 000000	392#																	
PR1	= 000040	393#																	
PR2	= 000100	394#																	
PR3	= 000140	395#																	
PR4	= 000200	396#																	
PR5	= 000240	397#																	
PR6	= 000300	398#																	
PR7	= 000340	399#																	
PS	= 177776	372#	373	5189*															
PSEL	002000	1557#	3091	3233	3338	3428	3535	3640	3743	3844	3945	6443	6744	6767					
PSW	= 177776	373#	6375*																
PWRVE	= 000024	464#	1811*	1812*	8696*	8697*	8706*	8712*	8724*	8725*									
RBUF	004100	1755#	2143*	2148*	2153*	2158*	2165*	2170*	3321	3727	5248	5249*	5287	5289					
		5389	5390*	5428	5430	5530	5531*	5569	5571	5671	5672*	5710	5712	5812					

RHBAE	003360	1640#	2012	2017*	2212	2261	2289*	2290	2301	2308	2311	2316	2348	2394	
		2398	2486	2521	2548	2572	2607*	2608	2609	2621	2661	2689	2713	2772	
		2828	2867	2899*	2922	2977*	3006	3018	3020	3022	3073*	3101	3178*	3243	
		3320*	3348	3438	3519*	3545	3623*	3650	3753	3828*	3854	3955	4051	4093*	
		4116	4165	4215	4265	4297*	4320	4350*	4373	4403*	4426	4456*	4479	4509*	
		4532	4562*	4585	4615*	4638	4668*	4691	4721*	4744	4774*	4797	4827*	4850	
		4880*	4903	4933*	4956	4987*	5014	5049	5111	5151	5187*	5216	5253*	5275	
		5318*	5351	5394*	5416	5459*	5492	5535*	5557	5600*	5633	5676*	5698	5741*	
		5774	5817*	5839	5882*	5915	5958*	5980	6023*	6056	6099*	6121	6164*	6197	
		6240*	6262	6305*	6338	6380*	6420	6541	6547*						
		1628#	2009	2020	2025	2110	2113	2148	2204	2253	2293	2340	2407	2478	
		2513	2540	2564	2613	2653	2681	2705	2753	2758	2764	2779	2820	2859	
		2901*	2903	2908	2914	2929	2982*	2984*	2987	2992	2998	3015	3040	3076*	
		3078	3083	3090	3093	3108	3181*	3183	3188	3200	3205	3211	3218*	3220	
		3225	3232	3235	3250	3322*	3326	3331	3337	3340	3355	3427	3430	3445	
3521*	3523	3528	3534	3537	3552	3626*	3628	3633	3639	3642	3657	3729*			
3731	3736	3742	3745	3760	3829*	3830*	3832	3837	3843	3846	3861	3944			
3947	3962	4032	4037	4043	4058	4062	4064	4095*	4097	4102	4108	4123			
4144*	4146	4151	4157	4172	4194*	4196	4201	4207	4222	4244*	4246	4251			
4257	4272	4299*	4301	4306	4312	4327	4352*	4354	4359	4365	4380	4405*			
4407	4412	4418	4433	4458*	4460	4465	4471	4486	4511*	4513	4518	4524			
4539	4564*	4566	4571	4577	4592	4617*	4619	4624	4630	4645	4670*	4672			
4677	4683	4698	4723*	4725	4730	4736	4751	4776*	4778	4783	4789	4804			
