

RH11, RH70

MASSBUS I/O & CONTROLLER
CZRHBD0

AH-9178D-MC
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FICHE 1 OF 1

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This microfiche card contains a grid of frames, each containing technical data for the RH11, RH70. The data is organized into columns and rows, with some frames containing diagrams or tables. The text is small and difficult to read, but it appears to be a detailed technical specification or test data for the device.

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IDENTIFICATION

PRODUCT CODE: AC-9176D-MC
PRODUCT NAME: CZRHBD0 MASSBUS I/O AND CONTROLLER DIAGNOSTIC
DATE CREATED: 1-MAY-78
MAINTAINER: DIAGNOSTIC GROUP
AUTHOR
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DIGITAL	PDP	UNIBUS	MASSBUS
DEC	DECUS	DECTAPE	

TABLE OF CONTENTS

47
48
49
50
51
52
53
54
55
56
57
58
59
60
61
62
63
64
65
66
67
68
69
70
71
72
73
74
75
76
77
78
79
80
81
82
83
84
85
86
87
88
89
90
91
92
93
94
95
96
97
98
99
100
101
102

1.0 ABSTRACT
2.0 REQUIREMENTS
2.1 HARDWARE
2.2 SOFTWARE
3.0 PROGRAM DESCRIPTION
3.1 SWITCH OPTIONS
3.2 SYSMAC ROUTINES
4.0 TEST DESCRIPTIONS

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

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

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

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

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

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

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

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- TEST 12 - RHWC BIT TEST. THIS TEST CHECKS THE WORD COUNT REGISTER TO SEE IF ALL BITS CAN BE SET AND CLEARED AND CHECKS THE REGISTER USING ALTERNATE BITS SET (52525) AND USING (125252) TO MAKE SURE IT WORKS WITH ALTERNATE PATTERN.
- TEST 13 - RHBAE BIT TEST. THIS TEST TESTS THE RHBAE 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 RESETTNG BITS IN THE RHDB REGISTER AND THEN BY USING AN ALTERNATE BIT PATTERN (52525) AND AN OPPOSITE ALTERNATE BIT PATTERN (125252).
- TEST 16 - RHWC OPERATIONAL TEST. THIS TEST CHECKS THAT WHEN THE WORD COUNT REGISTER IS INCREMENTED IT IS CARRIED TO THE HIGHEST BIT AND IS RETURNED TO ZERO.
- TEST 17 - RHBA OPERATIONAL TEST. THIS TEST CHECKS THAT THE BUS ADDRESS REGISTER WILL CARRY THROUGH TO THE HIGHEST BIT IN THE BUS ADDRESS EXTENSION REGISTER OR BIT A17 IN THE RHCS1 REGISTER AFTER IT IS INCREMENTED.
- TEST 20 - NEM, TRE, SC BIT TEST. THIS TEST WILL CHECK THAT NON-EXISTING MEMORY WILL SET THE TRE AND SC BIT IN RHCS1 REGISTER.
- TEST 21 - WCE, TRE, SC BIT TEST. THIS TEST WILL CHECK THAT TRE AND SC SET WHEN A WRITE CHECK ERROR OCCURS (WCE).
- TEST 22 - MDPE, TRE AND SC BIT TEST. THIS TEST CHECKS THAT MDPE CAN BE SET IN RHCS2, AND THAT MDPE SETS TRE AND SC IN THE RHCS1 REGISTER.
- TEST 23 - UPE, TRE, SC ERROR TEST (RH11). THIS TEST CHECKS THE UPE BIT IN RHCS2 TO SEE IF IT SETS AND WHEN IT IT SETS IS TRE AND SC BITS SET IN RHCS1.
- 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.

-
.TITLE MASSBUS RH70 AND RH11 DIAGNOSTIC
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000750

000011

000012

000015

000200

177776

177774

177772

177570

177570

000000

000001

000002

000003

000004

000005

000006

000007

000006

000007

000000

000040

000100

000140

000200

000240

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

;*INITIAL ADDRESS OF THE STACK POINTER *** 750 ***
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
R5= %5             ;;GENERAL REGISTER
R6= %6             ;;GENERAL REGISTER
R7= %7             ;;GENERAL REGISTER
SP= %6             ;;STACK POINTER
PC= %7             ;;PROGRAM COUNTER

;*PRIORITY LEVEL DEFINITIONS
PR0= 0             ;;PRIORITY LEVEL 0
PR1= 40            ;;PRIORITY LEVEL 1
PR2= 100           ;;PRIORITY LEVEL 2
PR3= 140           ;;PRIORITY LEVEL 3
PR4= 200           ;;PRIORITY LEVEL 4
PR5= 240           ;;PRIORITY LEVEL 5

```


383 000300
384 000340
385
386
387 100000
388 040000
389 020000
390 010000
391 004000
392 002000
393 001000
394 000400
395 000200
396 000100
397 000040
398 000020
399 000010
400 000004
401 000002
402 000001

PR6= 300 ;:PRIORITY LEVEL 6
PR7= 340 ;:PRIORITY LEVEL 7

;'SWITCH REGISTER' SWITCH DEFINITIONS

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

;'DATA BIT DEFINITIONS (BIT00 TO BIT15)

414 100000
415 040000
416 020000
417 010000
418 004000
419 002000
420 001000
421 000400
422 000200
423 000100
424 000040
425 000020
426 000010
427 000004
428 000002
429 000001
430
431
432
433
434
435
436
437
438

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

439
440
441
442
443 000004
444 000010
445 000014
446 000014
447 C00014
448 000020
449 000024
450 000030
451 000034
452 000060
453 000064
454 000240
455
456
457 000000
458
459
460
461 000174
462 000174 000000
463 000176 000000
464
465 000200 000137 004176
466 000204
467 000204 000137 004144
468 000210
469 000210 000137 004152
470
471
472
473
474
475 000250
476
477
478
479 177572
480 177574
481 177576
482 172516
483
484
485
486 172300
487 172302
488 172304
489 172306
490 172310
491 172312
492 172314
493 172316
494

```
.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
SR3= 172516

;*KERNEL 'I' PAGE DESCRIPTOR REGISTERS
KIPDR0= 172300
KIPDR1= 172302
KIPDR2= 172304
KIPDR3= 172306
KIPDR4= 172310
KIPDR5= 172312
KIPDR6= 172314
KIPDR7= 172316
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495
496
497 172340
498 172342
499 172344
500 172346
501 172350
502 172352
503 172354
504 172356
505
506
507
508
509
510
511 000214
512 000046
513 000046 046334
514 000052
515 000052 000000
516 000214

;*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

517
518
519
520
521
522
523 001100
524 001100 000000
525 001100 000000
526 001102 000
527 001103 000
528 001104 000000
529 001106 000000
530 001110 000000
531 001112 000000
532 001114 000
533 001115 001
534 001116 000000
535 001120 000000
536 001122 000000
537 001124 000000
538 001126 000000
539 001130 000000
540 001132 000000
541 001134 000
542 001135 000
543 001136 000000
544 001140 177570
545 001142 177570
546 001144 177560
547 001146 177562
548 001150 177564
549 001152 177566
550 001154 000
551 001155 002
552 001156 012
553 001157 000
554 001160 000000
555
556 001162 000000
557 001164 000000
558 001166 000000
559 001170 000000
560 001172 000000
561 001174 000000
562 001176 000000
563 001200 000000
564 001202 000000
565 001204 000000
566 001206 000000
567 001210 000000
568 001212 000000
569 001214 000000
570 001216 177607 000377
571 001222 077
572 001223 015

.SBTTL COMMON TAGS

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

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

MASSBUS RH70 AND RH11 DIAGNOSTIC
CZRHBD.P11 02-MAY-78 10:01

MACY11 30A(1052) 02-MAY-78^{M 1} 10:03 PAGE 12
COMMON TAGS

SEQ 0012

573 001224 000012
574

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

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589 001226
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592 001226 055032
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594 001230 067574
595 001232 071742
596 001234 072306
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598 001236 055072
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601 001240 067714
602 001242 071754
603 001244 072312
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605 001246 055132
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607 001250 070035
608 001252 071766
609 001254 072316
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611 001256 055206
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613 001260 070155
614 001262 072000
615 001264 072322
616
617 001266 055246
618
619 001270 070275
620 001272 072012
621 001274 072326
622
623 001276 055317
624
625
626 001300 070275
627 001302 072012
628 001304 072326
629
630 001306 055533

.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
    
```

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

687					;TRE AND THE BUS
688					
689	001400	070275		DH5	
690	001402	072012		DT5	
691	001404	072326		DF5	
692			:ITEM	17	
693	001406	056055		EM17	;WCE AND TRE ARE SET BUT
694					;SC BIT READS AS CLEARED
695					;LOGIC BETWEEN TRE AND SC
696					;DOES NOT SEEM TO BE WORKING
697					;BUT IT WORKED OK ON THE
698					;NON-EXISTENT MEMORY TEST
699					;WHICH PRECEDED THIS TEST
700					
701	001410	070275		DH5	
702	001412	072012		DT5	
703	001414	072326		DF5	
704					
705			:ITEM	20	
706	001416	056124		EM20	;UPE DID NOT SET IN RHCS2
707					
708	001420	070275		DH5	
709	001422	072012		DT5	
710	001424	072326		DF5	
711					
712			:ITEM	21	
713	001426	056155		EM21	;TRE AND SC BITS ARE SET
714					;EITHER UPE HAS AN OPEN GOING
715					;TO BUS OR TRE AND SC WAS
716					;SET BY ANOTHER ERROR
717					
718	001430	070275		DH5	
719	001432	072012		DT5	
720	001434	072326		DF5	
721					
722			:ITEM	22	
723	001436	056204		EM22	;TRE BIT IS SET, UPE AND SC
724					;SHOULD ALSO BE SET BUT THEY
725					;READ AS CLEARED
726					
727	001440	070275		DH5	
728	001442	072012		DT5	
729	001444	072326		DF5	
730					
731			:ITEM	23	
732	001446	056237		EM23	;UPE AND TRE ARE SET BUT
733					;SC DID NOT SET, LOGIC TO
734					;SET SC DOES NOT SEEM TO
735					;BE WORKING
736					
737	001450	070275		DH5	
738	001452	072012		DT5	
739	001454	072326		DF5	
740					
741			:ITEM	24	
742	001456	056256		EM24	;NED DID NOT SET IN RHCS2

743					
744	001460	070275		DH5	
745	001462	072012		DT5	
746	001464	072326		DF5	
747					
748			:ITEM	25	
749	001466	056307		EM25	
750					:TRE AND SC ARE SET
751					:BUT THEY SHOULD HAVE BEEN
752					:SET BY NED WHICH READS
753					:AS CLEARED
754	001470	070275		DH5	
755	001472	072012		DT5	
756	001474	072326		DF5	
757					
758			:ITEM	26	
759	001476	056341		EM26	
760					:TRE BIT SET BUT NED
761					:AND SC BITS READ AS
762					:CLEARED. NED SHOULD
763					:HAVE SET CAUSING TRE
764					:TO SET WHICH IN TURN
765					:SET SC. LOGIC NOT WORK
766					:ING CORRECTLY
767	001500	070275		DH5	
768	001502	072012		DT5	
769	001504	072326		DF5	
770					
771			:ITEM	27	
772	001506	056367		EM27	
773					:TRE BIT WAS NOT SET
774	001510	070275		DH5	
775	001512	072012		DT5	
776	001514	072326		DF5	
777					:NOT WORKING
778			:ITEM	30	
779	001516	056422		EM30	
780					:MXF BIT DID NOT SET
781					:IN RHCS2
782	001520	070275		DH5	
783	001522	072012		DT5	
784	001524	072326		DF5	
785					
786			:ITEM	31	
787	001526	056457		EM31	
788					:MXF BIT SHOULD BE SET
789					:IN RHCS2 BUT IT READS AS
790					:CLEARED. TRE AND SC ARE SET
791					:IN RHCS1.
792	001530	070275		DH5	
793	001532	072012		DT5	
794	001534	072326		DF5	
795					
796			:ITEM	32	
797	001536	056516		EM32	
798					:TRE BIT IS SET BUT MXF
					:AND SC READ AS CLEARED

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

855				
856	001620	070545	DH35	
857	001622	072044	DT35	
858	001624	072340	DF35	
859				
860			:ITEM 41	
861	001626	057146	EM41	:OUTPUT READY IN RHCS2
862				:DID NOT SET
863				
864	001630	070631	DH41	:PC TEST NO.
865				
866	001632	072060	DT41	:\$ERRPC,\$TSTNM,0
867				
868	001634	072344	DF41	:
869				
870			:ITEM 42	
871				
872	001636	057251	EM42	:ALL BITS DID NOT LOAD INTO RHWC
873				: (177777)
874				
875	001640	000000	0	
876	001642	000000	0	
877	001644	000000	0	
878				
879			:ITEM 43	
880	001646	057322	EM43	:RHWC DID NOT LOAD ANY BITS (177777)
881	001650	000000	0	
882	001652	000000	0	
883	001654	000000	0	
884				
885			:ITEM 44	
886	001656	057366	EM44	:RHWC
887				:SOME BITS CLEARED AFTER CLEAR
888				:WAS LOADED INTO RHCS2
889	001660	000000	0	
890	001662	000000	0	
891	001664	000000	0	
892				
893			:ITEM 45	
894	001666	057460	EM45	:NON-EXISTANT MEMORY BIT
895				:SET IN RHCS2
896	001670	000000	0	
897	001672	000000	0	
898	001674	000000	0	
899				
900			:ITEM 46	
901	001676	057533	EM46	:RHBA DID NOT CLEAR AFTER CLR
902				:WAS LOADED INTO RHCS2
903	001700	000000	0	
904	001702	000000	0	
905	001704	000000	0	
906				
907			:ITEM 47	
908	001706	057614	EM47	:ALL BITS DID NOT LOAD INTO
909				:RHBA REGISTER (177776)
910	001710	000000	0	

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

967	002014	000000	0	
968				
969			:ITEM 60	
970	002016	060204	EM60	;RHST
971	002020	000000	0	
972	002022	000000	0	
973	002024	000000	0	
974				
975			:ITEM 61	
976	002026	060211	EM61	;RHER
977	002030	000000	0	
978	002032	000000	0	
979	002034	000000	0	
980				
981			:ITEM 62	
982	002036	060216	EM62	;RHAS
983	002040	000000	0	
984	002042	000000	0	
985	002044	000000	0	
986				
987			:ITEM 63	
988	002046	060223	EM63	;RHTDB
989	002050	000000	0	
990	002052	000000	0	
991	002054	000000	0	
992				
993			:ITEM 64	
994	002056	060231	EM64	;RHDB
995	002060	000000	0	
996	002062	000000	0	
997	002064	000000	0	
998				
999			:ITEM 65	
1000	002066	060236	EM65	;RHMR1
1001	002070	000000	0	
1002	002072	000000	0	
1003	002074	000000	0	
1004				
1005			:ITEM 66	
1006	002076	060244	EM66	;RHDT
1007	002100	000000	0	
1008	002102	000000	0	
1009	002104	000000	0	
1010				
1011			:ITEM 67	
1012	002106	060251	EM67	;RHBAE
1013	002110	000000	0	
1014	002112	000000	0	
1015	002114	000000	0	
1016				
1017			:ITEM 70	
1018	002116	060257	EM70	;RHCS3
1019	002120	000000	0	
1020	002122	000000	0	
1021	002124	000000	0	
1022				

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

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

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

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

1247 002566 063651
1248 002570 071356
1249 002572 072176
1250 002574 072367
1251
1252 002576 063705
1253 002600 071356
1254 002602 072176
1255 002604 072367
1256
1257 002606 063766
1258 002610 071356
1259 002612 072176
1260 002614 072367
1261

EM135
DH132
DT132
DF132
:ITEM 136
EM136
DH132
DT132
DF132
:ITEM 137
EM137
DH132
DT132
DF132
:ITEM 140

;WCE HI DID NOT SET IN RHCS3

;WCE HI SET BUT WCE DID NOT SET IN RHCS2

;WCE LO SET WITH WCE HI IN RHCS3

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

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

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

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

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100000

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000100
002000
004000
010000
020000
040000
100000

: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)

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

:CONTROL AND STATUS REGISTER 3 (RHCS3)

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

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

:CONTROL AND STATUS 1 REGISTER. (#00)

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

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


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

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

```
1680
1681      000051
1682      000052
1683      000053
1684      000054
1685      000055
1686      000056
1687      000057
1688
1689
1690
1691      000071
1692      000072
1693      000073
1694      000074
1695      000075
1696      000076
1697      000077
1698
1699
1700
1701      000061
1702      000062
1703      000063
1704      000064
1705      000065
1706      000066
1707      000067
1708
1709
1710
1711      000011
1712
1713
1714
1715      000031
1716
1717
1718
1719
1720
1721
1722 003446 000000
1723 003450 000000
1724 003452 000000
1725
1726
1727
1728
1729
1730 003454 000000
1731 003456 000000
1732 003460 000000
1733
1734
1735
```

```
*****
WRCH0= 51      ;THESE WRCH BITS ARE WRITE/CHECK
WRCH1= 52      ;CODES ,IF THE CODE IS AN ODD
WRCH2= 53      ;NUMBER THE GO BIT IS INCLUDED
WRCH3= 54      ;IF THEY ARE EVEN GO BIT IS NOT INCLUDED
WRCH4= 55
WRCH5= 56
WRCH6= 57
*****

READ0= 71     ;READ CODES
READ1= 72     ;IF THE CODE IS AN ODD NUMBER
READ2= 73     ;THE GO BIT IS INCLUDED
READ3= 74
READ4= 75
READ5= 76
READ6= 77
*****

WRITE0= 61    ;WRITE CODES
WRITE1= 62    ;IF THE CODE IS AN ODD NUMBER
WRITE2= 63    ;THE GO BIT IS INCLUDED
WRITE3= 64    ;IF IT IS EVEN THE GO BIT
WRITE4= 65    ;IS NOT INCLUDED
WRITE5= 66
WRITE6= 67
*****

DRCLR= 11     ;CLEARS ALL ERROR BITS IN THE DRIVE
                ;AND SETS THE DRIVE READY BIT
*****

SEARCH= 31    ;SETS A ONE SHOT WHICH SETS
                ;ATA AFTER 100USEC + OR MINUS 20%
*****

                ;WATBIT STORAGE LOCATIONS
*****

BITCNT: 0     ;BIT COUNTER
LOOCNT: 0     ;LOOP CPUNT
PASS: 0       ;PASS COUNT FOR THE LARGE TRANSFER TEST
*****

                ;THIS IS WHERE THE TEST NUMBER IS STORED JUST
                ;BEFORE IT IS PRINTED OUT.....
*****

TSTNM: 0      ;TEST NO. STORAGE
OFFSET: 0     ;OFFSET FOR ERROR HEADER
HEDDAD: 0     ;USE TO FIND HEADER ERROR MESSAGE
*****

                ;THESE ARE THE READ WRITE BUFFERS
*****
```

1736 004000 004000
1737 004000 000000
1738 004002 000000
1739 004100 004100
1740 004100 000000
1741 004102 000000
1742 004104 000000
1743 004106 000000
1744 004110 000000
1745 004112 000000
1746 004114 000000
1747 004116 000000
1748
1749
1750
1751
1752
1753 004120 177777
1754 004122 000000
1755
1756 004124 000000
1757 004126 000000
1758 004130 000000
1759 004132 000000
1760 004134 000000
1761 004136 000000
1762 004140 000000
1763 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

```

1764
1765
1766 004144 005000
1767 004146 005100
1768 004150 000421
1769 004152 005000
1770 004154 005037 001174
1771 004160 005137 001174
1772 004164 000413
1773 004166 005000
1774 004170 005100
1775 004172 000137 004546
1776 004176 012737 000074 003404
1777 004204 012737 000774 003406
1778 004212 005000
1779
1780
1781 004214
1782
1783
1784 004214 012706 001100
1785 004220 005026
1786 004222 022706 001140
1787 004226 001374
1788 004230 012706 000750
1789
1790 004234 012737 072602 000020
1791 004242 012737 000340 000022
1792 004250 012737 074256 000030
1793 004256 012737 000340 000032
1794 004264 012737 075006 000034
1795 004272 012737 000340 000036
1796 004300 012737 073052 000024
1797 004306 012737 000340 000026
1798 004314 005037 001212
1799 004320 005037 001214
1800 004324 112737 000001 001115
1801 004332 012737 004332 001106
1802 004340 012737 004340 001110
1803
1804
1805 004346 013746 000004
1806 004352 012737 004406 000004
1807 004360 012737 177570 001140
1808 004366 012737 177570 001142
1809 004374 022777 177777 174536
1810 004402 001012
1811
1812 004404 000403
1813 004406 012716 004414 64$:
1814 004412 000002
1815 004414 012737 000176 001140 65$:
1816 004422 012737 000174 001142
1817 004430 012637 000004 66$:
1818
1819 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,@#REGEN
        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 # $TRAP,@#TRAPVEC ;:TRAP VECTOR FOR TRAP CALLS
MOV #340,@#TRAPVEC+2 ;:LEVEL 7
MOV # $PWRDN,@#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
64$: MOV #65$,(SP) ;:SET UP FOR TRAP RETURN
65$: MOV #SWREG,SWR ;:POINT TO SOFTWARE SWR
MOV #DISPREG,DISPLAY
66$: MOV (SP)+,@#ERRVEC ;:RESTORE ERROR VECTOR