4829*	4831	4836	4842	4857	4882*	4884	4889	4895	4910	4935*	4937	4942			
4948	4963	4993*	4995	5000	5006	5021	5028*	5030	5035	5041	5056	5090*			
5092	5097	5103	5118	5130*	5132	5137	5143	5158	5191*	5192	5197	5202*			
5208	5223	5254*	5256	5261	5267	5283	5320*	5332	5337	5343	5359	5395*			
5397	5402	5408	5424	5461*	5473	5478	5484	5500	5536*	5538	5543	5549			
5565	5602*	5614	5619	5625	5641	5677*	5679	5684	5690	5706	5743*	5755			
5760	5766	5782	5818*	5820	5825	5831	5847	5884*	5896	5901	5907	5923			
5959*	5961	5966	5977	5988	6025*	6037	6042	6048	6064	6100*	6102	6107			
6113	6129	6166*	6178	6183	6189	6205	6241*	6243	6248	6254	6270	6307*			
6319	6324	6330	6346	6393*	6396	6401	6407	6412	6429	6443	6539	6550			
6744*	6746	6751	6757	6766	8505										
RHS1B	003364	1642#	2020*	2021*	3160*	3302*	3407*	3497*	3604*	3709*	3812*	3913*	4014*	6550*	
RHCS2	003340	6551*													
		1632#	2024*	2088*	2089*	2117	2120	2143	2153	2184*	2185*	2203*	2214	2252*	
		2263	2292*	2303	2329	2334	2350	2355	2360	2365	2371*	2373	2377	2458*	
		2459*	2488	2523	2550	2574	2623	2663	2691	2715	2774	2783	2809	2814	
		2830	2835	2847	2852	2869	2874	2896*	2924	3008	3075*	3089	3103	3112	
		3161	3175*	3194*	3198*	3231	3245	3254	3303	3316*	3323*	3324	3350	3359	
		3408	3422*	3426*	3440	3449	3498	3513*	3547	3556	3605	3620*	3652	3661	
		3710	3725*	3755	3764	3813	3824*	3856	3865	3914	3930*	3931*	3933	3938	
		3957	3966	4015	4027*	4053	4094*	4118	4167	4217	4267	4298*	4322	4351*	
		4375	4404*	4428	4457*	4481	4510*	4534	4563*	4587	4616*	4640	4669*	4693	
		4722*	4746	4775*	4799	4828*	4852	4881*	4905	4934*	4958	4986*	5016	5051	
		5069	5086*	5113	5122*	5126*	5153	5171	5183*	5218	5246*	5277	5312*	5353	
		5387*	5418	5453*	5494	5528*	5559	5594*	5635	5669*	5700	5735*	5776	5810*	
		5841	5876*	5917	5951*	5982	6017*	6058	6092*	6123	6158*	6199	6233*	6264	
		6299*	6340	6374*	6422	6771	6786								
RHCS3	003362	1641#	2019*	2045*	2057*	2101	2104	2170	2213	2262	2302	2349	2464*	2465	
	2467	2473*	2474	2475	2487	2522	2549	2573	2622	2662	2690	2714	2773		
	2829	2868	2923	3007	3067	3102	3244	3349	3439	3517*	3546	3651	3754		
	3855	3956	4052	4117	4127	4166	4176	4216	4226	4266	4276	4321	4331		
	4374	4384	4427	4437	4480	4490	4533	4543	4586	4596	4639	4649	4692		
	4702	4745	4755	4798	4808	4851	4861	4904	4914	4957	4967	5015	5050		

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SEQ 0196

US2 = 000002	1514#	6772												
US4 = 000004	1515#	6772												
VECADD 003406	1659#	1792*	1882*	5188*	6383*									
VOUS 033030	5022	5025#												
WATBIT 046362	2145	2150	2155	2160	2167	2172	2228	2238	2273	2313	2494	2512	2539	
	2562	2612	2669	2697	2721	2792	2843	2882	6612#					
WATFIV 010246	2309	2314	2318#											
WATFOR 010036	2289#													
WC 003444	1679#	2205*	2225*	2227	2231*	2235*	2236	2254*	2294*	2341*	2479*	2511	2514*	
	2535*	2538	2541*	2558*	2561	2565*	2614*	2654*	2682*	2706*	2765*	2821*	2860*	
	2915*	2999*	3094*	3236*	3341*	3431*	3538*	3643*	3746*	3847*	3948*	4044*	4109*	
	4158*	4208*	4258*	4313*	4366*	4419*	4472*	4525*	4578*	4631*	4684*	4737*	4790*	
	4843*	4896*	4949*	5007*	5042*	5104*	5144*	5209*	5268*	5344*	5409*	5485*	5550*	
	5626*	5691*	5767*	5832*	5908*	5973*	6049*	6114*	6190*	6255*	6331*	6413*	8490	
	8514	8516	8527											
WCE = 040000	1527#	2120	3125	3254	3303	3372	3462	3569	3674	3777	3878	3979	4067	
	5069	5171	6787											
WCEERR 033730	5133	5138	5140	5142#										
WCEHI = 010000	1539#	2104	3126	3373	3570	3675	5066	5162						
WCELO = 004000	1538#	2104	3126	3373	3570	3675	5060	5168						
WCEOWT 033454	5093	5098	5100	5102#										
WCERR1 007462	2202	2222#												
WCERR2 007546	2220	2234#												
WCETRE 016610	3221	3226	3228	3230#										
WCETST 016400	3184	3189	3191	3193#										
WCTST 016474	3201	3206	3208	3210#										
WHYFO 007224	2175#	2381	2782	2939	2961	3025	3030	3033	3111	3130	3140	3144	3149	
	3153	3214	3253	3272	3282	3286	3291	3295	3358	3377	3387	3391	3396	
	3400	3448	3467	3477	3481	3486	3490	3555	3574	3584	3588	3593	3597	
	3660	3679	3689	3693	3698	3702	3763	3782	3792	3796	3801	3805	3864	
	3883	3893	3897	3902	3906	3965	3984	3994	3998	4003	4007	4061	4069	
	4078	4126	4130	4175	4179	4225	4229	4275	4279	4330	4334	4383	4387	
	4436	4440	4489	4493	4542	4546	4595	4599	4648	4652	4701	4705	4754	
	4758	4807	4811	4860	4864	4913	4917	4966	4970	5024	5059	5063	5121	
	5161	5165	5286	5296	5371	5427	5437	5512	5568	5578	5653	5709	5719	
	5794	5850	5860	5935	5991	6001	6076	6132	6142	6217	6273	6283	6358	
	6459													
WRCHO = 000051	1696#	3218	5028	5130										
WRCH1 = 000052	1697#													
WRCH2 = 000053	1698#													
WRCH3 = 000054	1699#													
WRCH4 = 000055	1700#													
WRCH5 = 000056	1701#													
WRCH6 = 000057	1702#													
WRITE0 = 000061	1716#	2901	2982	2984	3181	3521	3626	3729	3829	3830	4095	4144	4194	
	4244	4352	4458	4993	5090	5191	5320	5818	6393	6744				
WRITE1 = 000062	1717#													
WRITE2 = 000063	1718#	5602	5959											
WRITE3 = 000064	1719#													
WRITE4 = 000065	1720#	5884	6100											
WRITE5 = 000066	1721#													
WRITE6 = 000067	1722#	4405	4511	4564	4617	6166	6241							
ZERO = 000000	1687#	2581	2587	2593	2723	2729	2899	3178	3320	3519	3620	3623	3673	
	3728	3828	4093	4297	4350	4403	4456	4509	4562	4615	4668	4721	4774	
	4827	4880	4933	4987	5187	5249	5253	5318	5330	5390	5394	5459	4771	
	5531	5535	5600	5612	5672	5676	5741	5753	5814	5817	5882	5894	5955	

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CROSS REFERENCE TABLE -- USER SYMBOLS

SEQ 0200

\$XTSTR 072620	8648#													
\$SGET4= 000000	6597#													
\$CFILL 073701	8831*	8835*	8845	8880#										
\$4OCAT= ***** J	8645	9023												
= 075072	472#	476#	481#	483#	526	527#	529#	531#	538#	589	1751#	1754#	1802	
	1816	1817	1839#	1843#	1886#	1925#	1946#	1967#	1988#	2005#	2175	2420#	6500#	
	6512#	6523#	6534#	6582#	6605	6606#	6631#	6646#	6720#	6837#	8489#	8691	8692	
	8708	8730	8805	8948#	8995#	9037	9040	9104#	9105	9111				

.SAPT8	1#		
.SAPTH	1#		
.SAPTY	1#		
.SASTA	1#		
.SCATC	1#	338#	470
.SCMTA	1#	338#	532
.\$DB2D	1#		
.\$DB20	1#		
.\$DIV	1#		
.\$EOP	1#	338#	6558
.\$ERRO	1#	338#	8996
.\$ERRT	1#	338#	8949
.\$MULT	1#		
.\$POWE	1#	338#	8692
.\$RAND	1#		
.\$RDDE	1#		
.\$RDOC	1#	338#	9111
.\$READ	1#	338#	9037
.\$R2AZ	1#		
.\$SAVE	1#		
.\$SB2D	1#		
.\$SB20	1#		
.\$SCOP	1#	338#	8630
.\$SIZE	1#		
.\$SUPR	1#		
.\$TRAP	1#	338#	9149
.\$TYPB	1#		
.\$TYPD	1#	338#	9882
.\$TYPE	1#	338#	8735
.\$TYPO	1#	338#	8805
.\$4OCA	1#		
.1170	1#		

. ABS. 075072 000

ERRORS DETECTED: 0

CZRHBE.BIN,CZRHBE.LST/CRF/SOL/NL:TOC=CZRHBE.SML,CZRHBE.P11
RUN-TIME: 89 105 10 SECONDS
RUN-TIME RATIO: 476/206-2.3
CORE USED: 36K (71 PAGES)