TST R0 ;:WAS IT A RESTART

```

1820 004436 100443
1821 004440 104401 004446
1822 004444 000427
1823
1824 004524
1825 004524 104401 004532
1826 004530 000406
1827
1828 004546
1829 004546
1830
1831
1832
1833
1834
1835
1836
1837
1838
1839 004546 000004
1840 004550 012737 000001 001212
1841 004556 012737 047172 000114
1842 004564 012706 000750
1843 004570 012737 000340 000116
1844 004576 012737 046740 000004
1845 004604 012737 000340 000006
1846 004612 005700
1847 004614 001403
1848 004616 005000
1849 004620 000137 006552
1850 004624 005001
1851 004626 005737 001174
1852 004632 001402
1853 004634 000137 004644
1854 004640 000137 005066
1855 004644 005037 001174
1856 004650 104401 004656
1857 004654 000416
1858
1859 004712
1860 004712 104410
1861 004714 012637 003366
1862 004720 104401 004726
1863 004724 000415
1864
1865 004760
1866 004760 104410
1867 004762 012637 003406
1868 004766 104401 004774
1869 004772 000426
1870
1871 005050
1872 005050 104410
1873 005052 012637 003404
1874 005056 006137 003404
1875 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 TYPING ?
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)+,REGENG ;GET NUMBER OF REG
ROL REGENG ;MULT BY 2
JMP G1 ;GO CREATE ADDRESSES
```

```

1876 005066 013737 003320 003366 AD1ERR: MOV ADD1,DEVIC1 ;SETUP DEVICE 1
1877 005074 012737 005166 000004 MOV #AD2ERR,ERRVEC ;FOR TIMEOUT
1878 005102 005777 176214 TST @ADD2 ;IS THERE A DEVICE
1879 005106 013737 003322 003370 MOV ADD2,DEVIC2 ;YES
1880 005114 012737 005206 000004 MOV #AD3ERR,ERRVEC ;FOR TIMEOUT
1881 005122 005777 176176 TST @ADD3 ;IS THERE A DEVICE
1882 005126 013737 003324 003372 MOV ADD3,DEVIC3 ;YES
1883 005134 012737 005226 000004 MOV #AD4ERR,ERRVEC ;FOR TIMEOUT
1884 005142 005777 176160 TST @ADD4 ;IS THERE A DEVICE
1885 005146 013737 003326 003374 MOV ADD4,DEVIC4 ;YES
1886 005154 012737 046740 000004 MOV #TIEOUT,ERRVEC ;REPLACE TIMEOUT
1887 005162 000137 006054 JMP RESTAR ;TEST DEVICES
1888 005166 005037 003370 AD2ERR: CLR DEVIC2 ;NO DEVICE 2
1889 005172 012737 046740 000004 MOV #TIEOUT,ERRVEC ;REPLACE TIMEOUT
1890 005200 022626 CMP (SP)+,(SP)+ ;CORRECT STACK
1891 005202 000137 006054 JMP RESTAR ;TEST DEVICES
1892 005206 005037 003372 AD3ERR: CLR DEVIC3 ;NO DEVICE 3
1893 005212 012737 046740 000004 MOV #TIEOUT,ERRVEC ;REPLACE TIMEOUT
1894 005220 022626 CMP (SP)+,(SP)+ ;CORRECT STACK
1895 005222 000137 006054 JMP RESTAR ;TEST DEVICES
1896 005226 005037 003374 AD4ERR: CLR DEVIC4 ;NO DEVICE 4
1897 005232 012737 046740 000004 MOV #TIEOUT,ERRVEC ;REPLACE TIMEOUT
1898 005240 022626 CMP (SP)+,(SP)+ ;CORRECT STACK
1899 005242 000137 006054 JMP RESTAR ;TEST DEVICES
1900 005246 005737 000042 GIGO: TST @#42 ;IS THERE A MONITOR
1901 005252 001402 BEQ GIG1 ;NO
1902 005254 000137 046144 JMP $EOP ;YES EXIT
1903 005260 022737 160100 003366 GIG1: CMP #160100,DEVIC1 ;ARE WE HERE AFTER 210
1904 005266 001402 BEQ SA200 ;NO, 200
1905 005270 000137 004644 JMP KONG ;GET NEW ADDRESS FOR 210
1906 005274 SA200:
1907 005274 104401 005302 TYPE ,65$ ;:TYPE ASCIZ STRING
1908 005300 000420 BR 64$ ;:GET OVER THE ASCIZ
1909 ;:65$: .ASCIZ <15><12>/TYPE BASE ADDRESS FOR RH #1 /
1910 64$:
1911 005342 RDOCT
1912 005344 104410 MOV (SP)+,DEVIC1 ;GET BASE ADDRESS FOR RH1
1913 005350 105737 001103 TSTB $ERFLG ;ARE WE HERE BECAUSE OF AN ADDRESS ERROR
1914 005354 001405 BEQ GO1 ;NO,GET READY FOR NEXT ADDRESS
1915 005356 005737 003366 TST DEVIC1 ;IS IT A ZERO
1916 005362 001007 BNE G11 ;NO
1917 005364 000137 005260 JMP GIG1 ;NEED FIRST ADDRESS
1918 005370 005737 003366 GO1: TST DEVIC1 ;DID HE CORRECT WITH A 0
1919 005374 001012 BNE GIG01 ;GET BASE FOR RH # 2
1920 005376 000137 005260 JMP GIG1 ;NEED ADDRESS
1921 005402 013737 003366 003400 G11: MOV DEVIC1,DEVIC5 ;GET READY TO CREATE REG. ADDRESS
1922 005410 012737 005246 003410 MOV #GIGO,RETAIN ;SAVE RETURN ADDRESS
1923 005416 000137 006146 JMP GIG04 ;CONSTRUCT REGISTER ADDRESSES
1924 005422 005737 000042 GIG01: TST @#42 ;IS THER A MONITOR
1925 005426 001402 BEQ GIG2 ;NO
1926 005430 000137 046144 JMP $EOP ;EXIT
1927 005434 GIG2:
1928 005434 104401 005442 TYPE ,65$ ;:TYPE ASCIZ STRING
1929 005440 000420 BR 64$ ;:GET OVER THE ASCIZ
1930 ;:65$: .ASCIZ <15><12>/TYPE BASE ADDRESS FOR RH #2 /
1931 64$:
005502

```

1932	005502	104410		RDOCT		:GET VALUE
1933	005504	012637	003370	MOV	(SP)+,DEVIC2	:SAVE ADDRESS
1934	005510	105737	001103	TSTB	\$ERFLG	:ARE WE HERE BECAUSE OF ERROR
1935	005514	001405		BEQ	G02	:NO
1936	005516	005737	003370	TST	DEVIC2	:IS IT 0
1937	005522	001007		BNE	G12	:NO
1938	005524	000137	045366	JMP	RESTAT	:SET UP FOR RH #1
1939	005530	005737	003370	G02: TST	DEVIC2	:IS IT 0
1940	005534	001012		BNE	GIG02	:NO,GET NEXT ADDRESS
1941	005536	000137	006054	JMP	RESTAR	:CREATE ADDRESS FOR RH#1
1942	005542	013737	003370	003400 G12: MOV	DEVIC2,DEVIC5	:GET READY TO CREATE
1943	005550	012737	005422	003410 MOV	#GIG01,RETAIN	:SAVE RETURN ADDRESS
1944	005556	000137	006146	JMP	GIG04	:CREATE REG. ADDRESSES
1945	005562	005737	000042	GIG02: TST	@#42	:IS THERE A MONITOR
1946	005566	001402		BEQ	GIG3	:NO
1947	005570	000137	046144	JMP	\$EOP	:EXIT
1948	005574			GIG3:		
1949	005574	104401	005602	TYPE	.65\$::TYPE ASCIZ STRING
1950	005600	000420		BR	64\$::GET OVER THE ASCIZ
1951				::65\$:	.ASCIZ	<15><12>/TYPE BASE ADDRESS FOR RH #3 /
1952	005642			64\$:		
1953	005642	104410		RDOCT		
1954	005644	012637	003372	MOV	(SP)+,DEVIC3	:SAVE ADDRESS
1955	005650	105737	001103	TSTB	\$ERFLG	:ARE WE HERE DO TO ERROR
1956	005654	001405		BEQ	G03	:NO
1957	005656	005737	003372	TST	DEVIC3	:IS IT 0
1958	005662	001007		BNE	G13	:NO
1959	005664	000137	045366	JMP	RESTAT	:RESTART PASS
1960	005670	005737	003372	G03: TST	DEVIC3	:IS IT 0
1961	005674	001012		BNE	GIG03	:GET NEXT ADDRESS
1962	005676	000137	006054	JMP	RESTAR	:CREATE RH#1 ADDRESSES
1963	005702	013737	003372	003400 G13: MOV	DEVIC3,DEVIC5	:SETUP TO CREATE ADDRESS
1964	005710	012737	005562	003410 MOV	#GIG02,RETAIN	:SAVE RETURN ADDRESS
1965	005716	000137	006146	JMP	GIG04	:CREATE ADDRESSES
1966	005722	005737	000042	GIG03: TST	@#42	:IS THERE A MONITOR
1967	005726	001402		BEQ	GIG4	:NO
1968	005730	000137	046144	JMP	\$EOP	:EXIT
1969	005734			GIG4:		
1970	005734	104401	005742	TYPE	.65\$::TYPE ASCIZ STRING
1971	005740	000420		BR	64\$::GET OVER THE ASCIZ
1972				::65\$:	.ASCIZ	<15><12>/TYPE BASE ADDRESS FOR RH #4 /
1973	006002			64\$:		
1974	006002	104410		RDOCT		
1975	006004	012637	003374	MOV	(SP)+,DEVIC4	:SAVE ADDRESS
1976	006010	105737	001103	TSTB	\$ERFLG	:ARE WE HERE BECAUSE OF ERROR
1977	006014	001405		BEQ	G04	:NO
1978	006016	005737	003374	TST	DEVIC4	:IS IT 0
1979	006022	001004		BNE	G14	:NO
1980	006024	000137	045366	JMP	RESTAT	:RESTART PASS
1981	006030	000137	006054	G04: JMP	RESTAR	:GO SET UP REG. ADDRESSES
1982	006034	013737	003374	003400 G14: MOV	DEVIC4,DEVIC5	:GET READY TO CREATE REG. ADDRESSES
1983	006042	012737	005722	003410 MOV	#GIG03,RETAIN	:STORE RETURN ADDRESS
1984	006050	000137	006146	JMP	GIG04	:GO CREATE ADDRESSES
1985	006054	013737	003366	003400 RESTAR: MOV	DEVIC1,DEVIC5	:GET READY TO CREATE REG. ADDRESSES
1986	006062	012737	005246	003410 MOV	#GIG0,RETAIN	:SAVE RETURN ADDRESS
1987	006070	104401	006076	TYPE	.65\$::TYPE ASCIZ STRING


```

1988 006074 000421          BR      64$          ;;GET OVER THE ASCIZ
1989                      ;;65$: .ASCIZ <15><12>/TESTING RH #1 AT BASE ADDRESS /
1990                      64$:
1991 006140 013746 003366  MOV     DEVIC1,-(SP)    ;;SAVE DEVIC1 FOR TYPEOUT
1992 006144 104402          TYPOC          ;;GO TYPE--OCTAL ASCII(ALL DIGITS)
1993 006146 013737 003400 003402 GIG04: MOV     DEVIC5,@#OFF11  ;SETUP FOR ADDRESSES
1994 006154 012702 003330          MOV     #RHCS1,R2      ;SET UP WHERE TO PUT THEM
1995 006160 013722 003402          MOV     @#OFF11,(R2)+  ;SETUP ADDRESS
1996 006164 062737 000002 003402 4$:   ADD     #TWO,@#OFF11   ;SETUP NEXT ADDRESS
1997 006172 022702 003360          CMP     #RHBAE,R2     ;ARE ALL ADDRESSES SET UP
1998 006176 001401          BEQ     3$           ;IS INFORMATION CORRECT?
1999 006200 000767          BR      4$           ;NO SETUP NEW ADDRESS
2000 006202 013737 003400 003402 3$:   MOV     DEVIC5,@#OFF11
2001 006210 063737 003404 003402     ADD     REGEND,@#OFF11
2002 006216 013737 003402 003360     MOV     @#OFF11,RHBAE  ;WITH CORRECT ADDRESS
2003 006224 062737 000002 003402     ADD     #2,@#OFF11    ;SETUP RHCS3 ADDRESS
2004 006232 013737 003402 003362     MOV     @#OFF11,RHCS3  ;WITH CORRECT ADDRESS
2005 006240 013737 003330 003364     MOV     RHCS1,RHCS1B  ;SETUP RHCS1B WITH
2006 006246 005237 003364          INC     RHCS1B        ;HIGH BYTE ADDRESS OF RHCS1
2007 006252 013746 000004          TSTADD: MOV    @#ERRVEC,-(SP) ;SAVE TIOUT VALUE
2008 006256 012737 006336 000004     MOV    #ADDERR,@#ERRVEC ;SETUP NEW TIOUT VALUE
2009 006264 012777 000007 175046     MOV    #7,@RHCS2      ;SETUP UNIT NO.
2010 006272 005777 175032          TST    @RHCS1        ;WILL RH RESPOND
2011 006276 022777 000040 175052     CMP    #40,@RHDT     ;IS A TESTER THERE
2012 006304 001403          BEQ    1$           ;YES,CONTINUE
2013 006306 104034          ERROR  34          ;TESTER IS NOT CONNECTED
2014 006310 000137 006340          JMP    ADDERR+2      ;BAD ADDRESS
2015 006314 122777 000007 175014 1$:   CMPB   #7,@RHMR2     ;IS THERE ALSO A 7 FOR UNIT NO.
2016 006322 001403          BEQ    2$           ;YES,CONTINUE
2017 006324 104071          ERROR  71          ;BAD ADDRESS
2018 006326 000137 006340          JMP    ADDERR+2
2019 006332 005726          2$:   TST    (SP)+        ;CORRECT STACK
2020 006334 000406          BR     RHTEST       ;YES AN RH IS THERE
2021 006336 022626          ADDERR: CMP   (SP)+,(SP)+ ;CORRECT STACK
2022 006340 012637 000004     MOV    (SP)+,@#ERRVEC ;REPLACE OLD TIOUT VALUE
2023 006344 104036          ERROR  36          ;RH DID NOT RESPOND
2024 006346 000177 175036          JMP    @RETAIN      ;GET CORRECT BASE ADDRESS
2025 006352 012637 000004          RHTEST: MOV   (SP)+,@#ERRVEC ;REPLACE TIOUT VALUE
2026 006356 005701          TST    R1           ;IS IT A 70
2027 006360 001433          BEQ    RH70TT       ;YES,LETS MAKE SURE
2028 006362 013746 000004          MOV    @#ERRVEC,-(SP) ;SAVE TIME OUT VALUE
2029 006366 012737 006540 000004     MOV    #RH11,@#ERRVEC ;CHECK FOR AN RH11
2030 006374 012777 000117 174760     MOV    #IPCK0!IPCK1!IPCK2!IPCK3!IE3,@RHCS3
2031          ;SET ALL BITS IN RHCS3
2032 006402 012637 000004          RH11BA: MOV   (SP)+,@#ERRVEC ;REPLACE TIMEOUT
2033 006406
2034 006406 104401 006414          TYPE   ,65$        ;;TYPE ASCIZ STRING
2035 006412 000413          BR     64$        ;;GET OVER THE ASCIZ
2036                      ;;65$: .ASCIZ <15><12>/TESTING FOR AN RH70/
2037                      64$:
2038 006442 005001          CLR    R1           ;SET UP RH70 FLAG
2039 006444 000137 006546          JMP    RH11+6       ;EXIT
2040 006450 013746 000004          RH70TT: MOV   @#ERRVEC,-(SP) ;SAVE LOCATION 4
2041 006454 012737 006474 000004     MOV    #FAKE70,@#ERRVEC ;REPLACE ADDRESS
2042 006462 012777 000117 174672     MOV    #IPCK0!IPCK1!IPCK2!IPCK3!IE3,@RHCS3
2043          ;SET ALL BITS

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2044 006470 000137 006542
2045 006474 022626
2046 006476 012637 000004
2047 006502 005001
2048 006504 005101
2049 006506 104401 006514
2050 006512 000411
2051
2052 006536
2053 006536 000403
2054 006540 022626
2055 006542 012637 000004
2056 006546 004737 050202
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2064 006552 000004
2065 006554 012737 000001 001212
2066 006562 005037 001210
2067 006566 005137 001210
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2073 006572 012777 000040 174540
2074 006600 012777 000007 174532
2075 006606 122777 000007 174522
2076 006614 001107
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2082 006616 005701
2083 006620 100417
2084 006622 005737 004122
2085 006626 001406
2086 006630 033777 004130 174524
2087 006636 001410
2088 006640 000137 007174
2089 006644 032777 174000 174510 14$:
2090
2091 006652 001412
2092 006654 000137 007174
2093 006660 005737 004122
2094 006664 001405
2095 006666 033777 004124 174434
2096 006674 001070
2097 006676 000404
2098 006700 032777 160000 174422 5$:
2099 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$: .ASCIZ <15><12>/TESTING AN RH11/
64$:
RH11: BR ERR1
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 $TMP5 ;SET UP FOR JSR ROUTINE
;*****
;*THIS TEST IS ALSO ENTERED AT THE LABEL CLEAR
;*AT THE END OF ALL THE ERROR BIT TESTS TO SEE
;*THAT A CLEAR WILL CLEAR THE ERROR BIT SET
;*****
CLEER: MOV #CLR,@RHCS2 ;TELL IT TO CLEAR
MOV #7,@RHCS2 ;SETJP UNIT NO.
CMPB #7,@RHMR2 ;HAS DEVICE BEEN SET TO 7
BNE 1$ ;NO,FIND WHAT BIT WAS NOT SET
;*****
;*THE TEST IS ENTERED HERE IF THE ERROR BIT BEING
;*FORCED SET DID NOT SET TO SEE IF ANY OTHER ERROR
;*BIT DID SET.....
;*****
12$: TST R1 ;IS IT AN 11 OR A 70
BMI 15$ ;IT'S A 70
TST BEFORE ;ARE WE HERE FOR SHORTS
BEQ 14$ ;NO
BIT $CS3,@RHCS3 ;ANY EXTRA ERROR BITS
BEQ 15$ ;NO
JMP 13$ ;WE FOUND AN ERROR
14$: BIT #WCELO!WCEHI!DPELO!DPEHI!APE,@RHCS3
;TEST ERROR BITS
BEQ 5$ ;NO ERROR BITS SET
JMP 13$ ;GO REPORT ERROR BITS
15$: TST BEFORE ;ARE WE HERE FOR SHORTS
BEQ 5$ ;NO
BIT $CS1,@RHCS1 ;YES SEE IF THERE ARE ANY
BNE 2$ ;NONE FOUND
BR 16$ ;GO CHECK THE NEXT ONE
5$: BIT #TRE!SC!MCPE,@RHCS1 ;ANY ERROR BITS SET IN CS1
BNE 2$ ;YES,FIND THEM

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

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

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

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2233 007606 000004
2234 007610 012777 177776 173516
2235 007616 022777 177776 173510
2236 007624 001066
2237 007626 012777 000040 173504
2238 007634 017737 173470 003420
2239 007642 017737 173464 003444
2240 007650 017737 173460 003414
2241 007656 005701
2242 007660 001406
2243 007662 005037 003416
2244 007666 005037 003424
2245 007672 000137 007712
2246 007676 017737 173456 003416 87\$:
2247 007704 017737 173452 003424
2248 007712 017737 173422 003422 86\$:
2249 007720 017737 173416 003432
2250 007726 017737 173412 003436
2251 007734 017737 173410 003442
2252 007742 017737 173370 003440
2253 007750 005777 173360
2254 007754 001421
2255 007756 005037 001162
2256 007762 017737 173346 001200
2257 007770 104045
2258 007772 004737 046354
2259 007776 000137 010020
2260 010002 012737 177776 001162 1\$:
2261 010010 017737 173320 001200
2262 010016 104046
2263 010020
2264 010020 004737 006572
2265 010024 004737 050202
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2271 010030 000004
2272 010032 005701
2273 010034 100510
2274 010036 012777 000077 173314
2275 010044 022777 000077 173306
2276 010052 001066
2277 010054 012777 000040 173256
2278 010062 017737 173242 003420
2279 010070 017737 173236 003444
2280 010076 017737 173232 003414
2281 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,WC ;SAVE WORD COUNT
MOV @RHBA,BA ;SAVE BUS ADDRESS
TST R1 ;IS IT AN RH11
BEQ 87\$;NO IT'S A 70
CLR BAE ;CLEAR BAE
CLR CS3 ;CLEAR CS3
JMP 86\$;CONTINUE
87\$: MOV @RHBAE,BAE ;SAVE BUS ADDRESS EXTENSION
MOV @RHCS3,CS3 ;SAVE RHCS3
86\$: MOV @RHCS2,CS2 ;SAVE CS2
MOV @RHST,DS1 ;SAVE TESTER STATUS
MOV @RHER,ER1 ;SAVE ERROR REGISTER
MOV @RHTDB,TDR ;SAVE TESTER DATA REG.
MOV @RHMR2,TC ;SAVE MR2 TESTER REG.
TST @RHBA ;IS IT ZERO
BEQ TOIT ;TEST IS GOOD
CLR \$REGO ;CREATE GOOD DATA
MOV @RHBA,\$TMP1 ;SETUP FOR WATBIT
ERROR 45 ;RHBA DID NOT CLEAR
JSR R7,WATBIT ;FIND BITS STILL SET
JMP @#TOIT ;GO TO NEXT REG. TEST
1\$: MOV #-2,\$REGO ;SETUP GOOD DATA
MOV @RHBA,\$TMP1 ;SETUP FOR WATBIT
ERROR 46 ;BITS DID NOT SET IN RHBA
TOIT: JSR R7,CLEER ;CLEAR ERRORS
JSR R7,ERRTST

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

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

::*****

TST6: SCOPE
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,WC ;SAVE WORD COUNT
MOV @RHBA,BA ;SAVE BUS ADDRESS
TST R1 ;IS IT AN RH11

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2282 010106 001406          BEQ      87$          ;NO IT'S A 70
2283 010110 005037 003416  CLR      BAE          ;CLEAR BAE
2284 010114 005037 003424  CLR      CS3          ;CLEAR CS3
2285 010120 000137 010140  JMP      86$          ;CONTINUE
2286 010124 017737 173230 003416 87$:  MOV     @RHBAE,BAE    ;SAVE BUS ADDRESS EXTENSION
2287 010132 017737 173224 003424  MOV     @RHCS3,CS3    ;SAVE RHCS3
2288 010140 017737 173174 003422 86$:  MOV     @RHCS2,CS2    ;SAVE CS2
2289 010146 017737 173170 003432  MOV     @RHST,DS1     ;SAVE TESTER STATUS
2290 010154 017737 173164 003436  MOV     @RHER,ER1     ;SAVE ERROR REGISTER
2291 010162 017737 173162 003442  MOV     @RHTDB,TDR    ;SAVE TESTER DATA REG.
2292 010170 017737 173142 003440  MOV     @RHMR2,TC     ;SAVE MR2 TESTER REG.
2293 010176 005777 173156          TST     @RHBAE        ;IS IT ZERO
2294 010202 001421          BEQ     WATFIV        ;TEST IS GOOD
2295 010204 005037 001162          CLR     $REG0         ;CREATE GOOD DATA
2296 010210 017737 173144 001200  MOV     @RHBAE,$TMP1  ;SETUP FOR WATBIT
2297 010216 104100          ERROR  100           ;RHBAE DID NOT CLEAR
2298 010220 004737 046354          JSR     R7,WATBIT     ;FIND BITS STILL SET
2299 010224 000137 010246          JMP     @WATFIV       ;GO TO NEXT REG. TEST
2300 010230 012737 000077 001162 1$:   MOV     #77,$REG0     ;SETUP GOOD DATA
2301 010236 017737 173116 001200  MOV     @RHBAE,$TMP1  ;SETUP FOR WATBIT
2302 010244 104101          ERROR  101           ;BITS DID NOT SET IN RHBAE
2303 010246          WATFIV:
2304 010246 004737 006572          JSR     R7,CLEER     ;CLEAR ERRORS
2305 010252 004737 050202          JSR     R7,ERRTST
2306          ;:*****
2307          ;*TEST 7          RHDB CLEAR TEST
2308          ;*THIS TEST CHECKS THAT WHEN A CLEAR IS GENERATED
2309          ;*OUTPUT READY IS NEGATED
2310          ;:*****
2311 010256 000004          TST7:  SCOPE
2312 010260 012777 177777 173064  MOV     #-1,@RHDB     ;SET ALL BITS IN RHDB
2313 010266 005037 003446          CLR     BITCNT        ;CLEAR BIT COUNTER
2314 010272 032777 000200 173040 18$:  BIT     #OR,@RHCS2    ;IS OR SET
2315 010300 001015          BNE     DBMG          ;BIT IS SET
2316 010302 005237 003446          INC     BITCNT        ;COUNT UP
2317 010306 001371          BNE     18$          ;NOT FINISHED COUNTING
2318 010310 005037 003446          CLR     BITCNT        ;GET READY TO DO IT AGAIN
2319 010314 032777 000200 173016 19$:  BIT     #OR,@RHCS2    ;IS IT SET YET?
2320 010322 001004          BNE     DBMG          ;YES
2321 010324 005237 003446          INC     BITCNT        ;COUNT UP
2322 010330 001401          BEQ     DBMG          ;BIT IS NOT GOING TO SET
2323 010332 000770          BR     19$
2324 010334          DBMG:
2325 010334 017737 172770 003420  MOV     @RHCS1,CS1    ;SAVE RHCS1
2326 010342 017737 172764 003444  MOV     @RHWC,WC      ;SAVE WORD COUNT
2327 010350 017737 172760 003414  MOV     @RHBA,BA      ;SAVE BUS ADDRESS
2328 010356 005701          TST     R1            ;IS IT AN RH11
2329 010360 001406          BEQ     87$          ;NO IT'S A 70
2330 010362 005037 003416  CLR     BAE          ;CLEAR BAE
2331 010366 005037 003424  CLR     CS3          ;CLEAR CS3
2332 010372 000137 010412  JMP     86$          ;CONTINUE
2333 010376 017737 172756 003416 87$:  MOV     @RHBAE,BAE    ;SAVE BUS ADDRESS EXTENSION
2334 010404 017737 172752 003424  MOV     @RHCS3,CS3    ;SAVE RHCS3
2335 010412 017737 172722 003422 86$:  MOV     @RHCS2,CS2    ;SAVE CS2
2336 010420 017737 172716 003432  MOV     @RHST,DS1     ;SAVE TESTER STATUS
2337 010426 017737 172712 003436  MOV     @RHER,ER1     ;SAVE ERROR REGISTER

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2338 010434 017737 172710 003442      MOV      @RHTDB,TDR      ;SAVE TESTER DATA REG.
2339 010442 017737 172670 003440      MOV      @RHMR2,TC      ;SAVE MR2 TESTER REG.
2340 010450 032777 000200 172662      BIT      #OR,@RHCS2     ;IS OUTPUT READY SET
2341 010456 001001                BNE      HURTS          ;YES ,CONTINUE TEST
2342 010460 104041                ERROR    41             ;OUTPUT READY DID NOT SET
2343 010462 022777 177777 172662 HURTS:  CMP      #-1,@RHDB     ;DID INFO GET LOADED TO DB
2344 010470 005037 003446                CLR      BITCNT         ;CLEAR BIT COUNTER
2345 010474 032777 000200 172636 18$:   BIT      #OR,@RHCS2     ;IS OR SET
2346 010502 001015                BNE      DBMSG          ;BIT IS SET
2347 010504 005237 003446                INC      BITCNT         ;COUNT UP
2348 010510 001371                BNE      18$           ;NOT FINISHED COUNTING
2349 010512 005037 003446                CLR      BITCNT         ;GET READY TO DO IT AGAIN
2350 010516 032777 000200 172614 19$:   BIT      #OR,@RHCS2     ;IS IT SET YET?
2351 010524 001004                BNE      DBMSG          ;YES
2352 010526 005237 003446                INC      BITCNT         ;COUNT UP
2353 010532 001401                BEQ      DBMSG          ;BIT IS NOT GOING TO SET
2354 010534 000770                BR       19$
2355 010536                DBMSG:
2356 010536 012777 000040 172574      MOV      #CLR,@RHCS2    ;TELL IT TO CLEAR
2357 010544 005037 003446                CLR      BITCNT         ;CLEAR THE COUNTER
2358 010550 032777 000200 172562 18$:   BIT      #OR,@RHCS2     ;DID OUTPUT READY CLEAR
2359 010556 001403                BEQ      SNAFOO         ;YES GET OUT OF LOOP
2360 010560 005237 003446                INC      BITCNT         ;INCREMENT COUNT LOOP
2361 010564 001371                BNE      18$           ;CONTINUE LOOP IF NO CARRY
2362 010566 032777 000200 172544 SNAFOO: BIT      #OR,@RHCS2     ;IS OUTPUT READY CLEARED
2363 010574 001403                BEQ      1$            ;YES,EXIT TEST
2364 010576 104114                ERROR    114           ;OUTPUT READY NOT CLEARED
2365                                ;BY SETTING CLR IN RHCS2
2366 010600 004737 007224                JSR      R7,WHYFO       ;ANY ERROR BITS SET
2367 010604 004737 006572 1$:     JSR      R7,CLEER       ;CLEAR ERRORS
2368 010610 004737 050202                JSR      R7,ERRTST
2369                                ;*****
2370                                ;*TEST 10      PROM REGISTER DECODE TEST
2371                                ;*THIS TEST CHECKS THAT THE PROM
2372                                ;*CAN ACCESS ALL REGISTERS
2373                                ;*****
2374 010614 000004                TST10: SCOPE
2375 010616 023727 003366 160100      CMP      DEVIC1,#160100 ;CHECK FOR WHAT REG END
2376 010624 001000                BNE      1$            ;WE ARE OK
2377 010626 013704 003356 1$:     MOV      RHDT,R4        ;SETUP TO TEST RH11
2378 010632 005724                TST      (R4)+          ;CORRECT ADDRESS
2379 010634 023704 003360                CMP      RHBAE,R4       ;ARE ALL REGISTERS CHECKED
2380 010640 001526                BEQ      ERR3          ;WERE THERE ANY ERRORS
2381 010642 005724 2$:     TST      (R4)+          ;TEST REGISTER
2382 010644 001004                BNE      3$            ;SOME INFORMATION WAS FOUND
2383 010646 023704 003360                CMP      RHBAE,R4       ;ARE ALL REGISTERS CHECKED
2384 010652 001521                BEQ      ERR3          ;WAS THERE ANY ERRORS
2385 010654 000772                BR       2$            ;TEST NOT COMPLETED
2386 010656 005744 3$:     TST      -(R4)         ;CORRECT ADDRESS
2387 010660 010437 003416                MOV      R4,BAE        ;SAVE ADDRESS
2388 010664 011437 001162                MOV      (R4),$REGO    ;GET CONTENTS
2389 010670 017737 172452 003412      MOV      @RHAS,AS      ;GET ATTENTION SUMMARY
2390 010676 104052                ERROR    52            ;FALSE INFO IN FAKE REGISTER
2391 010700 005003                CLR      R3            ;GET OFFSET READY
2392 010702 013737 003330 003420      MOV      RHCS1,CS1     ;GET ADDRESS TO START CHECKING
2393 010710 027737 172504 001162 29$:   CMP      @CS1,$REGO    ;HAS A REGISTER BEEN FOUND THAT COMPARES
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2394 010716 001412 BEQ 28$ :YES,PRINT IT OUT
2395 010720 023737 003356 003420 30$: CMP RHD1,CS1 :IS IT LAST REG IN RH11
2396 010726 001473 BEQ ERR3 :WAS THERE ANY ERRORS
2397 010730 062737 000002 003420 ADD #TWO,CS1 :NO,CORRECT FOR NEXT CHECK
2398 010736 062703 000004 ADD #4,R3 :CORRECT OFFSET
2399 010742 000762 BR 29$ :CONTINUE TEST
2400 010744 032737 020000 177570 28$: BIT #SW13,@#177570 :SKIP ERROR PRINTOUT
2401 010752 001024 BNE 55$ :SKIP MESSAGE
2402 010754 104401 010762 TYPE ,65$ ::TYPE ASCIZ STRING
2403 010760 000421 BR 64$ ::GET OVER THE ASCIZ
2404 :65$: .ASCIZ <15><12>/REGISTER CONTENTS COMPARES TO:/
2405 64$:
2406 011024 000163 011030 55$: JMP 27$(R3) :PRINT REGISTER
2407 011030 104053 27$: ERROR 53 :RHCS1
2408 011032 000732 BR 30$ :CONTINUE TEST
2409 011034 104054 ERROR 54 :RHWC
2410 011036 000730 BR 30$ :CONTINUE TEST
2411 011040 104055 ERROR 55 :RHBA
2412 011042 000726 BR 30$ :CONTINUE TEST
2413 011044 104056 ERROR 56 :RHMR2
2414 011046 000724 BR 30$ :CONTINUE TEST
2415 011050 104057 ERROR 57 :RHCS2
2416 011052 000722 BR 30$ :CONTINUE TEST
2417 011054 104060 ERROR 60 :RHST
2418 011056 000720 BR 30$ :CONTINUE TEST
2419 011060 104061 ERROR 61 :RHER
2420 011062 000716 BR 30$ :CONTINUE TEST
2421 011064 104062 ERROR 62 :RHAS
2422 011066 000714 BR 30$ :CONTINUE TEST
2423 011070 104063 ERROR 63 :RHTDB
2424 011072 000712 BR 30$ :CONTINUE TEST
2425 011074 104064 ERROR 64 :RHDB
2426 011076 000710 BR 30$ :CONTINUE TEST
2427 011100 104065 ERROR 65 :RHMR1
2428 011102 000706 BR 30$ :CONTINUE TEST
2429 011104 104066 ERROR 66 :RHDT
2430 011106 000704 BR 30$ :CONTINUE TEST
2431 011110 104067 ERROR 67 :RHBAE
2432 011112 000702 BR 30$ :CONTINUE TEST
2433 011114 104070 ERROR 70 :RHCS3
2434 011116 004737 050202 ERR3: JSR R7,ERRTST
2435 011122 004737 006572 JSR R7,CLEER :CLEAR ERRORS
2436
2437 ::*****
2438 :*TEST 11 RHCS3 TEST
2439 :*THIS TEST CHECKS THE READ/WRITE BITS
2440 :*IN THE RHCS3 REGISTER CAN BE CLEARED AND SET.
2441 ::*****
2442 TST11: SCOPE
2443 011126 000004 MOV #CLR,@RHCS2 :CLEAR TESTER
2444 011130 012777 000040 172202 MOV #7,@RHCS2 :SETUP UNIT SEVEN
2445 011136 012777 000007 172174 TST R1 :IS IT AN RH70
2446 011144 005701 BNE TST12 ::THIS IS A RH11
2447 011150 012737 000004 003450 MOV #4,LOOPCNT :SETUP LOOP COUNT OF FOUR
2448 011156 012737 000001 001162 MOV #1,$REGO :SETUP BIT TO BE TESTED
2449 011164 013777 001162 172170 1$: MOV $REGO,@RHCS3 :SET THE BIT
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2450 011172 017737 172164 003424      MOV      @RHCS3,CS3      ;SAVE CONTENTS OF RHCS3
2451 011100 013737 003424 001200      MOV      CS3,$T1P1      ;SETUP FOR WHAT BIT IF NEEDED
2452 011106 123777 001162 172146      CMPB     $REGO,@RHCS3   ;IS THE BIT SET?
2453 011124 001022          BNE      2$             ;NO,GO TO ERROR
2454 011216 006137 001162          ROL      $REGO          ;SETUP TO TEST NEXT BIT
2455 011222 005337 003450          DEC      LOOCNT         ;-1 TO THE LOOP COUNT
2456 011226 001356          BNE      1$             ;TEST NEXT BIT
2457 011230 012737 000100 001162      MOV      #IE3,$REGO     ;SET INTERRUPT BIT
2458 011236 013777 001162 172116      MOV      $REGO,@RHCS3   ;SET BIT
2459 011244 017737 172112 003424      MOV      @RHCS3,CS3     ;SAVE CONTENTS
2460 011252 023777 001162 172102      CMP      $REGO,@RHCS3   ;IS BIT SET?
2461 011260 001451          BEQ      ERR5           ;WAS THERE AN ERROR
2462 011262
2463 011262 017737 172042 003420      2$:      MOV      @RHCS1,CS1     ;SAVE RHCS1
2464 011270 017737 172036 003444      MOV      @RHWC,WC       ;SAVE WORD COUNT
2465 011276 017737 172032 003414      MOV      @RHBA,BA       ;SAVE BUS ADDRESS
2466 011304 005701          TST      R1             ;IS IT AN RH11
2467 011306 001406          BEQ      87$           ;NO IT'S A 70
2468 011310 005037 003416      CLR      BAE            ;CLEAR BAE
2469 011314 005037 003424      CLR      CS3            ;CLEAR CS3
2470 011320 000137 011340          JMP      86$           ;CONTINUE
2471 011324 017737 172030 003416      87$:     MOV      @RHBAE,BAE     ;SAVE BUS ADDRESS EXTENSION
2472 011332 017737 172024 003424      MOV      @RHCS3,CS3     ;SAVE RHCS3
2473 011340 017737 171774 003422      86$:     MOV      @RHCS2,CS2     ;SAVE CS2
2474 011346 017737 171770 003432      MOV      @RHST,DS1      ;SAVE TESTER STATUS
2475 011354 017737 171764 003436      MOV      @RHER,ER1      ;SAVE ERROR REGISTER
2476 011362 017737 171762 003442      MOV      @RHTDB,TDR     ;SAVE TESTER DATA REG.
2477 011370 017737 171742 003440      MOV      @RHMR2,TC      ;SAVE MR2 TESTER REG.
2478 011376 104035          ERROR    35            ;BIT DID NOT SET
2479 011400 004737 046354      JSR      R7,WATBIT      ;TELL WHAT BIT POSITION IS NO GOOD
2480 011404 004737 050202      ERR5:    JSR      R7,ERRTST
2481 011410 004737 006572      JSR      R7,CLEER      ;CLEAR ERRORS
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2491 011414 000004      TST12:  SCOPE
2492 011416 012737 000001 001162      MOV      #ONE,$REGO     ;SET UP REFERANCE WORD
2493 011424 013777 001162 171700      RHWCT:  MOV      $REGO,@RHWC ;MOVE BIT INTO WORD COUNT REGISTER
2494 011432 023777 001162 171672      CMP      $REGO,@RHWC   ;IS BIT SET?
2495 011440 001454          BEQ      1$             ;YES,CONTINUE BIT TEST
2496 011442 013737 003444 001200      MOV      WC,$TMP1      ;SETUP FOR WATBIT PROG.
2497 011450 004737 046354          JSR      R7,WATBIT      ;GO TO WATBIT PROGRAM
2498 011454 017737 171650 003420      MOV      @RHCS1,CS1     ;SAVE RHCS1
2499 011462 017737 171644 003444      MOV      @RHWC,WC       ;SAVE WORD COUNT
2500 011470 017737 171640 003414      MOV      @RHBA,BA       ;SAVE BUS ADDRESS
2501 011476 005701          TST      R1             ;IS IT AN RH11
2502 011500 001406          BEQ      87$           ;NO IT'S A 70
2503 011502 005037 003416      CLR      BAE            ;CLEAR BAE
2504 011506 005037 003424      CLR      CS3            ;CLEAR CS3
2505 011512 000137 011532          JMP      86$           ;CONTINUE

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:*****
:*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.
:*****

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:*****
TST12:  SCOPE
RHWCT:  MOV      #ONE,$REGO     ;SET UP REFERANCE WORD
        MOV      $REGO,@RHWC ;MOVE BIT INTO WORD COUNT REGISTER
        CMP      $REGO,@RHWC   ;IS BIT SET?
        BEQ      1$             ;YES,CONTINUE BIT TEST
        MOV      WC,$TMP1      ;SETUP FOR WATBIT PROG.
        JSR      R7,WATBIT      ;GO TO WATBIT PROGRAM
        MOV      @RHCS1,CS1     ;SAVE RHCS1
        MOV      @RHWC,WC       ;SAVE WORD COUNT
        MOV      @RHBA,BA       ;SAVE BUS ADDRESS
        TST      R1             ;IS IT AN RH11
        BEQ      87$           ;NO IT'S A 70
        CLR      BAE            ;CLEAR BAE
        CLR      CS3            ;CLEAR CS3
        JMP      86$           ;CONTINUE

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2506	011516	017737	171636	003416	87\$:	MOV	@RHBAE,BAE	:SAVE BUS ADDRESS EXTENSION
2507	011524	017737	171632	003424		MOV	@RHCS3,CS3	:SAVE RHCS3
2508	011532	017737	171602	003422	86\$:	MOV	@RHCS2,CS2	:SAVE CS2
2509	011540	017737	171576	003432		MOV	@RHST,DS1	:SAVE TESTER STATUS
2510	011546	017737	171572	003436		MOV	@RHER,ER1	:SAVE ERROR REGISTER
2511	011554	017737	171570	003442		MOV	@RHTDB,TDR	:SAVE TESTER DATA REG.
2512	011562	017737	171550	003440		MOV	@RHMR2,TC	:SAVE MR2 TESTER REG.
2513	011570	104001				ERROR	1	:BIT WAS NOT SET IN RHCW REG
2514	011572	005737	001162		1\$:	TST	\$REGO	:WAS IT BIT 15 THAT WAS LAST TESTED
2515	011576	100403				BMI	RHCWA	:YES,GO TO NEXT PART OF TEST
2516	011600	006137	001162			ROL	\$REGO	:NO,THEN TEST NEXT BIT
2517	011604	000707				BR	RHCWT	:DO BIT TEST AGAIN
2518	011606	012737	052525	001162	RHCWA:	MOV	#AB,\$REGO	:SET UP ALTERNATE BIT PATTERN
2519	011614	013777	001162	171510		MOV	\$REGO,@RHWC	:SET ALTERNATE BITS
2520	011622	017737	171504	003444		MOV	@RHWC,WC	:SAVE RHCW CONTENTS
2521	011630	023777	001162	171474		CMP	\$REGO,@RHWC	:ARE THEY ALL SET?
2522	011636	001457				BEQ	1\$:YES,CONTINUE TEST
2523	011640	013737	003444	001200		MOV	WC,\$TMP1	:SETUP FOR WATBIT PROG.
2524	011646	004737	046354			JSR	R7,WATBIT	:GO TO WATBIT PROGRAM
2525	011652	017737	171452	003420		MOV	@RHCS1,CS1	:SAVE RHCS1
2526	011660	017737	171446	003444		MOV	@RHWC,WC	:SAVE WORD COUNT
2527	011666	017737	171442	003414		MOV	@RHBA,BA	:SAVE BUS ADDRESS
2528	011674	005701				TST	R1	:IS IT AN RH11
2529	011676	001406				BEQ	87\$:NO IT'S A 70
2530	011700	005037	003416			CLR	BAE	:CLEAR BAE
2531	011704	005037	003424			CLR	CS3	:CLEAR CS3
2532	011710	000137	011730			JMP	86\$:CONTINUE
2533	011714	017737	171440	003416	87\$:	MOV	@RHBAE,BAE	:SAVE BUS ADDRESS EXTENSION
2534	011722	017737	171434	003424		MOV	@RHCS3,CS3	:SAVE RHCS3
2535	011730	017737	171404	003422	86\$:	MOV	@RHCS2,CS2	:SAVE CS2
2536	011736	017737	171400	003432		MOV	@RHST,DS1	:SAVE TESTER STATUS
2537	011744	017737	171374	003436		MOV	@RHER,ER1	:SAVE ERROR REGISTER
2538	011752	017737	171372	003442		MOV	@RHTDB,TDR	:SAVE TESTER DATA REG.
2539	011760	017737	171352	003440		MOV	@RHMR2,TC	:SAVE MR2 TESTER REG.
2540	011766	104001				ERROR	1	:TEST FAILED
2541	011770	012737	125252	001162		MOV	#OAB,\$REGO	:SET UP ALTERNATE OPPISITE BITS
2542	011776	013777	001162	171326	1\$:	MOV	\$REGO,@RHWC	:SET OPPISITE ALTERNATE BITS
2543	012004	017737	171322	003444		MOV	@RHWC,WC	:SAVE CONTENTS OF RHCW
2544	012012	023777	001162	171312		CMP	\$REGO,@RHWC	:ARE CORRECT BITS SET?
2545	012020	001454				BEQ	ERR6	:WAS THERE AN ERROR
2546	012022	013737	003444	001200		MOV	WC,\$TMP1	:SETUP FOR WATBIT PROG.
2547	012030	004737	046354			JSR	R7,WATBIT	:GO TO WATBIT PROGRAM
2548	012034				GOOF:			
2549	012034	017737	171270	003420		MOV	@RHCS1,CS1	:SAVE RHCS1
2550	012042	017737	171264	003444		MOV	@RHWC,WC	:SAVE WORD COUNT
2551	012050	017737	171260	003414		MOV	@RHBA,BA	:SAVE BUS ADDRESS
2552	012056	005701				TST	R1	:IS IT AN RH11
2553	012060	001406				BEQ	87\$:NO IT'S A 70
2554	012062	005037	003416			CLR	BAE	:CLEAR BAE
2555	012066	005037	003424			CLR	CS3	:CLEAR CS3
2556	012072	000137	012112			JMP	86\$:CONTINUE
2557	012076	017737	171256	003416	87\$:	MOV	@RHBAE,BAE	:SAVE BUS ADDRESS EXTENSION
2558	012104	017737	171252	003424		MOV	@RHCS3,CS3	:SAVE RHCS3
2559	012112	017737	171222	003422	86\$:	MOV	@RHCS2,CS2	:SAVE CS2
2560	012120	017737	171216	003432		MOV	@RHST,DS1	:SAVE TESTER STATUS
2561	012126	017737	171212	003436		MOV	@RHER,ER1	:SAVE ERROR REGISTER

2562	012134	017737	171210	003442	MOV	@RHTDB,TDR	:SAVE TESTER DATA REG.
2563	012142	017737	171170	003440	MOV	@RHMR2,TC	:SAVE MR2 TESTER REG.
2564	012150	104001			ERROR	1	:OPPISITE BIT TEST FAILED
2565	012152	013737	003332	004142	ERR6: MOV	RHWC,\$RHWC	:GET READY TO TEST BYTES
2566	012160	012777	000000	171144	MOV	#ZERO,@RHWC	:CLEAR WC FIRST
2567	012166	113777	004120	171746	MOVB	MINUS,@\$RHWC	:CHECK LOBYTE
2568	012174	022777	000377	171130	CMP	#377,@RHWC	:ANY EXTRA BITS
2569	012202	001401			BEQ	HIBYTE	:OK SO FAR
2570	012204	104200			ERROR	200	:HIBYTE GATE NOT WORKING PROPERLY
2571	012206	005237	004142		HIBYTE: INC	\$RHWC	:GET READY FOR NEXT BYTE
2572	012212	012777	000000	171112	MOV	#ZERO,@RHWC	:CLEAR WC
2573	012220	113777	004121	171714	MOVB	MINUS+1,@\$RHWC	:CHECK THE HI BYTE
2574	012226	022777	177400	171076	CMP	#177400,@RHWC	:IS IT OK
2575	012234	001401			BEQ	ALRIGT	:ITS OK
2576	012236	104200			ERROR	200	:LOBYTE GATE NOT WORKING PROPERLY
2577	012240	004737	050202		ALRIGT: JSR	R7,ERRTST	
2578	012244	012777	000000	171060	MOV	#ZERO,@RHWC	:CLEAR WORD COUNT
2579	012252	004737	006572		JSR	R7,CLEER	:CLEAR ERRORS

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

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2588	012256	000004			TST13: SCOPE		
2589	012260	005701			TST	R1	:IS RH AN RH70
2590	012262	001104			BNE	TST14	:;NO PASS OVER TEST
2591	012264	012737	000001	001162	MOV	#1,\$REGO	:SET UP BIT TEST
2592	012272	013777	001162	171060	BAETST: MOV	\$REGO,@RHBAE	:SET BIT IN RHBAE REGISTER
2593	012300	017737	171054	003416	MOV	@RHBAE,BAE	:SAVE CONTENTS OF RHBAE REGISTER
2594	012306	023777	001162	171044	CMP	\$REGO,@RHBAE	:IS IT SET?
2595	012314	001454			BEQ	1\$:YES CONTINUE TEST
2596	012316	013737	003416	001200	MOV	BAE,\$TMP1	:SETUP FOR WATBIT PROG.
2597	012324	004737	046354		JSR	R7,WATBIT	:GO TO WATBIT PROGRAM
2598	012330	017737	170774	003420	MOV	@RHCS1,CS1	:SAVE RHCS1
2599	012336	017737	170770	003444	MOV	@RHWC,WC	:SAVE WORD COUNT
2600	012344	017737	170764	003414	MOV	@RHBA,BA	:SAVE BUS ADDRESS
2601	012352	005701			TST	R1	:IS IT AN RH11
2602	012354	001406			BEQ	87\$:NO IT'S A 70
2603	012356	005037	003416		CLR	BAE	:CLEAR BAE
2604	012362	005037	003424		CLR	CS3	:CLEAR CS3
2605	012366	000137	012406		JMP	86\$:CONTINUE
2606	012372	017737	170762	003416	87\$: MOV	@RHBAE,BAE	:SAVE BUS ADDRESS EXTENSION
2607	012400	017737	170756	003424	MOV	@RHCS3,CS3	:SAVE RHCS3
2608	012406	017737	170726	003422	86\$: MOV	@RHCS2,CS2	:SAVE CS2
2609	012414	017737	170722	003432	MOV	@RHST,DS1	:SAVE TESTER STATUS
2610	012422	017737	170716	003436	MOV	@RHER,ER1	:SAVE ERROR REGISTER
2611	012430	017737	170714	003442	MOV	@RHTDB,TDR	:SAVE TESTER DATA REG.
2612	012436	017737	170674	003440	MOV	@RHMR2,TC	:SAVE MR2 TESTER REG.
2613	012444	104002			ERROR	2	:BIT DID NIT SET
2614	012446	022737	000040	001162	1\$: CMP	#40,\$REGO	:IS IT LAST BIT TO BE TESTED
2615	012454	001403			BEQ	ERR7	:WAS THERE AN ERROR
2616	012456	006137	001162		ROL	\$REGO	:NO,SET UP FOR NEXT BIT
2617	012462	000703			BR	BAETST	:CONTINUE TEST

2618 012464 004737 006572
2619 012470 004737 050202

ERR7: JSR R7,CLEER ;CLEAR ERRORS
JSR R7,ERR:ST

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::*****
:*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).
::*****

2630 012474 000004

TST14: SCOPE

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2632 012476 012737 000002 001162
2633 012504 013777 001162 170622
2634 012512 017737 170616 003414
2635 012520 023777 001162 170606
2636 012526 001454
2637 012530 013737 003414 001200
2638 012536 017737 170566 003420
2639 012544 017737 170562 003444
2640 012552 017737 170556 003414
2641 012560 005701
2642 012562 001406
2643 012564 005037 003416
2644 012570 005037 003424
2645 012574 000137 012614
2646 012600 017737 170554 003416
2647 012606 017737 170550 003424
2648 012614 017737 170520 003422
2649 012622 017737 170514 003432
2650 012630 017737 170510 003436
2651 012636 017737 170506 003442
2652 012644 017737 170466 003440
2653 012652 104003
2654 012654 004737 046354
2655 012660 005737 001162
2656 012664 100403
2657 012666 006137 001162
2658 012672 000704
2659 012674 012737 052525 001162
2660 012702 042737 000001 001162
2661 012710 013777 001162 170416
2662 012716 017737 170412 003414
2663 012724 023777 001162 170402
2664 012732 001454
2665 012734 013737 003414 001200
2666 012742 017737 170362 003420
2667 012750 017737 170356 003444
2668 012756 017737 170352 003414
2669 012764 005701
2670 012766 001406
2671 012770 005037 003416
2672 012774 005037 003424
2673 013000 000137 013020

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

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2674 013004 017737 170350 003416 87$: MOV @RHBAE,BAE ;SAVE BUS ADDRESS EXTENSION
2675 013012 017737 170344 003424 MOV @RHCS3,CS3 ;SAVE RHCS3
2676 013020 017737 170314 003422 86$: MOV @RHCS2,CS2 ;SAVE CS2
2677 013026 017737 170310 003432 MOV @RHST,DS1 ;SAVE TESTER STATUS
2678 013034 017737 170304 003436 MOV @RHER,ER1 ;SAVE ERROR REGISTER
2679 013042 017737 170302 003442 MOV @RHTDB,TDR ;SAVE TESTER DATA REG.
2680 013050 017737 170262 003440 MOV @RHMR2,TC ;SAVE MR2 TESTER REG.
2681 013056 104003 ERROR 3 ;NO,CORRECT BITS ARE NOT SET
2682 013060 004737 046354 JSR R7,WATBIT ;GO TO WATBIT PROGRAM
2683 013064 012737 125252 001162 1$: MOV #OAB,$REGO ;SET UP OPPOSITE ALTERNATE BIT TEST
2684 013072 013777 001162 170234 MOV $REGO,@RHBA ;SET BITS IN RHBA REGISTER
2685 013100 017737 170230 003414 MOV @RHBA,BA ;SAVE CONTENTS OF BA REGISTER
2686 013106 023777 001162 170220 CMP $REGO,@RHBA ;ARE CORRECT BITS SET
2687 013114 001454 BEQ ERR10 ;WAS THERE AN ERROR
2688 013116 013737 003414 001200 MOV BA,$TMP1 ;SETUP FOR WATBIT PROG.
2689 013124 GOOFED:
2690 013124 017737 170200 003420 MOV @RHCS1,CS1 ;SAVE RHCS1
2691 013132 017737 170174 003444 MOV @RHWC,WC ;SAVE WORD COUNT
2692 013140 017737 170170 003414 MOV @RHBA,BA ;SAVE BUS ADDRESS
2693 013146 005701 TST R1 ;IS IT AN RH11
2694 013150 001406 BEQ 87$ ;NO IT'S A 70
2695 013152 005037 003416 CLR BAE ;CLEAR BAE
2696 013156 005037 003424 CLR CS3 ;CLEAR CS3
2697 013162 000137 013202 JMP 86$ ;CONTINUE
2698 013166 017737 170166 003416 87$: MOV @RHBAE,BAE ;SAVE BUS ADDRESS EXTENSION
2699 013174 017737 170162 003424 MOV @RHCS3,CS3 ;SAVE RHCS3
2700 013202 017737 170132 003422 86$: MOV @RHCS2,CS2 ;SAVE CS2
2701 013210 017737 170126 003432 MOV @RHST,DS1 ;SAVE TESTER STATUS
2702 013216 017737 170122 003436 MOV @RHER,ER1 ;SAVE ERROR REGISTER
2703 013224 017737 170120 003442 MOV @RHTDB,TDR ;SAVE TESTER DATA REG.
2704 013232 017737 170100 003440 MOV @RHMR2,TC ;SAVE MR2 TESTER REG.
2705 013240 104003 ERROR 3 ;NO,CORRECT BITS ARE NOT SET
2706 013242 004737 046354 JSR R7,WATBIT ;GO TO WATBIT PROGRAM
2707 013246 013737 003334 004136 ERR10: MOV RHBA,$RHBA ;GET READY TO TEST BYTES
2708 013254 012777 000000 170052 MOV #ZERO,@RHBA ;ZERO THE BUS ADDRESS
2709 013262 113777 004120 170646 MOVB MINUS,@$RHBA ;MOVE THE BYTE
2710 013270 022777 000376 170036 CMP #376,@RHBA ;DID IT GET THERE ALRIGHT
2711 013276 001401 BEQ 99$ ;YES,CHECK NEXT BYTE
2712 013300 104202 ERROR 202 ;HIGH BYTE DOES NOT SEEM TO BE WORKING
2713 013302 005237 004136 99$: INC $RHBA ;GET READY FOR NEXT BYTE
2714 013306 012777 000000 170020 MOV #ZERO,@RHBA ;ZERO THE BUS ADDRESS
2715 013314 113777 004121 170614 MOVB MINUS+1,@$RHBA ;MOVE TO UPPER BYTE
2716 013322 022777 177400 170004 CMP #177400,@RHBA ;DID IT GET THERE ALRIGHT
2717 013330 001401 BEQ 98$ ;YES,EXIT TEST
2718 013332 104202 ERROR 202 ;LOBYTE IS NOT WORKING PROPERLY
2719 013334 004737 006572 98$: JSR R7,CLEER ;CLAER ERRORS
2720 013340 004737 050202 JSR R7,ERRTST
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013344 000004

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*****  
:*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 OPPISITE  
:*ALTERNATE BIT PATTERN (125252)  
*****  
TST15: SCOPE
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                CLR      LOOCNT      ;CLEAR LOOP COUNT  
                MOV      #ONE,$REGO   ;SET UP BIT TEST  
DBTST:          MOV      $REGO,@RHDB   ;SET BIT IN RHDB REGISTER  
                CLR      BITCNT      ;CLEAR BIT COUNTER  
18$:            BIT      #RDY,@RHCS1   ;IS RDY SET  
                BNE     ABLE         ;BIT IS SET  
                INC     BITCNT      ;COUNT UP  
                BNE     18$         ;NOT FINISHED COUNTING  
                CLR     BITCNT      ;GET READY TO DO IT AGAIN  
19$:            BIT      #RDY,@RHCS1   ;IS IT SET YET?  
                BNE     ABLE         ;YES  
                INC     BITCNT      ;COUNT UP  
                BEQ     ABLE         ;BIT IS NOT GOING TO SET  
                BR      19$  
  
ABLE:           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     RDYSET       ;SKIP ERROR  
                ERROR   102          ;READY DID NOT SET  
                JSR    R7,WHYFO      ;ANY ERRORS SET  
RDYSET:         BIT     #OR,@RHCS2    ;IS OR SET?  
                BNE     ORSET        ;YES,IT'S SET  
                MOV     @RHDB,DB      ;SAVE CONTENTS OF RHDB REGISTER  
                ERROR   41           ;OUTPUT READY DID NOT SET  
ORSET:          MOV     @RHDB,DB      ;SAVE CONTENTS OF REGISTER  
                CMP     $REGO,DB     ;IS CORRECT BIT SET?  
                BEQ     1$           ;YES,CONTINUE TEST  
                MOV     DB,$TMP1     ;SETUP FOR WATBIT PROG.  
                ERROR   4            ;NO,CORRECT BIT IS NOT SET  
                JSR    R7,WATBIT     ;GO TO WATBIT PROGRAM
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2778 013640 005737 001162 1$: TST $REGO ;WAS BIT 15 THE LAST BIT TESTED
2779 013644 100415 BMI DBTSTA ;YES,GO TO ALTERNATE BIT PATTERN TEST
2780 013646 022737 000001 003450 CMP #ONE,LOOCNT ;IS IT FIRST TIME
2781 013654 001404 BEQ 2$ ;NO, IT'S SECOND
2782 013656 005237 003450 INC LOOCNT ;YES,
2783 013662 000137 013360 JMP DBTST ;CONTINUE TEST
2784 013666 005037 003450 2$: CLR LOOCNT ;CLEAR LOOP COUNT
2785 013672 006137 001162 ROL $REGO ;NO,SET UP TO TEST NEXT BIT
2786 013676 000630 BR DBTST ;GO AND TEST BIT
2787 013700 022737 000001 003450 DBTSTA: CMP #ONE,LOOCNT ;IS IT FIRST TIME
2788 013706 001404 BEQ 1$ ;NO
2789 013710 005237 003450 INC LOOCNT ;INCREMENT LOOP COUNTER
2790 013714 000137 013360 JMP DBTST ;DO AGAIN
2791 013720 012737 052525 001162 1$: MOV #AB,$REGO ;SET UP BIT PATTERN TEST
2792 013726 013777 001162 167416 MOV $REGO,@RHDB ;SET BITS IN REGISTER
2793 013734 005037 003446 CLR BITCNT ;CLEAR BIT COUNTER
2794 013740 032777 000200 167372 18$: BIT #OR,@RHCS2 ;IS OR SET
2795 013746 001015 BNE DBOUT ;BIT IS SET
2796 013750 005237 003446 INC BITCNT ;COUNT UP
2797 013754 001371 BNE 18$ ;NOT FINISHED COUNTING
2798 013756 005037 003446 CLR BITCNT ;GET READY TO DO IT AGAIN
2799 013762 032777 000200 167350 19$: BIT #OR,@RHCS2 ;IS IT SET YET?
2800 013770 001004 BNE DBOUT ;YES
2801 013772 005237 003446 INC BITCNT ;COUNT UP
2802 013776 001401 BEQ DBOUT ;BIT IS NOT GOING TO SET
2803 014000 000770 BR 19$
2804 014002 DBOUT:
2805 014002 017737 167322 003420 MOV @RHCS1,CS1 ;SAVE RHCS1
2806 014010 017737 167316 003444 MOV @RHWC,WC ;SAVE WORD COUNT
2807 014016 017737 167312 003414 MOV @RHBA,BA ;SAVE BUS ADDRESS
2808 014024 005701 TST R1 ;IS IT AN RH11
2809 014026 001406 BEQ 87$ ;NO IT'S A 70
2810 014030 005037 003416 CLR BAE ;CLEAR BAE
2811 014034 005037 003424 CLR CS3 ;CLEAR CS3
2812 014040 000137 014060 JMP 86$ ;CONTINUE
2813 014044 017737 167310 003416 87$: MOV @RHBAE,BAE ;SAVE BUS ADDRESS EXTENSION
2814 014052 017737 167304 003424 MOV @RHCS3,CS3 ;SAVE RHCS3
2815 014060 017737 167254 003422 86$: MOV @RHCS2,CS2 ;SAVE CS2
2816 014066 017737 167250 003432 MOV @RHST,DS1 ;SAVE TESTER STATUS
2817 014074 017737 167244 003436 MOV @RHER,ER1 ;SAVE ERROR REGISTER
2818 014102 017737 167242 003442 MOV @RHADB,TDR ;SAVE TESTER DATA REG.
2819 014110 017737 167222 003440 MOV @RHMR2,TC ;SAVE MR2 TESTER REG.
2820 014116 032777 000200 167214 BIT #OR,@RHCS2 ;IS OUTPUT READY ?
2821 014124 001001 BNE 2$ ;YES CONTINUE TEST
2822 014126 104041 ERROR 41 ;OUTPUT READY DID NOT SET
2823 014130 023777 001162 167214 2$: CMP $REGO,@RHDB ;ARE CORRECT BITS SET?
2824 014136 001411 BEQ 1$ ;YES,CONTINUE TESTS
2825 014140 017737 167206 003426 MOV @RHDB,DB ;SAVE CONTENTS OF REGISTER
2826 014146 013737 003426 001200 MOV DB,$TMP1 ;SETUP FOR WATBIT TEST
2827 014154 104004 ERROR 4 ;NO,CORRECT BITS ARE NOT SET
2828 014156 004737 046354 JSR R7,WATBIT ;GO TO WATBIT PROGRAM
2829 014162 012737 125252 001162 1$: MOV #OAB,$REGO ;SET UP OPPOSITE ALTERNATE BIT PATTERN TEST
2830 014170 013777 001162 167154 MOV $REGO,@RHDB ;SET BITS IN REGISTER
2831 014176 005037 003446 CLR BITCNT ;CLEAR BIT COUNTER
2832 014202 032777 000200 167130 18$: BIT #OR,@RHCS2 ;IS OR SET
2833 014210 001015 BNE OABTST ;BIT IS SET

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2834 014212 005237 003446      INC      BITCNT      :COUNT UP
2835 014216 001371              BNE      18$         :NOT FINISHED COUNTING
2836 014220 005037 003446      CLR      BITCNT      :GET READY TO DO IT AGAIN
2837 014224 032777 000200 167106 19$:  BIT      #OR,@RHCS2  :IS IT SET YET?
2838 014232 001004              BNE      OABTST      :YES
2839 014234 005237 003446      INC      BITCNT      :COUNT UP
2840 014240 001401              BEQ      OABTST      :BIT IS NOT GOING TO SET
2841 014242 000770              BR       19$
2842 014244              OABTST:
2843 014244              MYSTIC:
2844 014244 017737 167060 003420      MOV      @RHCS1,CS1  :SAVE RHCS1
2845 014252 017737 167054 003444      MOV      @RHWC,WC    :SAVE WORD COUNT
2846 014260 017737 167050 003414      MOV      @RHBA,BA    :SAVE BUS ADDRESS
2847 014266 005701              TST      R1          :IS IT AN RH11
2848 014270 001406              BEQ      87$         :NO IT'S A 70
2849 014272 005037 003416      CLR      BAE         :CLEAR BAE
2850 014276 005037 003424      CLR      CS3        :CLEAR CS3
2851 014302 000137 014322      JMP      86$         :CONTINUE
2852 014306 017737 167046 003416 87$:  MOV      @RHBAE,BAE   :SAVE BUS ADDRESS EXTENSION
2853 014314 017737 167042 003424      MOV      @RHCS3,CS3  :SAVE RHCS3
2854 014322 017737 167012 003422 86$:  MOV      @RHCS2,CS2  :SAVE CS2
2855 014330 017737 167006 003432      MOV      @RHST,DS1   :SAVE TESTER STATUS
2856 014336 017737 167002 003436      MOV      @RHER,ER1   :SAVE ERROR REGISTER
2857 014344 017737 167000 003442      MOV      @RHTDB,TDR  :SAVE TESTER DATA REG.
2858 014352 017737 166760 003440      MOV      @RHMR2,TC   :SAVE MR2 TESTER REG.
2859 014360 032777 000200 166752      BIT      #OR,@RHCS2  :IS OUTPUT READY SET
2860 014366 001001              BNE      2$         :YES
2861 014370 104041              ERROR     41        :OUTPUT READY DID NOT SET
2862 014372 017737 166754 003426 2$:  MOV      @RHDB,DB    :SAVE CONTENTS OF REGISTER
2863 014400 023737 001162 003426      CMP      $REGO,DB    :ARE CORRECT BITS SET?
2864 014406 001406              BEQ      ERR11       :WAS THERE AN ERROR
2865 014410 013737 003426 001200      MOV      DB,$TMP1    :SETUP FOR WATBIT PROG.
2866 014416 104004              ERROR     4         :CORRECT BITS ARE NOT SET
2867 014420 004737 046354              JSR      R7,WATBIT   :GO TO WATBIT PROGRAM
2868 014424 004737 006572              JSR      R7,CLEER    :CLEAR ERRORS
2869 014430 004737 050202              JSR      R7,ERRTST
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2879 014434 000004              TST16: SCOPE
2880 014436 012777 177777 166666      MOV      #-1,@RHWC   :SETUP FOR 1 WORD
2881 014444 012777 000007 166666      MOV      #7,@RHCS2   :SETUP UNIT 7
2882 014452 005701              TST      R1          :IS IT AN RH11
2883 014454 100403              BMI      1$         :YES
2884 014456 012777 000000 166674      MOV      #ZERO,@RHBAE :SETUP BUS ADDRESS EXTENSION
2885 014464 012777 001204 166642 1$:  MOV      #$TMP3,@RHBA :SETUP BUS ADDRESS
2886 014472 012777 000061 166630      MOV      #WRITE0,@RHCS1
2887 014500 005037 003446      CLR      BITCNT      :CLEAR BIT COUNTER
2888 014504 032777 000200 166616 18$:  BIT      #RDY,@RHCS1 :IS RDY SET
2889 014512 001015              BNE      6$         :BIT IS SET

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:*****
:*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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2946 015004 004737 007224
2947 015010 004737 006572
2948 015014 004737 050202
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2957 015020 000004
2958 015022 012737 000001 001212
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2960 015030 005701
2961 015032 100403
2962 015034 012777 000037 166316
2963 015042 012777 177776 166264
2964 015050 012777 177777 166254
2965 015056 005701
2966 015060 001404
2967 015062 012777 000461 166240
2968 015070 000403
2969 015072 112777 000061 166230
2970 015100
2971 015100 005037 003446
2972 015104 032777 000200 166216
2973 015112 001015
2974 015114 005237 003446
2975 015120 001371
2976 015122 005037 003446
2977 015126 032777 000200 166174
2978 015134 001004
2979 015136 005237 003446
2980 015142 001401
2981 015144 000770
2982 015146
2983 015146 017737 166156 003420
2984 015154 017737 166152 003444
2985 015162 017737 166146 003414
2986 015170 005701
2987 015172 001406
2988 015174 005037 003416
2989 015200 005037 003424
2990 015204 000137 015224
2991 015210 017737 166144 003416
2992 015216 017737 166140 003424
2993 015224 017737 166110 003422
2994 015232 017737 166104 003432
2995 015240 017737 166100 003436
2996 015246 017737 166076 003442
2997 015254 017737 166056 003440
2998 015262 005701
2999 015264 001406
3000 015266 032777 001000 166034
3001 015274 001022

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      JSR      R7,WHYFO      ;WAS AN ERROR SET
8$:     JSR      R7,CLECR    ;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 BIT
:*IN THE BUS ADDRESS EXTENSION REGISTER OR BIT A17
:*IN THE RHCS1 REGISTER AFTER IT IS INCREMENTED
:*****
TST17:  SCOPE
      MOV      #1,$TIMES    ;;DO 1 ITERATION

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

      CLR     BITCNT      ;CLEAR BIT COUNTER
      BIT     #RDY,@RHCS1 ;IS RDY SET
      BNE     2$         ;BIT IS SET
      INC     BITCNT      ;COUNT UP
      BNE     18$        ;NOT FINISHED COUNTING
      CLR     BITCNT      ;GET READY TO DO IT AGAIN
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.
      TST     R1           ;IS IT AN 11 OR A 70
      BEQ     12$        ;DO RH70 PART OF TEST
      BIT     #A17,@RHCS1 ;DID A17 GET SET
      BNE     4$         ;YES

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3002	015276	000137	015410			JMP	5\$:CONT. FOR RH11
3003	015302	022777	000040	166050	12\$:	CMP	#40,@RHBAE		:DID BAE INC
3004	015310	001414				BEQ	4\$:BAE INCREMENTED
3005	015312	022777	000037	166040		CMP	#37,@RHBAE		:IS BAE OLD VALUE
3006	015320	001420				BEQ	3\$:BAE DID NOT INCREMENT
3007	015322	005777	166032			TST	@RHBAE		:IS BAE ZERO
3008	015326	001425				BEQ	9\$:BAE IS ZERO
3009	015330	104105				ERROR	105		:BAE GOT MESSED UP DOING A WRITE
3010	015332	004737	007224			JSR	R7,WHYFO		:DID AN ERROR OTHER THAN NEM CAVSIT
3011	015336	000137	015426			JMP	10\$		
3012	015342	005777	165766		4\$:	TST	@RHBA		:DID BA INCREMENT ?
3013	015346	001443				BEQ	8\$:YES ,EXIT TEST
3014	015350	104112				ERROR	112		:BA DID NOT INCREMENT
3015	015352	004737	007224			JSR	R7,WHYFO		:WAS AN ERROR BIT SET
3016	015356	000137	015456			JMP	8\$:EXIT TEST
3017	015362	104106			3\$:	ERROR	106		:BAE DID NOT INCREMENT
3018	015364	004737	007224			JSR	R7,WHYFO		:WAS AN ERROR BIT SET
3019	015370	000137	015456			JMP	8\$:EXIT TEST
3020	015374	104107			6\$:	ERROR	107		:BAE INCREMENTED OK BUT A17 +
3021									:A16 DID NOT INC PROPERLY IN RHCS1
3022	015376	000137	015456			JMP	8\$:EXIT TEST
3023	015402	104110			9\$:	ERROR	110		:RHBAE IS ZERO
3024	015404	000137	015456			JMP	8\$:BIT 5 IN BAE SHOULD BE SET
3025	015410	033777	000400	165712	5\$:	BIT	A16,@RHCS1		:IS A 16 SET
3026	015416	001003				BNE	10\$:YES, BA DID NOT INCREMENT
3027	015420	104111				ERROR	111		:A17 DID NOT SET WHEN BA WAS
3028									:INC
3029	015422	000137	015456			JMP	8\$:EXIT TEST
3030	015426	005777	165702		10\$:	TST	@RHBA		:DOES BA =0
3031	015432	001403				BEQ	11\$:YES, BA INCREMENTED
3032	015434	104112				ERROR	112		:BA DID NOT INCREMENT
3033	015436	000137	015456			JMP	8\$:EXIT TEST
3034	015442	005701			11\$:	TST	R1		:IS IT A 70 OR 11
3035	015444	100403				BMI	13\$:GO TO CORRECT ERROR
3036	015446	104076				ERROR	76		:BA INCREMENTED BUT DID NOT
3037									:CARRY TO BAE
3038	015450	000137	015456			JMP	8\$:GET OUT OF TEST
3039	015454	104113			13\$:	ERROR	113		:BA INCREMENTED BUT IT DID NOT
3040									:CARRY OVER TO A17 + A16
3041	015456	004737	006572		8\$:	JSR	R7,CLEER		:CLEAR ERRORS
3042	015462	004737	050202			JSR	R7,ERRTST		:WAS THERE ANY ERRORS
3043									
3044									
3045									
3046									
3047									
3048									
3049	015466	000004				TST20:	SCOPE		
3050	015470	005701				TST	R1		
3051	015472	001404				BEQ	40\$		
3052	015474	013777	003362	165632		MOV	RHCS3,@RHBA		
3053	015502	000403				BR	41\$		
3054									
3055	015504	012777	177702	165622	40\$:	MOV	#177702,@RHBA		:SET UP BUS ADDRESS
3056	015512	005701			41\$:	TST	R1		:IS IT AN RH70
3057	015514	100403				BMI	9\$:NO SKIP RH11 PORTION

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3058 015516 012777 000077 165634      MOV      #77,@RHBAE      ;SET UP BAE REGISTER
3059 015524 012777 177777 165600 9$:      MOV      #-1,@RIWC      ;SET WORD COUNT TO ONE WORD
3060 015532 012777 000007 165600      MOV      #7,@RHCS2      ;SET UNIT NUMBER
3061 015540 012777 001471 165562      MOV      #A16!A17!READ0,@RHCS1 ;TELL IT TO READ
3062 015546 005037 003446      CLR      BITCNT        ;CLEAR BIT COUNTER
3063 015552 032777 000200 165550 18$:      BIT      #RDY,@RHCS1    ;IS RDY SET
3064 015560 001015      BNE      DELTA         ;BIT IS SET
3065 015562 005237 003446      INC      BITCNT        ;COUNT UP
3066 015566 001371      BNE      18$          ;NOT FINISHED COUNTING
3067 015570 005037 003446      CLR      BITCNT        ;GET READY TO DO IT AGAIN
3068 015574 032777 000200 165526 19$:      BIT      #RDY,@RHCS1    ;IS IT SET YET?
3069 015602 001004      BNE      DELTA         ;YES
3070 015604 005237 003446      INC      BITCNT        ;COUNT UP
3071 015610 001401      BEQ      DELTA         ;BIT IS NOT GOING TO SET
3072 015612 000770      BR       19$
3073 015614      DELTA:
3074 015614 017737 165520 003422      MOV      @RHCS2,CS2     ;SAVE CONTENTS OF RHCS2
3075 015622 017737 165502 001162      MOV      @RHCS1,$REGO   ;SET UP NEEDED BITS ONLY
3076 015630 042737 027777 001162      BIC      #GO!IE!RDY!A16!A17!PSEL!DVA!MCPE!READ6,$REGO ;CLEAR BITS NOT NEEDED
3077
3078 015636 017737 165466 003420      MOV      @RHCS1,CS1     ;SAVE RHCS1
3079 015644 017737 165462 003444      MOV      @RHWC,W        ;SAVE WORD COUNT
3080 015652 017737 165456 003414      MOV      @RHBA,BA      ;SAVE BUS ADDRESS
3081 015660 005701      TST      R1            ;IS IT AN RH11
3082 015662 001406      BEQ      87$          ;NO IT'S A 70
3083 015664 005037 003416      CLR      BAE          ;CLEAR BAE
3084 015670 005037 003424      CLR      CS3          ;CLEAR CS3
3085 015674 000137 015714      JMP      86$          ;CONTINUE
3086 015700 017737 165454 003416 87$:      MOV      @RHBAE,BAE     ;SAVE BUS ADDRESS EXTENSION
3087 015706 017737 165450 003424      MOV      @RHCS3,CS3     ;SAVE RHCS3
3088 015714 017737 165420 003422 86$:      MOV      @RHCS2,CS2     ;SAVE CS2
3089 015722 017737 165414 003432      MOV      @RHST,DS1      ;SAVE TESTER STATUS
3090 015730 017737 165410 003436      MOV      @RHER,ER1      ;SAVE ERROR REGISTER
3091 015736 017737 165406 003442      MOV      @RHTDB,TDR     ;SAVE TESTER DATA REG.
3092 015744 017737 165366 003440      MOV      @RHMR2,TC      ;SAVE MR2 TESTER REG.
3093 015752 032777 000200 165350      BIT      #RDY,@RHCS1    ;IS READY SET
3094 015760 001003      BNE      99$          ;YES CONTINUE TEST
3095 015762 104102      ERROR    102          ;READY NOT SET
3096 015764 004737 007224      JSR      R7,WHYFO      ;ANY ERRORS SET
3097 015770 032777 004000 165342 99$:      BIT      #NEM,@RHCS2    ;IS NEM SET
3098 015776 001016      BNE      1$           ;YES CHECK TRE AND SC
3099 016000 022737 140000 001162      CMP      #SC!TRE,$REGO  ;IS THE SC AND TRE BITS SET
3100 016006 001460      BEQ      2$           ;YES NEM IS IN ERROR
3101 016010 032737 040000 001162      BIT      #TRE,$REGO    ;IS JUST THE TRE BIT SET
3102 016016 001060      BNE      3$           ;TRE BIT MUST BE IN ERROR
3103 016020 032737 100000 001162      BIT      #SC,$REGO     ;IS JUST THE SC BIT SET
3104 016026 001060      BNE      4$           ;SC BIT SET ERRONIOUSLY
3105 016030 104005      ERROR    5           ;NEM NOT SET IN RHCS2
3106 016032 000467      BR       8$           ;SET UP TO TEST AGAIN
3107 016034 022737 140000 001162 1$:      CMP      #SC!TRE,$REGO  ;IS SC AND TRE SET
3108 016042 001030      BNE      22$          ;FIND THE ERROR
3109 016044 012737 020000 004124      MOV      #MCPE,$CS1     ;TEST FOR SHORTS
3110 016052 012737 173400 004126      MOV      #MPE!MXF!PGE!NED!UPE!WCE!DLT,$CS2
3111 016060 012737 174000 004130      MOV      #WCELO!WCEHI!DPELO!DPEHI!APE,$CS3
3112 016066 012737 000000 004132      MOV      #0,$ST
3113 016074 012737 030175 004134      MOV      #ILF!RMR!CPE!DPE!RMBEX!RFAIL!DTE!OPI,$ER

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3114	016102	012737	177777	004122		MOV	#-1,BEFORE	:TELL WHYFO ITS FOR SHORTS
3115	016110	004737	007224			JSR	R7,WHYFO	:TEST FOR SHORTS
3116	016114	005037	004122			CLR	BEFORE	:WE HAVE CHECKED FOR SHORTS
3117	016120	000137	016212			JMP	8\$:LEAVE THE TEST
3118	016124	032737	040000	001162	22\$:	BIT	#TRE,\$REGO	:THEN IS THE TRE BIT SET
3119	016132	001022				BNE	6\$:SC BIT DID NOT SEE TRE BIT
3120	016134	032737	100000	001162		BIT	#SC,\$REGO	:IS THE SC BIT SET
3121	016142	001022				BNE	7\$:TRE HAS AN OPEN GOING TO BUS
3122	016144	104006				ERROR	6	:TRE SET LOGIC NOT WORKING
3123	016146	000421				BR	8\$:SET UP TO TEST AGAIN
3124	016150	104007			2\$:	ERROR	7	:NEM HAS OPEN IN LINE GOING TO BUS
3125	016152	004737	007224			JSR	R7,WHYFO	:SEE IF ANY OTHER ERROR BIT IS
3126								:SET OTHER THAN NEM
3127	016156	000415				BR	8\$:SET UP TO TEST AGAIN
3128	016160	104010			3\$:	ERROR	10	:SOMTHING WRONG WITH TRE BIT
3129	016162	004737	007224			JSR	R7,WHYFO	:SEE IF AN ERROR BIT IS SET
3130								:OR BOTH NEM IN RHCS2 AND SC IN
3131								:RHCS1 HAS AN OPEN BETWEEN IT AND THE BUS
3132	016166	000411				BR	8\$:SET UP TO TEST AGAIN
3133	016170	104011			4\$:	ERROR	11	:SC BIT WAS SET BY EITHER ATTN OR
3134	016172	004737	007224			JSR	R7,WHYFO	:FIND WHAT ERROR BIT IS SET
3135								:MCPE ERROR OR SC IS SHORTED TO +5 VOLTS
3136	016176	000405				BR	8\$:SETUP TO TEST AGAIN
3137	016200	104012			6\$:	ERROR	12	:TRE WAS SET BY OTHER THAN NEM
3138	016202	004737	007224			JSR	R7,WHYFO	:FIND ERROR BIT THAT SET TRE
3139	016206	000401				BR	8\$:SETUP TO TEST AGAIN
3140	016210	104013			7\$:	ERROR	13	:TRE HAS AN OPEN GOING TO THE BUS
3141	016212	032737	041400	177570	8\$:	BIT	#SW14!SW9!SW8,@#177570	:ANY LOOPING BEEING DONE
3142	016220	001003				BNE	21\$:YES,LOAD TRE NO MATTER WHAT
3143	016222	105737	001103			TSTB	\$ERFLG	:WAS THERE AN ERROR
3144	016226	001010				BNE	9\$:SKIP TRE CHECK
3145	016230	112777	000100	165126	21\$:	MOVB	#TREB,@RHCS1B	:LOAD TRE
3146	016236	032777	004000	165074		BIT	#NEM,@RHCS2	:DID ERROR CLEAR
3147	016244	001401				BEQ	9\$:YES EXIT TEST
3148	016246	104050				ERROR	50	:LOADING TRE DID NOT CLEAR ERROR
3149	016250	004737	006572		9\$:	JSR	R7,CLEER	:SEE IF ERRORS ARE CLEARED
3150	016254	004737	050202			JSR	R7,ERRTST	

3151
3152

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

3157

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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
9\$: MOV #\$REG4,@RHBA :SETUP BUS ADDRESS
MOV #AB,\$REG4 :CREATE INFORMATION
MOV #WRITE0,@RHCS1 :TELL IT TO WRITE
CLR BITCNT :CLEAR BIT COUNTER
18\$: BIT #RDY,@RHCS1 :IS RDY SET
BNE WCETST :BIT IS SET

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3170 016346 005237 003446      INC      BITCNT      ;COUNT UP
3171 016352 001371              BNE      18$        ;NOT FINISHED COUNTING
3172 016354 005037 003446      CLR      BITCNT      ;GET READY TO DO IT AGAIN
3173 016360 032777 000200 164742 19$:  BIT      #RDY,@RHCS1 ;IS IT SET YET?
3174 016366 001004              BNE      WCETST     ;YES
3175 016370 005237 003446      INC      BITCNT      ;COUNT UP
3176 016374 001401              BEQ      WCETST     ;BIT IS NOT GOING TO SET
3177 016376 000770              BR
3178 016400              WCESTST:
3179 016400 052777 000040 164732  BIS      #40, @RHCS2 ;DO A CONTROLLER CLEAR
3180 016406 005037 003446      CLR      BITCNT      ;SET UP FOR DELAY
3181 016412 005237 003446      17$:    INC      BITCNT      ;COUNT UP
3182 016416 001375              BNE      17$
3183 016420 012777 000007 164712  MOV      #7, @RHCS2 ;SELECT UNIT #
3184 016426 005037 003446      CLR      BITCNT      ;CLEAR BIT COUNTER
3185 016432 032777 000200 164670 18$:  BIT      #RDY,@RHCS1 ;IS RDY SET
3186 016440 001015              BNE      WCTST      ;BIT IS SET
3187 016442 005237 003446      INC      BITCNT      ;COUNT UP
3188 016446 001371              BNE      18$        ;NOT FINISHED COUNTING
3189 016450 005037 003446      CLR      BITCNT      ;GET READY TO DO IT AGAIN
3190 016454 032777 000200 164646 19$:  BIT      #RDY,@RHCS1 ;IS IT SET YET?
3191 016462 001004              BNE      WCTST      ;YES
3192 016464 005237 003446      INC      BITCNT      ;COUNT UP
3193 016470 001401              BEQ      WCTST      ;BIT IS NOT GOING TO SET
3194 016472 000770              BR
3195 016474              WCTST:
3196 016474 032777 000200 164626  BIT      #RDY, @RHCS1 ;IS READY SET
3197 016502 001003              BNE      20$        ;YES
3198 016504 104102              ERROR    102        ;READY NOT SET
3199 016506 004737 007224      JSR      R7, WHYFO  ;ANY ERRORS SET
3200 016512 012777 177777 164612 20$:  MOV      #-1,@RHWC  ;RESET WORD COUNT
3201 016520 012777 001172 164606  MOV      #$REG4,@RHBA ;RESET BUS ADDRESS
3202 016526 012737 125252 001172  MOV      #OAB,$REG4  ;CREATE WRITE CHECK ERROR
3203 016534 012777 000051 164566  MOV      #WRCHO,@RHCS1 ;MAKE THE ERROR
3204 016542 005037 003446      CLR      BITCNT      ;CLEAR BIT COUNTER
3205 016546 032777 000200 164554 18$:  BIT      #RDY,@RHCS1 ;IS RDY SET
3206 016554 001015              BNE      WCETRE     ;BIT IS SET
3207 016556 005237 003446      INC      BITCNT      ;COUNT UP
3208 016562 001371              BNE      18$        ;NOT FINISHED COUNTING
3209 016564 005037 003446      CLR      BITCNT      ;GET READY TO DO IT AGAIN
3210 016570 032777 000200 164532 19$:  BIT      #RDY,@RHCS1 ;IS IT SET YET?
3211 016576 001004              BNE      WCETRE     ;YES
3212 016600 005237 003446      INC      BITCNT      ;COUNT UP
3213 016604 001401              BEQ      WCETRE     ;BIT IS NOT GOING TO SET
3214 016606 000770              BR
3215 016610              WCETRE:
3216 016610 017737 164524 003422  MOV      @RHCS2,CS2  ;SAVE CONTENTS
3217 016616 017737 164506 001162  MOV      @RHCS1,$REG0 ;SET UP NEEDED BITS ONLY
3218 016624 042737 027777 001162  BIC      #GO!IE!RDY!A16!A17!PSEL!DVA!MCPE!READ6,$REG0 ;CLEAR BITS NOT NEEDED
3219
3220 016632 017737 164472 003420  MOV      @RHCS1,CS1  ;SAVE RHCS1
3221 016640 017737 164466 003444  MOV      @RHWC,WC    ;SAVE WORD COUNT
3222 016646 017737 164462 003414  MOV      @RHBA,BA    ;SAVE BUS ADDRESS
3223 016654 005701              TST      R1          ;IS IT AN RH11
3224 016656 001406              BEQ      87$        ;NO IT'S A 70
3225 016660 005037 003416      CLR      BAE        ;CLEAR BAE

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3226	016664	005037	003424			CLR	CS3		:CLEAR CS3
3227	016670	000137	016710			JMP	86\$:CONTINUE
3228	016674	017737	164460	003416	87\$:	MOV	@RHBAE,BAE		:SAVE BUS ADDRESS EXTENSION
3229	016702	017737	164454	003424		MOV	@RHCS3,CS3		:SAVE RHCS3
3230	016710	017737	164424	003422	86\$:	MOV	@RHCS2,CS2		:SAVE CS2
3231	016716	017737	164420	003432		MOV	@RHST,DS1		:SAVE TESTER STATUS
3232	016724	017737	164414	003436		MOV	@RHER,ER1		:SAVE ERROR REGISTER
3233	016732	017737	164412	003442		MOV	@RHTDB,TDR		:SAVE TESTER DATA REG.
3234	016740	017737	164372	003440		MOV	@RHMR2,TC		:SAVE MR2 TESTER REG.
3235	016746	032777	000200	164354		BIT	#RDY,@RHCS1		:IS READY SET
3236	016754	001003				BNE	99\$:YES CONTINUE TEST
3237	016756	104102				ERROR	102		:READY NOT SET
3238	016760	004737	007224			JSR	R7,WHYFO		:ANY ERRORS SET
3239	016764	032777	040000	164346	99\$:	BIT	#WCE,@RHCS2		:IS WCE SET
3240	016772	001016				BNE	1\$:YES CHECK TRE AND SC
3241	016774	022737	140000	001162		CMP	#SC!TRE,\$REGO		:IS THE SC AND TRE BITS SET
3242	017002	001460				BEQ	2\$:YES WCE IS IN ERROR
3243	017004	032737	040000	001162		BIT	#TRE,\$REGO		:IS JUST THE TRE BIT SET
3244	017012	001060				BNE	3\$:TRE BIT MUST BE IN ERROR
3245	017014	032737	100000	001162		BIT	#SC,\$REGO		:IS JUST THE SC BIT SET
3246	017022	001060				BNE	4\$:SC BIT SET ERRONIOUSLY
3247	017024	104014				ERROR	14		:WCE NOT SET IN RHCS2
3248	017026	000467				BR	8\$:SET UP TO TEST AGAIN
3249	017030	022737	140000	001162	1\$:	CMP	#SC!TRE,\$REGO		:IS SC AND TRE SET
3250	017036	001030				BNE	22\$:FIND THE ERROR
3251	017040	012737	020000	004124		MOV	#MCPE,\$CS1		:TEST FOR SHORTS
3252	017046	012737	137400	004126		MOV	#MPE!MXF!PGE!NEM!NED!UPE!DLT,\$CS2		
3253	017054	012737	160000	004130		MOV	#DPELO!DPEHI!APE,\$CS3		
3254	017062	013737	004132	004132		MOV	\$ST,\$ST		
3255	017070	013737	004134	004134		MOV	\$ER,\$ER		
3256	017076	012737	177777	004122		MOV	#-1,BEFORE		:TELL WHYFO ITS FOR SHORTS
3257	017104	004737	007224			JSR	R7,WHYFO		:TEST FOR SHORTS
3258	017110	005037	004122			CLR	BEFORE		:WE HAVE CHECKED FOR SHORTS
3259	017114	000137	017206			JMP	8\$:LEAVE THE TEST
3260	017120	032737	040000	001162	22\$:	BIT	#TRE,\$REGO		:THEN IS THE TRE BIT SET
3261	017126	001022				BNE	6\$:SC BIT DID NOT SEE TRE BIT
3262	017130	032737	100000	001162		BIT	#SC,\$REGO		:IS THE SC BIT SET
3263	017136	001022				BNE	7\$:TRE HAS AN OPEN GOING TO BUS
3264	017140	104006				ERROR	6		:TRE SET LOGIC NOT WORKING
3265	017142	000421				BR	8\$:SET UP TO TEST AGAIN
3266	017144	104015			2\$:	ERROR	15		:WCE HAS OPEN IN LINE GOING TO BUS
3267	017146	004737	007224			JSR	R7,WHYFO		:SEE IF ANY OTHER ERROR BIT IS
3268									:SET OTHER THAN WCE
3269	017152	000415				BR	8\$:SET UP TO TEST AGAIN
3270	017154	104016			3\$:	ERROR	16		:SOMTHING WRONG WITH TRE BIT
3271	017156	004737	007224			JSR	R7,WHYFO		:SEE IF AN ERROR BIT IS SET
3272									:OR BOTH WCE IN RHCS2 AND SC IN
3273									:RHCS1 HAS AN OPEN BETWEEN IT AND THE BUS
3274	017162	000411				BR	8\$:SET UP TO TEST AGAIN
3275	017164	104011			4\$:	ERROR	11		:SC BIT WAS SET BY EITHER ATTN OR
3276	017166	004737	007224			JSR	R7,WHYFO		:FIND WHAT ERROR BIT IS SET
3277									:MCPE ERROR OR SC IS SHORTED TO +5 VOLTS
3278	017172	000405				BR	8\$:SETUP TO TEST AGAIN
3279	017174	104017			6\$:	ERROR	17		:TRE WAS SET BY OTHER THAN WCE
3280	017176	004737	007224			JSR	R7,WHYFO		:FIND ERROR BIT THAT SET TRE
3281	017202	000401				BR	8\$:SETUP TO TEST AGAIN


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3282 017204 104013 7$: ERROR 13 :TRE HAS AN OPEN GOING TO THE BUS
3283 017206 032737 041400 177570 8$: BIT #SW14!SW9!SW8,@#177570 :ANY LOOPING BEEING DONE
3284 017214 001003 BNE 21$ :YES,LOAD TRE NO MATTER WHAT
3285 017216 105737 001103 TSTB $ERFLG :WAS THERE AN ERROR
3286 017222 001010 BNE 9$ :SKIP TRE CHECK
3287 017224 112777 000100 164132 21$: MOVB #TREB,@RHCS1B :LOAD TRE
3288 017232 032777 040000 164100 BIT #WCE,@RHCS2 :DID ERROR CLEAR
3289 017240 001401 BEQ 9$ :YES EXIT TEST
3290 017242 104050 ERROR 50 :LOADING TRE DID NOT CLEAR ERROR
3291 017244 004737 006572 9$: JSR R7,CLEER :SEE IF ERRORS ARE CLEARED
3292 017250 004737 050202 JSR R7,ERRST
3293
3294
3295
3296
3297
3298
3299
3300 017254 000004 TST22: SCOPE
3301 017256 012777 000007 164054 MOV #7,@RHCS2 :SET UNIT #
3302 017264 012777 177774 164040 MOV #-4,@RHWC :SET UP WORD COUNT
3303 017272 005701 TST R1 :IS IT AN RH70
3304 017274 001003 BNE 9$ :NO ITS AN RH11
3305 017276 012777 000000 164054 MOV #ZERO,@RHBAE :SET UP BAE REGISTER
3306 017304 012777 004100 164022 9$: MOV #RBUF,@RHBA :SET UP BUS ADDRESS
3307 017312 012777 000071 164010 MOV #READ0,@RHCS1 :TELL IT TO READ
3308 017320 012777 000027 164012 MOV #PAT!7,@RHCS2 :INVERT PARITY
3309 017326 017737 164006 003422 MOV @RHCS2,CS2 :SAVE CONTENTS
3310 017334 005037 003446 CLR BITCNT :CLEAR BIT COUNTER
3311 017340 032777 000200 163762 18$: BIT #RDY,@RHCS1 :IS RDY SET
3312 017346 001015 BNE UPETRE :BIT IS SET
3313 017350 005237 003446 INC BITCNT :COUNT UP
3314 017354 001371 BNE 18$ :NOT FINISHED COUNTING
3315 017356 005037 003446 CLR BITCNT :GET READY TO DO IT AGAIN
3316 017362 032777 000200 163740 19$: BIT #RDY,@RHCS1 :IS IT SET YET?
3317 017370 001004 BNE UPETRE :YES
3318 017372 005237 003446 INC BITCNT :COUNT UP
3319 017376 001401 BEQ UPETRE :BIT IS NOT GOING TO SET
3320 017400 000770 BR 19$
3321 017402 UPETRE:
3322 017402 017737 163722 001162 MOV @RHCS1,$REGO :SET UP NEEDED BITS ONLY
3323 017410 042737 027777 001162 BIC #GO!IE!RDY!A16!A17!PSEL!DVA!MCPE!READ6,$REGO :CLEAR BITS NOT NEEDED
3324
3325 017416 017737 163706 003420 MOV @RHCS1,CS1 :SAVE RHCS1
3326 017424 017737 163702 003444 MOV @RHWC,WC :SAVE WORD COUNT
3327 017432 017737 163676 003414 MOV @RHBA,BA :SAVE BUS ADDRESS
3328 017440 005701 TST R1 :IS IT AN RH11
3329 017442 001406 BEQ 87$ :NO IT'S A 70
3330 017444 005037 003416 CLR BAE :CLEAR BAE
3331 017450 005037 003424 CLR CS3 :CLEAR CS3
3332 017454 000137 017474 JMP 86$ :CONTINUE
3333 017460 017737 163674 003416 87$: MOV @RHBAE,BAE :SAVE BUS ADDRESS EXTENSION
3334 017466 017737 163670 003424 MOV @RHCS3,CS3 :SAVE RHCS3
3335 017474 017737 163640 003422 86$: MOV @RHCS2,CS2 :SAVE CS2
3336 017502 017737 163634 003432 MOV @RHST,DS1 :SAVE TESTER STATUS
3337 017510 017737 163630 003436 MOV @RHER,ER1 :SAVE ERROR REGISTER

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3338	017516	017737	163626	003442		MOV	@RHTDB,TDR		:SAVE TESTER DATA REG.
3339	017524	017737	163606	003440		MOV	@RHMR2,TC		:SAVE MR2 TESTER REG.
3340	017532	032777	000200	163570		BIT	#RDY,@RHCS1		:IS READY SET
3341	017540	001003				BNE	99\$:YES CONTINUE TEST
3342	017542	104102				ERROR	102		:READY NOT SET
3343	017544	004737	007224			JSR	R7,WHYFO		:ANY ERRORS SET
3344	017550	032777	000400	163562	99\$:	BIT	#MPE,@RHCS2		:IS MPE SET
3345	017556	001016				BNE	1\$:YES CHECK TRE AND SC
3346	017560	022737	140000	001162		CMP	#SC!TRE,\$REGO		:IS THE SC AND TRE BITS SET
3347	017566	001460				BEQ	2\$:YES MPE IS IN ERROR
3348	017570	032737	040000	001162		BIT	#TRE,\$REGO		:IS JUST THE TRE BIT SET
3349	017576	001060				BNE	3\$:TRE BIT MUST BE IN ERROR
3350	017600	032737	100000	001162		BIT	#SC,\$REGO		:IS JUST THE SC BIT SET
3351	017606	001060				BNE	4\$:SC BIT SET ERRONIOUSLY
3352	017610	104116				ERROR	116		:MPE NOT SET IN RHCS2
3353	017612	000467				BR	8\$:SET UP TO TEST AGAIN
3354	017614	022737	140000	001162	1\$:	CMP	#SC!TRE,\$REGO		:IS SC AND TRE SET
3355	017622	001030				BNE	22\$:FIND THE ERROR
3356	017624	013737	004124	004124		MOV	\$CS1,\$CS1		:TEST FOR SHORTS
3357	017632	012737	177000	004126		MOV	#MXF!PGE!NEM!NED!UPE!WCE!DLT,\$CS2		
3358	017640	012737	174000	004130		MOV	#WCELO!WCEHI!DPELO!DPEHI!APE,\$CS3		
3359	017646	013737	004132	004132		MOV	\$ST,\$ST		
3360	017654	013737	004134	004134		MOV	\$ER,\$ER		
3361	017662	012737	177777	004122		MOV	#-1,BEFORE		:TELL WHYFO ITS FOR SHORTS
3362	017670	004737	007224			JSR	R7,WHYFO		:TEST FOR SHORTS
3363	017674	005037	004122			CLR	BEFORE		:WE HAVE CHECKED FOR SHORTS
3364	017700	000137	017772			JMP	8\$:LEAVE THE TEST
3365	017704	032737	040000	001162	22\$:	BIT	#TRE,\$REGO		:THEN IS THE TRE BIT SET
3366	017712	001022				BNE	6\$:SC BIT DID NOT SEE TRE BIT
3367	017714	032737	100000	001162		BIT	#SC,\$REGO		:IS THE SC BIT SET
3368	017722	001022				BNE	7\$:TRE HAS AN OPEN GOING TO BUS
3369	017724	104006				ERROR	6		:TRE SET LOGIC NOT WORKING
3370	017726	000421				BR	8\$:SET UP TO TEST AGAIN
3371	017730	104120			2\$:	ERROR	120		:MPE HAS OPEN IN LINE GOING TO BUS
3372	017732	004737	007224			JSR	R7,WHYFO		:SEE IF ANY OTHER ERROR BIT IS
3373									:SET OTHER THAN MPE
3374	017736	000415				BR	8\$:SET UP TO TEST AGAIN
3375	017740	104121			3\$:	ERROR	121		:SOMTHING WRONG WITH TRE BIT
3376	017742	004737	007224			JSR	R7,WHYFO		:SEE IF AN ERROR BIT IS SET
3377									:OR BOTH MPE IN RHCS2 AND SC IN
3378									:RHCS1 HAS AN OPEN BETWEEN IT AND THE BUS
3379	017746	000411				BR	8\$:SET UP TO TEST AGAIN
3380	017750	104011			4\$:	ERROR	11		:SC BIT WAS SET BY EITHER ATTN OR
3381	017752	004737	007224			JSR	R7,WHYFO		:FIND WHAT ERROR BIT IS SET
3382									:MCPE ERROR OR SC IS SHORTED TO +5 VOLTS
3383	017756	000405				BR	8\$:SETUP TO TEST AGAIN
3384	017760	104122			6\$:	ERROR	122		:TRE WAS SET BY OTHER THAN MPE
3385	017762	004737	007224			JSR	R7,WHYFO		:FIND ERROR BIT THAT SET TRE
3386	017766	000401				BR	8\$:SETUP TO TEST AGAIN
3387	017770	104013			7\$:	ERROR	13		:TRE HAS AN OPEN GOING TO THE BUS
3388	017772	032737	041400	177570	8\$:	BIT	#SW14!SW9!SW8,@#177570		:ANY LOOPING BEEING DONE
3389	020000	001003				BNE	21\$:YES,LOAD TRE NO MATTER WHAT
3390	020002	105737	001103			TSTB	\$ERFLG		:WAS THERE AN ERROR
3391	020006	001010				BNE	9\$:SKIP TRE CHECK
3392	020010	112777	000100	163346	21\$:	MOVB	#TREB,@RHCS1B		:LOAD TRE
3393	020016	032777	000400	163314		BIT	#MPE,@RHCS2		:DID ERROR CLEAR

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3394 020024 001401          BEQ      9$          :YES EXIT TEST
3395 020026 104050          ERROR    50          :LOADING TRE DID NOT CLEAR ERROR
3396 020030 004737 006572    9$:      JSR      R7,CLEER :SEE IF ERRORS ARE CLEARED
3397 020034 004737 050202          JSR      R7,ERRTST
3398
3399
3400
3401
3402
3403
3404
3405 020040 000004          :*****
3406
3407 020042 012777 000007 163270      MOV      #7,@RHCS2      :SET UP UNIT 7
3408 020050 005701          TST      R1             :IS IT AN RH11
3409 020052 100402          BMI      FITIT         :IT'S AN RH11,DO THE TEST
3410 020054 000137 020524          JMP      FIT           :IT'S AN RH70, EXIT TEST
3411 020060 012777 020007 163252    FITIT:  MOV      #UPE!7,@RHCS2 :SET PARITY ERROR IN RH11'S CS2 REG
3412 020066 017737 163236 001162      MOV      @RHCS1,$REGO  :SET UP NEEDED BITS ONLY
3413 020074 042737 027777 001162      BIC      #GO!IE!RDY!A16!A17!PSEL!DVA!MCPE!READ6,$REGO
3414
3415 020102 017737 163222 003420      MOV      @RHCS1,CS1    :CLEAR BITS NOT NEEDED
3416 020110 017737 163216 003444      MOV      @RHWC,W C     :SAVE RHCS1
3417 020116 017737 163212 003414      MOV      @RHBA,BA     :SAVE WORD COUNT
3418 020124 005701          TST      R1             :SAVE BUS ADDRESS
3419 020126 001406          BEQ      87$          :IS IT AN RH11
3420 020130 005037 003416          CLR      BAE           :NO IT'S A 70
3421 020134 005037 003424          CLR      CS3          :CLEAR BAE
3422 020140 000137 020160          JMP      86$          :CLEAR CS3
3423 020144 017737 163210 003416    87$:    MOV      @RHBAE,BAE    :CONTINUE
3424 020152 017737 163204 003424          MOV      @RHCS3,CS3   :SAVE BUS ADDRESS EXTENSION
3425 020160 017737 163154 003422    86$:    MOV      @RHCS2,CS2   :SAVE RHCS3
3426 020166 017737 163150 003432          MOV      @RHST,DS1    :SAVE CS2
3427 020174 017737 163144 003436          MOV      @RHER,ER1    :SAVE TESTER STATUS
3428 020202 017737 163142 003442          MOV      @RHTDB,TDR   :SAVE ERROR REGISTER
3429 020210 017737 163122 003440          MOV      @RHMR2,TC    :SAVE TESTER DATA REG.
3430 020216 032777 000200 163104      BIT      #RDY,@RHCS1  :SAVE MR2 TESTER REG.
3431 020224 001003          BNE      99$          :IS READY SET
3432 020226 104102          ERROR    102         :YES CONTINUE TEST
3433 020230 004737 007224          JSR      R7,WHYFO     :READY NOT SET
3434 020234 032777 020000 163076    99$:    BIT      #UPE,@RHCS2  :ANY ERRORS SET
3435 020242 001016          BNE      1$          :IS UPE SET
3436 020244 022737 140000 001162      CMP      #SC!TRE,$REGO :YES CHECK TRE AND SC
3437 020252 001460          BEQ      2$          :IS THE SC AND TRE BITS SET
3438 020254 032737 040000 001162      BIT      #TRE,$REGO   :YES UPE IS IN ERROR
3439 020262 001060          BNE      3$          :IS JUST THE TRE BIT SET
3440 020264 032737 100000 001162      BIT      #SC,$REGO    :TRE BIT MUST BE IN ERROR
3441 020272 001060          BNE      4$          :IS JUST THE SC BIT SET
3442 020274 104020          ERROR    20         :SC BIT SET ERRONIOUSLY
3443 020276 000467          BR       8$          :UPE NOT SET IN RHCS2
3444 020300 022737 140000 001162    1$:    CMP      #SC!TRE,$REGO :SET UP TO TEST AGAIN
3445 020306 001030          BNE      22$         :IS SC AND TRE SET
3446 020310 013737 004124 004124      MOV      $CS1,$CS1    :FIND THE ERROR
3447 020316 012737 157400 004126      MOV      #MPE!MXF!PGE!NEM!NED!WCE!DLT,$CS2 :TEST FOR SHORTS
3448 020324 013737 004130 004130      MOV      $CS3,$CS3
3449 020332 013737 004132 004132      MOV      $ST,$ST

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3450 020340 013737 004134 004134      MOV    $ER,$ER
3451 020346 012737 177777 004122      MOV    #-1,BEFORE      ;TELL WHYFO ITS FOR SHORTS
3452 020354 004737 007224          JSR    R7,WHYFO        ;TEST FOR SHORTS
3453 020360 005037 004122          CLR    BEFORE         ;WE HAVE CHECKED FOR SHORTS
3454 020364 000137 020456          JMP    8$             ;LEAVE THE TEST
3455 020370 032737 040000 001162 22$:  BIT    #TRE,$REGO     ;THEN IS THE TRE BIT SET
3456 020376 001022          BNE    6$             ;SC BIT DID NOT SEE TRE BIT
3457 020400 032737 100000 001162      BIT    #SC,$REGO     ;IS THE SC BIT SET
3458 020406 001022          BNE    7$             ;TRE HAS AN OPEN GOING TO BUS
3459 020410 104006          ERROR  6             ;TRE SET LOGIC NOT WORKING
3460 020412 000421          BR     8$             ;SET UP TO TEST AGAIN
3461 020414 104021          2$:  ERROR  21        ;UPE HAS OPEN IN LINE GOING TO BUS
3462 020416 004737 007224      JSR    R7,WHYFO      ;SEE IF ANY OTHER ERROR BIT IS
3463                                ;SET OTHER THAN UPE
3464 020422 000415          BR     8$             ;SET UP TO TEST AGAIN
3465 020424 104023          3$:  ERROR  23        ;SOMTHING WRONG WITH TRE BIT
3466 020426 004737 007224      JSR    R7,WHYFO      ;SEE IF AN ERROR BIT IS SET
3467                                ;OR BOTH UPE IN RHCS2 AND SC IN
3468                                ;RHCS1 HAS AN OPEN BETWEEN IT AND THE BUS
3469 020432 000411          BR     8$             ;SET UP TO TEST AGAIN
3470 020434 104011          4$:  ERROR  11        ;SC BIT WAS SET BY EITHER ATTN OR
3471 020436 004737 007224      JSR    R7,WHYFO      ;FIND WHAT ERROR BIT IS SET
3472                                ;MCPE ERROR OR SC IS SHORTED TO +5 VOLTS
3473 020442 000405          BR     8$             ;SETUP TO TEST AGAIN
3474 020444 104022          6$:  ERROR  22        ;TRE WAS SET BY OTHER THAN UPE
3475 020446 004737 007224      JSR    R7,WHYFO      ;FIND ERROR BIT THAT SET TRE
3476 020452 000401          BR     8$             ;SETUP TO TEST AGAIN
3477 020454 104013          7$:  ERROR  13        ;TRE HAS AN OPEN GOING TO THE BUS
3478 020456 032737 041400 177570 8$:  BIT    #SW14!SW9!SW8,@#177570 ;ANY LOOPING BEEING DONE
3479 020464 001003          BNE    21$           ;YES,LOAD TRE NO MATTER WHAT
3480 020466 105737 001103          TSTB  $ERFLG         ;WAS THERE AN ERROR
3481 020472 001010          BNE    9$             ;SKIP TRE CHECK
3482 020474 112777 000100 162662 21$:  MOVB  #TREB,@RHCS1B   ;LOAD TRE
3483 020502 032777 020000 162630      BIT    #UPE,@RHCS2   ;DID ERROR CLEAR
3484 020510 001401          BEQ    9$             ;YES EXIT TEST
3485 020512 104050          ERROR  50           ;LOADING TRE DID NOT CLEAR ERROR
3486 020514 004737 006572          9$:  JSR    R7,CLEER   ;SEE IF ERRORS ARE CLEARED
3487 020520 004737 050202          JSR    R7,ERRTST
3488
3489 020524          FIT:
3490          ;:*****
3491          ;*TEST 24      UPE,TRE,SC ERROR TEST (RH70)
3492          ;*THIS TEST CHECKS THE UPE BIT IN RHCS2
3493          ;*TO SEE IF IT SETS AND WHEN IT SETS IS
3494          ;*TRE AND SC BITS SET IN RHCS1.....
3495          ;:*****
3496 020524 000004          TST24:  SCOPE
3497
3498 020526 012777 000007 162604      MOV    #7,@RHCS2     ;SETUP UNIT 7
3499 020534 005701          TST    R1             ;IS IT AN RH11
3500 020536 001402          BEQ    PLACE         ;IT'S AN RH70
3501 020540 000137 021306          JMP    FANGIE        ;IT'S AN RH11, EXIT TEST
3502 020544 012777 000004 162610  PLACE:  MOV    #IPCK2,@RHCS3 ;SETUP FOR PARITY ERROR
3503 020552 012777 177776 162552      MOV    #-2,@RHWC     ;SETUP WORD COUNT TO TWO WORDS
3504 020560 012777 000000 162572      MOV    #ZERO,@RHBAE  ;SETUP BAE
3505 020566 012777 001162 162540      MOV    #$REG0,@RHBA ;SETUP ADDRESS
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3506 020574 012777 000061 162526      MOV      #WRITE0,@RHCS1 ;TELL IT TO WRITE
3507 020602 005037 003446      CLR      BITCNT          ;CLEAR BIT COUNTER
3508 020606 032777 000200 162514 18$:  BIT      #RDY,@RHCS1     ;IS RDY SET
3509 020614 001015      BNE      DYNO            ;BIT IS SET
3510 020616 005237 003446      INC      BITCNT          ;COUNT UP
3511 020622 001371      BNE      18$            ;NOT FINISHED COUNTING
3512 020624 005037 003446      CLR      BITCNT          ;GET READY TO DO IT AGAIN
3513 020630 032777 000200 162472 19$:  BIT      #RDY,@RHCS1     ;IS IT SET YET?
3514 020636 001004      BNE      DYNO            ;YES
3515 020640 005237 003446      INC      BITCNT          ;COUNT UP
3516 020644 001401      BEQ      DYNO            ;BIT IS NOT GOING TO SET
3517 020646 000770      BR       19$
3518 020650
3519 020650 017737 162454 001162      MOV      @RHCS1,$REGO    ;SET UP NEEDED BITS ONLY
3520 020656 042737 027777 001162      BIC      #GO!IE!RDY!A16!A17!PSEL!DVA!MCPE!READ6,$REGO
3521
3522 020664 017737 162440 003420      MOV      @RHCS1,CS1     ;SAVE RHCS1
3523 020672 017737 162434 003444      MOV      @RHW,WC        ;SAVE WORD COUNT
3524 020700 017737 162430 003414      MOV      @RHBA,BA       ;SAVE BUS ADDRESS
3525 020706 005701      TST      R1              ;IS IT AN RH11
3526 020710 001406      BEQ      87$            ;NO IT'S A 70
3527 020712 005037 003416      CLR      BAE             ;CLEAR BAE
3528 020716 005037 003424      CLR      CS3            ;CLEAR CS3
3529 020722 000137 020742      JMP      86$            ;CONTINUE
3530 020726 017737 162426 003416 87$:  MOV      @RHBAE,BAE     ;SAVE BUS ADDRESS EXTENSION
3531 020734 017737 162422 003424      MOV      @RHCS3,CS3     ;SAVE RHCS3
3532 020742 017737 162372 003422 86$:  MOV      @RHCS2,CS2     ;SAVE CS2
3533 020750 017737 162366 003432      MOV      @RHST,DS1      ;SAVE TESTER STATUS
3534 020756 017737 162362 003436      MOV      @RHER,ER1      ;SAVE ERROR REGISTER
3535 020764 017737 162360 003442      MOV      @RHTDB,TDR     ;SAVE TESTER DATA REG.
3536 020772 017737 162340 003440      MOV      @RHMR2,TC      ;SAVE MR2 TESTER REG.
3537 021000 032777 000200 162322      BIT      #RDY,@RHCS1    ;IS READY SET
3538 021006 001003      BNE      99$            ;YES CONTINUE TEST
3539 021010 104102      ERROR    102           ;READY NOT SET
3540 021012 004737 007224      JSR      R7,WHYFO       ;ANY ERRORS SET
3541 021016 032777 020000 162314 99$:  BIT      #UPE,@RHCS2    ;IS UPE SET
3542 021024 001016      BNE      1$             ;YES CHECK TRE AND SC
3543 021026 022737 140000 001162      CMP      #SC!TRE,$REGO  ;IS THE SC AND TRE BITS SET
3544 021034 001460      BEQ      2$             ;YES UPE IS IN ERROR
3545 021036 032737 040000 001162      BIT      #TRE,$REGO     ;IS JUST THE TRE BIT SET
3546 021044 001060      BNE      3$             ;TRE BIT MUST BE IN ERROR
3547 021046 032737 100000 001162      BIT      #SC,$REGO      ;IS JUST THE SC BIT SET
3548 021054 001060      BNE      4$             ;SC BIT SET ERRONIOUSLY
3549 021056 104020      ERROR    20            ;UPE NOT SET IN RHCS2
3550 021060 000467      BR       8$             ;SET UP TO TEST AGAIN
3551 021062 022737 140000 001162 1$:  CMP      #SC!TRE,$REGO  ;IS SC AND TRE SET
3552 021070 001030      BNE      22$           ;FIND THE ERROR
3553 021072 013737 004124 004124      MOV      $CS1,$CS1      ;TEST FOR SHORTS
3554 021100 012737 157400 004126      MOV      #MPE!MXF!PGE!NEM!NED!WCE!DLT,$CS2
3555 021106 012737 134100 004130      MOV      #APE!DPELO!WCEHI!WCELO!IE3,$CS3
3556 021114 013737 004132 004132      MOV      $ST,$ST
3557 021122 013737 004134 004134      MOV      $ER,$ER
3558 021130 012737 177777 004122      MOV      #-1,BEFORE     ;TELL WHYFO ITS FOR SHORTS
3559 021136 004737 007224      JSR      R7,WHYFO       ;TEST FOR SHORTS
3560 021142 005037 004122      CLR      BEFORE        ;WE HAVE CHECKED FOR SHORTS
3561 021146 000137 021240      JMP      8$             ;LEAVE THE TEST
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3562 021152 032737 040000 001162 22$: BIT #TRE,$REGO ;THEN IS THE TRE BIT SET
3563 021160 001022 BNE 6$ ;SC BIT DID NOT SEE TRE BIT
3564 021162 032737 100000 001162 BIT #SC,$REGO ;IS THE SC BIT SET
3565 021170 001022 BNE 7$ ;TRE HAS AN OPEN GOING TO BUS
3566 021172 104006 ERROR 6 ;TRE SET LOGIC NOT WORKING
3567 021174 000421 BR 8$ ;SET UP TO TEST AGAIN
3568 021176 104021 2$: ERROR 21 ;UPE HAS OPEN IN LINE GOING TO BUS
3569 021200 004737 007224 JSR R7,WHYFO ;SEE IF ANY OTHER ERROR BIT IS
3570 ;SET OTHER THAN UPE
3571 021204 000415 BR 8$ ;SET UP TO TEST AGAIN
3572 021206 104023 3$: ERROR 23 ;SOMTHING WRONG WITH TRE BIT
3573 021210 004737 007224 JSR R7,WHYFO ;SEE IF AN ERROR BIT IS SET
3574 ;OR BOTH UPE IN RHCS2 AND SC IN
3575 ;RHCS1 HAS AN OPEN BETWEEN IT AND THE BUS
3576 021214 000411 BR 8$ ;SET UP TO TEST AGAIN
3577 021216 104011 4$: ERROR 11 ;SC BIT WAS SET BY EITHER ATTN OR
3578 021220 004737 007224 JSR R7,WHYFO ;FIND WHAT ERROR BIT IS SET
3579 ;MCPE ERROR OR SC IS SHORTED TO +5 VOLTS
3580 021224 000405 BR 8$ ;SETUP TO TEST AGAIN
3581 021226 104022 6$: ERROR 22 ;TRE WAS SET BY OTHER THAN UPE
3582 021230 004737 007224 JSR R7,WHYFO ;FIND ERROR BIT THAT SET TRE
3583 021234 000401 BR 8$ ;SETUP TO TEST AGAIN
3584 021236 104013 7$: ERROR 13 ;TRE HAS AN OPEN GOING TO THE BUS
3585 021240 032737 041400 177570 8$: BIT #SW14!SW9!SW8,@#177570 ;ANY LOOPING BEEING DONE
3586 021246 001003 BNE 21$ ;YES,LOAD TRE NO MATTER WHAT
3587 021250 105737 001103 TSTB $ERFLG ;WAS THERE AN ERROR
3588 021254 001010 BNE 9$ ;SKIP TRE CHECK
3589 021256 112777 000100 162100 21$: MOVB #TREB,@RHCS1B ;LOAD TRE
3590 021264 032777 020000 162046 BIT #UPE,@RHCS2 ;DID ERROR CLEAR
3591 021272 001401 BEQ 9$ ;YES EXIT TEST
3592 021274 104050 ERROR 50 ;LOADING TRE DID NOT CLEAR ERROR
3593 021276 004737 006572 9$: JSR R7,CLEER ;SEE IF ERRORS ARE CLEARED
3594 021302 004737 050202 JSR R7,ERRTST
3595
3596 021306 FANGIE:
3597
3598
3599
3600
3601
3602
3603 021306 000004 TST25: SCOPE
3604
3605 021310 012777 000000 162022 MOV #ZERO,@RHCS2 ;SETUP NED
3606 021316 005701 TST R1 ;RH11 OR RH70
3607 021320 100403 BMI NEDERR ;IT'S AN RH11
3608 021322 012777 000000 162030 MOV #ZERO,@RHBAE ;SETUP BA EXTENSION
3609 021330 012777 177777 161774 NEDERR: MOV #-1,@RHWC ;FOR A 1 WORD TRANSFER
3610 021336 012777 001172 161770 MOV #$REG4,@RHBA ;SETUP BA
3611 021344 012777 000061 161756 MOV #WRITE0,@RHCS1 ;TELL IT TO WRITE
3612 021352 005037 003446 CLR BITCNT ;CLEAR BIT COUNTER
3613 021356 032777 000200 161744 18$: BIT #RDY,@RHCS1 ;IS RDY SET
3614 021364 001015 BNE BAKER ;BIT IS SET
3615 021366 005237 003446 INC BITCNT ;COUNT UP
3616 021372 001371 BNE 18$ ;NOT FINISHED COUNTING
3617 021374 005037 003446 CLR BITCNT ;GET READY TO DO IT AGAIN

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*****
:*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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3618 021400 032777 000200 161722 19$: BIT #RDY,@RHCS1 ;IS IT SET YET?
3619 021406 001004 BNE BAKER ;YES
3620 021410 005237 003446 INC BITCNT ;COUNT UP
3621 021414 001401 BEQ BAKER ;BIT IS NOT GOING TO SET
3622 021416 000770 BR 19$
3623 021420 BAKER:
3624 021420 017737 161704 001162 MOV @RHCS1,$REGO ;SET UP NEEDED BITS ONLY
3625 021426 042737 027777 001162 BIC #GO!IE!RDY!A16!A17!PSEL!DVA!MCPE!READ6,$REGO ;CLEAR BITS NOT NEEDED
3626 021434 017737 161670 003420 MOV @RHCS1,CS1 ;SAVE RHCS1
3627 021442 017737 161664 003444 MOV @RHWC,WC ;SAVE WORD COUNT
3628 021450 017737 161660 003414 MOV @RHBA,BA ;SAVE BUS ADDRESS
3629 021456 005701 TST R1 ;IS IT AN RH11
3630 021460 001406 BEQ 87$ ;NO IT'S A 70
3631 021462 005037 003416 CLR BAE ;CLEAR BAE
3632 021466 005037 003424 CLR CS3 ;CLEAR CS3
3633 021472 000137 021512 JMP 86$ ;CONTINUE
3634 021476 017737 161656 003416 87$: MOV @RHBAE,BAE ;SAVE BUS ADDRESS EXTENSION
3635 021504 017737 161652 003424 MOV @RHCS3,CS3 ;SAVE RHCS3
3636 021512 017737 161622 003422 86$: MOV @RHCS2,CS2 ;SAVE CS2
3637 021520 017737 161616 003432 MOV @RHST,DS1 ;SAVE TESTER STATUS
3638 021526 017737 161612 003436 MOV @RHER,ER1 ;SAVE ERROR REGISTER
3639 021534 017737 161610 003442 MOV @RHTDB,TDR ;SAVE TESTER DATA REG.
3640 021542 017737 161570 003440 MOV @RHMR2,TC ;SAVE MR2 TESTER REG.
3641 021550 032777 000200 161552 BIT #RDY,@RHCS1 ;IS READY SET
3642 021556 001003 BNE 99$ ;YES CONTINUE TEST
3643 021560 104102 ERROR 102 ;READY NOT SET
3644 021562 004737 007224 JSR R7,WHYFO ;ANY ERRORS SET
3645 021566 032777 010000 161544 99$: BIT #NED,@RHCS2 ;IS NED SET
3646 021574 001016 BNE 1$ ;YES CHECK TRE AND SC
3647 021576 022737 140000 001162 CMP #SC!TRE,$REGO ;IS THE SC AND TRE BITS SET
3648 021604 001460 BEQ 2$ ;YES NED IS IN ERROR
3649 021606 032737 040000 001162 BIT #TRE,$REGO ;IS JUST THE TRE BIT SET
3650 021614 001060 BNE 3$ ;TRE BIT MUST BE IN ERROR
3651 021616 032737 100000 001162 BIT #SC,$REGO ;IS JUST THE SC BIT SET
3652 021624 001060 BNE 4$ ;SC BIT SET ERRONIOUSLY
3653 021626 104024 ERROR 24 ;NED NOT SET IN RHCS2
3654 021630 000467 BR 8$ ;SET UP TO TEST AGAIN
3655 021632 022737 140000 001162 1$: CMP #SC!TRE,$REGO ;IS SC AND TRE SET
3656 021640 001030 BNE 22$ ;FIND THE ERROR
3657 021642 012737 000000 004124 MOV #ZERO,$CS1 ;TEST FOR SHORTS
3658 021650 012737 167400 004126 MOV #MPE!MXF!PGE!NEM!UPE!WCE!DLT,$CS2
3659 021656 012737 174100 004130 MOV #APE!DPEHI!DPELO!WCEHI!WCELO!IE3,$CS3
3660 021664 013737 004132 004132 MOV $ST,$ST
3661 021672 013737 004134 004134 MOV $ER,$ER
3662 021700 012737 177777 004122 MOV #-1,BEFORE ;TELL WHYFO ITS FOR SHORTS
3663 021706 004737 007224 JSR R7,WHYFO ;TEST FOR SHORTS
3664 021712 005037 004122 CLR BEFORE ;WE HAVE CHECKED FOR SHORTS
3665 021716 000137 022010 JMP 8$ ;LEAVE THE TEST
3666 021722 032737 040000 001162 22$: BIT #TRE,$REGO ;THEN IS THE TRE BIT SET
3667 021730 001022 BNE 6$ ;SC BIT DID NOT SEE TRE BIT
3668 021732 032737 100000 001162 BIT #SC,$REGO ;IS THE SC BIT SET
3669 021740 001022 BNE 7$ ;TRE HAS AN OPEN GOING TO BUS
3670 021742 104006 ERROR 6 ;TRE SET LOGIC NOT WORKING
3671 021744 000421 BR 8$ ;SET UP TO TEST AGAIN
3672 021746 104025 2$: ERROR 25 ;NED HAS OPEN IN LINE GOING TO BUS

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3674 021750 004737 007224      JSR      R7,WHYFO      ;SEE IF ANY OTHER ERROR BIT IS
3675                                ;SET OTHER THAN NED
3676 021754 000415              BR       8$            ;SET UP TO TEST AGAIN
3677 021756 104026              3$:     ERROR        26 ;SOMTHING WRONG WITH TRE BIT
3678 021760 004737 007224      JSR      R7,WHYFO      ;SEE IF AN ERROR BIT IS SET
3679                                ;OR BOTH NED IN RHCS2 AND SC IN
3680                                ;RHCS1 HAS AN OPEN BETWEEN IT AND THE BUS
3681 021764 000411              BR       8$            ;SET UP TO TEST AGAIN
3682 021766 104011              4$:     ERROR        11 ;SC BIT WAS SET BY EITHER ATTN OR
3683 021770 004737 007224      JSR      R7,WHYFO      ;FIND WHAT ERROR BIT IS SET
3684                                ;MCPE ERROR OR SC IS SHORTED TO +5 VOLTS
3685 021774 000405              BR       8$            ;SETUP TO TEST AGAIN
3686 021776 104027              6$:     ERROR        27 ;TRE WAS SET BY OTHER THAN NED
3687 022000 004737 007224      JSR      R7,WHYFO      ;FIND ERROR BIT THAT SET TRE
3688 022004 000401              BR       8$            ;SETUP TO TEST AGAIN
3689 022006 104013              7$:     ERROR        13 ;TRE HAS AN OPEN GOING TO THE BUS
3690 022010 032737 041400 177570 8$:     BIT          #SW14!SW9!SW8,@#177570 ;ANY LOOPING BEEING DONE
3691 022016 001003              BNE     21$           ;YES,LOAD TRE NO MATTER WHAT
3692 022020 105737 001103      TSTB    $ERFLG        ;WAS THERE AN ERROR
3693 022024 001010              BNE     9$            ;SKIP TRE CHECK
3694 022026 112777 000100 161330 21$:     MOVB     #TREB,@RHCS1B ;LOAD TRE
3695 022034 032777 010000 161276  BIT     #NED,@RHCS2   ;DID ERROR CLEAR
3696 022042 001401              BEQ     9$            ;YES EXIT TEST
3697 022044 104050              ERROR   50            ;LOADING TRE DID NOT CLEAR ERROR
3698 022046 004737 006572      9$:     JSR      R7,CLEER ;SEE IF ERRORS ARE CLEARED
3699 022052 004737 050202      JSR      R7,ERRTST

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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.....
*****

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TST26:  SCOPE
MOV     #PAT!7,@RHCS2      ;SET MXF BIT
MOV     #-1,@RHWC          ;SET UP WORD COUNT
MOV     #RBUF,@RHBA        ;SETUP BA
MOV     #ZERO,@RHTDB       ;SET MXF ERROR
MOV     #WRITE0,@RHCS1     ;TELL IT TO WRITE
CLR     BITCNT             ;CLEAR BIT COUNTER
18$:   BIT     #RDY,@RHCS1   ;IS RDY SET
BNE     CHARLE             ;BIT IS SET
INC     BITCNT             ;COUNT UP
BNE     18$                ;NOT FINISHED COUNTING
CLR     BITCNT             ;GET READY TO DO IT AGAIN
19$:   BIT     #RDY,@RHCS1   ;IS IT SET YET?
BNE     CHARLE             ;YES
INC     BITCNT             ;COUNT UP
BEQ     CHARLE             ;BIT IS NOT GOING TO SET
BR      19$
CHARLE: MOV     @RHCS1,$REGO ;SET UP NEEDED BITS ONLY
BIC     #GO!IE!RDY!A16!A17!PSEL!DVA!MCPE!READ6,$REGO ;CLEAR BITS NOT NEEDED

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3730	022200	017737	161124	003420		MOV	@RHCS1,CS1	:SAVE RHCS1
3731	022206	017737	161120	003444		MOV	@RHWC,W	:SAVE WORD COUNT
3732	022214	017737	161114	003414		MOV	@RHBA,BA	:SAVE BUS ADDRESS
3733	022222	005701				TST	R1	:IS IT AN RH11
3734	022224	001406				BEQ	87\$:NO IT'S A 70
3735	022226	005037	003416			CLR	BAE	:CLEAR BAE
3736	022232	005037	003424			CLR	CS3	:CLEAR CS3
3737	022236	000137	022256			JMP	86\$:CONTINUE
3738	022242	017737	161112	003416	87\$:	MOV	@RHBAE,BAE	:SAVE BUS ADDRESS EXTENSION
3739	022250	017737	161106	003424		MOV	@RHCS3,CS3	:SAVE RHCS3
3740	022256	017737	161056	003422	86\$:	MOV	@RHCS2,CS2	:SAVE CS2
3741	022264	017737	161052	003432		MOV	@RHST,DS1	:SAVE TESTER STATUS
3742	022272	017737	161046	003436		MOV	@RHER,ER1	:SAVE ERROR REGISTER
3743	022300	017737	161044	003442		MOV	@RHTDB,TDR	:SAVE TESTER DATA REG.
3744	022306	017737	161024	003440		MOV	@RHMR2,TC	:SAVE MR2 TESTER REG.
3745	022314	032777	000200	161006		BIT	#RDY,@RHCS1	:IS READY SET
3746	022322	001003				BNE	99\$:YES CONTINUE TEST
3747	022324	104102				ERROR	102	:READY NOT SET
3748	022326	004737	007224			JSR	R7,WHYFO	:ANY ERRORS SET
3749	022332	032777	001000	161000	99\$:	BIT	#MXF,@RHCS2	:IS MXF SET
3750	022340	001016				BNE	1\$:YES CHECK TRE AND SC
3751	022342	022737	140000	001162		CMP	#SC!TRE,\$REGO	:IS THE SC AND TRE BITS SET
3752	022350	001460				BEQ	2\$:YES MXF IS IN ERROR
3753	022352	032737	040000	001162		BIT	#TRE,\$REGO	:IS JUST THE TRE BIT SET
3754	022360	001060				BNE	3\$:TRE BIT MUST BE IN ERROR
3755	022362	032737	100000	001162		BIT	#SC,\$REGO	:IS JUST THE SC BIT SET
3756	022370	001060				BNE	4\$:SC BIT SET ERRONIOUSLY
3757	022372	104030				ERROR	30	:MXF NOT SET IN RHCS2
3758	022374	000467				BR	8\$:SET UP TO TEST AGAIN
3759	022376	022737	140000	001162	1\$:	CMP	#SC!TRE,\$REGO	:IS SC AND TRE SET
3760	022404	001030				BNE	22\$:FIND THE ERROR
3761	022406	012737	020000	004124		MOV	#MCPE,\$CS1	:TEST FOR SHORTS
3762	022414	012737	176400	004126		MOV	#MPE!PGE!NEM!NED!UPE!WCE!DLT,\$CS2	
3763	022422	013737	004130	004130		MOV	\$CS3,\$CS3	
3764	022430	013737	004132	004132		MOV	\$ST,\$ST	
3765	022436	012737	030165	004134		MOV	#ILF!RMR!DPE!RMBEX!RFAIL!DTE!OPI,\$ER	
3766	022444	012737	177777	004122		MOV	#-1,BEFORE	:TELL WHYFO ITS FOR SHORTS
3767	022452	004737	007224			JSR	R7,WHYFO	:TEST FOR SHORTS
3768	022456	005037	004122			CLR	BEFORE	:WE HAVE CHECKED FOR SHORTS
3769	022462	000137	022554			JMP	8\$:LEAVE THE TEST
3770	022466	032737	040000	001162	22\$:	BIT	#TRE,\$REGO	:THEN IS THE TRE BIT SET
3771	022474	001022				BNE	6\$:SC BIT DID NOT SEE TRE BIT
3772	022476	032737	100000	001162		BIT	#SC,\$REGO	:IS THE SC BIT SET
3773	022504	001022				BNE	7\$:TRE HAS AN OPEN GOING TO BUS
3774	022506	104006				ERROR	6	:TRE SET LOGIC NOT WORKING
3775	022510	000421				BR	8\$:SET UP TO TEST AGAIN
3776	022512	104031			2\$:	ERROR	31	:MXF HAS OPEN IN LINE GOING TO BUS
3777	022514	004737	007224			JSR	R7,WHYFO	:SEE IF ANY OTHER ERROR BIT IS
3778								:SET OTHER THAN MXF
3779	022520	000415				BR	8\$:SET UP TO TEST AGAIN
3780	022522	104032			3\$:	ERROR	32	:SOMTHING WRONG WITH TRE BIT
3781	022524	004737	007224			JSR	R7,WHYFO	:SEE IF AN ERROR BIT IS SET
3782								:OR BOTH MXF IN RHCS2 AND SC IN
3783								:RHCS1 HAS AN OPEN BETWEEN IT AND THE BUS
3784	022530	000411				BR	8\$:SET UP TO TEST AGAIN
3785	022532	104011			4\$:	ERROR	11	:SC BIT WAS SET BY EITHER ATTN OR

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3786 022534 004737 007224 JSR R7,WHYFO ;FIND WHAT ERROR BIT IS SET
3787 ;MCPE ERROR OR SC IS SHORTED TO +5 VOLTS
3788 022540 000405 BR 8$ ;SETUP TO TEST AGAIN
3789 022542 104033 6$: ERROR 33 ;TRE WAS SET BY OTHER THAN MXF
3790 022544 004737 007224 JSR R7,WHYFO ;FIND ERROR BIT THAT SET TRE
3791 022550 000401 BR 8$ ;SETUP TO TEST AGAIN
3792 022552 104013 7$: ERROR 13 ;TRE HAS AN OPEN GOING TO THE BUS
3793 022554 032737 041400 177570 8$: BIT #SW14!SW9!SW8,@#177570 ;ANY LOOPING BEEING DONE
3794 022562 001003 BNE 21$ ;YES,LOAD TRE NO MATTER WHAT
3795 022564 105737 001103 TSTB $ERFLG ;WAS THERE AN ERROR
3796 022570 001010 BNE 9$ ;SKIP TRE CHECK
3797 022572 112777 000100 160564 21$: MOVB #TREB,@RHCS1B ;LOAD TRE
3798 022600 032777 001000 160532 BIT #MXF,@RHCS2 ;DID ERROR CLEAR
3799 022606 001401 BEQ 9$ ;YES EXIT TEST
3800 022610 104050 ERROR 50 ;LOADING TRE DID NOT CLEAR ERROR
3801 022612 004737 006572 9$: JSR R7,CLEER ;SEE IF ERRORS ARE CLEARED
3802 022616 004737 050202 JSR R7,ERRTST
3803 ;*****
3804 ;*TEST 27 PGE ERROR BIT TEST
3805 ;*THIS TEST FORCES PGE TO SET IN RHCS2
3806 ;*AND VERIFYS TRE AND SC IS SET IN RHCS1
3807 ;*****
3808 022622 000004 TST27: SCOPE
3809 022624 012777 000007 160506 MOV #7,@RHCS2 ;SET UNIT NUMBER
3810 022632 012777 004000 160474 MOV #EVENAD,@RHBA ;SETUP BUS ADDRESS
3811 022640 005701 TST R1 ;IS IT AN 11 OR A 70
3812 022642 100403 BMI JUMP ;ITS AN RH11
3813 022644 012777 000000 160506 MOV #ZERO,@RHBAE ;SETUP BAE
3814 022652 012777 000061 160450 JUMP: MOV #WRITE0,@RHCS1 ;TELL IT TO WRITE
3815 022660 012777 000061 160442 MOV #WRITE0,@RHCS1 ;CREATE THE ERROR
3816 022666 005037 003446 CLR BITCNT ;CLEAR BIT COUNTER
3817 022672 032777 000200 160430 18$: BIT #RDY,@RHCS1 ;IS RDY SET
3818 022700 001015 BNE PGETST ;BIT IS SET
3819 022702 005237 003446 INC BITCNT ;COUNT UP
3820 022706 001371 BNE 18$ ;NOT FINISHED COUNTING
3821 022710 005037 003446 CLR BITCNT ;GET READY TO DO IT AGAIN
3822 022714 032777 000200 160406 19$: BIT #RDY,@RHCS1 ;IS IT SET YET?
3823 022722 001004 BNE PGETST ;YES
3824 022724 005237 003446 INC BITCNT ;COUNT UP
3825 022730 001401 BEQ PGETST ;BIT IS NOT GOING TO SET
3826 022732 000770 BR 19$
3827 022734 PGETST:
3828 022734 017737 160370 001162 MOV @RHCS1,$REG0 ;SET UP NEEDED BITS ONLY
3829 022742 042737 027777 001162 BIC #GO!IE!RDY!A16!A17!PSEL!DVA!MCPE!READ6,$REG0 ;CLEAR BITS NOT NEEDED
3830 ;*****
3831 022750 017737 160354 003420 MOV @RHCS1,CS1 ;SAVE RHCS1
3832 022756 017737 160350 003444 MOV @RHWC,WC ;SAVE WORD COUNT
3833 022764 017737 160344 003414 MOV @RHBA,BA ;SAVE BUS ADDRESS
3834 022772 005701 TST R1 ;IS IT AN RH11
3835 022774 001406 BEQ 87$ ;NO IT'S A 70
3836 022776 005037 003416 CLR BAE ;CLEAR BAE
3837 023002 005037 003424 CLR CS3 ;CLEAR CS3
3838 023006 000137 023026 JMP 86$ ;CONTINUE
3839 023012 017737 160342 003416 87$: MOV @RHBAE,BAE ;SAVE BUS ADDRESS EXTENSION
3840 023020 017737 160336 003424 MOV @RHCS3,CS3 ;SAVE RHCS3
3841 023026 017737 160306 003422 86$: MOV @RHCS2,CS2 ;SAVE CS2
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3842	023034	017737	160302	003432		MOV	@RHST,DS1	:SAVE TESTER STATUS
3843	023042	017737	160276	003436		MOV	@RHER,CR1	:SAVE ERROR REGISTER
3844	023050	017737	160274	003442		MOV	@RHTDB,TDR	:SAVE TESTER DATA REG.
3845	023056	017737	160254	003440		MOV	@RHMR2,TC	:SAVE MR2 TESTER REG.
3846	023064	032777	000200	160236		BIT	#RDY,@RHCS1	:IS READY SET
3847	023072	001003				BNE	99\$:YES CONTINUE TEST
3848	023074	104102				ERROR	102	:READY NOT SET
3849	023076	004737	007224			JSR	R7,WHYFO	:ANY ERRORS SET
3850	023102	032777	002000	160230	99\$:	BIT	#PGE,@RHCS2	:IS PGE SET
3851	023110	001016				BNE	1\$:YES CHECK TRE AND SC
3852	023112	022737	140000	001162		CMP	#SC!TRE,\$REGO	:IS THE SC AND TRE BITS SET
3853	023120	001460				BEQ	2\$:YES PGE IS IN ERROR
3854	023122	032737	040000	001162		BIT	#TRE,\$REGO	:IS JUST THE TRE BIT SET
3855	023130	001060				BNE	3\$:TRE BIT MUST BE IN ERROR
3856	023132	032737	100000	001162		BIT	#SC,\$REGO	:IS JUST THE SC BIT SET
3857	023140	001060				BNE	4\$:SC BIT SET ERRONIOUSLY
3858	023142	104051				ERROR	51	:PGE NOT SET IN RHCS2
3859	023144	000467				BR	8\$:SET UP TO TEST AGAIN
3860	023146	022737	140000	001162	1\$:	CMP	#SC!TRE,\$REGO	:IS SC AND TRE SET
3861	023154	001030				BNE	22\$:FIND THE ERROR
3862	023156	013737	004124	004124		MOV	\$CS1,\$CS1	:TEST FOR SHORTS
3863	023164	012737	175400	004126		MOV	#MPE!MXF!NEM!NED!UPE!WCE!DLT,\$CS2	
3864	023172	013737	004130	004130		MOV	\$CS3,\$CS3	
3865	023200	013737	004132	004132		MOV	\$ST,\$ST	
3866	023206	012737	030175	004134		MOV	#ILF!CPE!RMR!DPE!RMBEX!RFAIL!DTE!OPI,\$ER	
3867	023214	012737	177777	004122		MOV	#-1,BEFORE	:TELL WHYFO ITS FOR SHORTS
3868	023222	004737	007224			JSR	R7,WHYFO	:TEST FOR SHORTS
3869	023226	005037	004122			CLR	BEFORE	:WE HAVE CHECKED FOR SHORTS
3870	023232	000137	023324			JMP	8\$:LEAVE THE TEST
3871	023236	032737	040000	001162	22\$:	BIT	#TRE,\$REGO	:THEN IS THE TRE BIT SET
3872	023244	001022				BNE	6\$:SC BIT DID NOT SEE TRE BIT
3873	023246	032737	100000	001162		BIT	#SC,\$REGO	:IS THE SC BIT SET
3874	023254	001022				BNE	7\$:TRE HAS AN OPEN GOING TO BUS
3875	023256	104006				ERROR	6	:TRE SET LOGIC NOT WORKING
3876	023260	000421				BR	8\$:SET UP TO TEST AGAIN
3877	023262	104123			2\$:	ERROR	123	:PGE HAS OPEN IN LINE GOING TO BUS
3878	023264	004737	007224			JSR	R7,WHYFO	:SEE IF ANY OTHER ERROR BIT IS
3879								:SET OTHER THAN PGE
3880	023270	000415				BR	8\$:SET UP TO TEST AGAIN
3881	023272	104171			3\$:	ERROR	171	:SOMTHING WRONG WITH TRE BIT
3882	023274	004737	007224			JSR	R7,WHYFO	:SEE IF AN ERROR BIT IS SET
3883								:OR BOTH PGE IN RHCS2 AND SC IN
3884								:RHCS1 HAS AN OPEN BETWEEN IT AND THE BUS
3885	023300	000411				BR	8\$:SET UP TO TEST AGAIN
3886	023302	104011			4\$:	ERROR	11	:SC BIT WAS SET BY EITHER ATTN OR
3887	023304	004737	007224			JSR	R7,WHYFO	:FIND WHAT ERROR BIT IS SET
3888								:MCPE ERROR OR SC IS SHORTED TO +5 VOLTS
3889	023310	000405				BR	8\$:SETUP TO TEST AGAIN
3890	023312	104172			6\$:	ERROR	172	:TRE WAS SET BY OTHER THAN PGE
3891	023314	004737	007224			JSR	R7,WHYFO	:FIND ERROR BIT THAT SET TRE
3892	023320	000401				BR	8\$:SETUP TO TEST AGAIN
3893	023322	104013			7\$:	ERROR	13	:TRE HAS AN OPEN GOING TO THE BUS
3894	023324	032737	041400	177570	8\$:	BIT	#SW14!SW9!SW8,@#177570	:ANY LOOPING BEEING DONE
3895	023332	001003				BNE	21\$:YES,LOAD TRE NO MATTER WHAT
3896	023334	105737	001103			TSTB	\$ERFLG	:WAS THERE AN ERROR
3897	023340	001010				BNE	9\$:SKIP TRE CHECK

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3898 023342 112777 000100 160014 21$:  MOVB  #TREB,@RHCS1B      ;LOAD TRE
3899 023350 032777 002000 157762      BIT  #PGE,@RHCS2      ;DID ERROR CLEAR
3900 023356 001401          BEQ   9$              ;YES EXIT TEST
3901 023360 104050          ERROR  50             ;LOADING TRE DID NOT CLEAR ERROR
3902 023362 004737 006572      JSR   R7,CLEER       ;SEE IF ERRORS ARE CLEARED
3903 023366 004737 050202      JSR   R7,ERRTST
3904
3905      ;*****
3906      ;*TEST 30      MXF,TRE AND SC BIT TEST (RH11 ONLY)
3907      ;*THIS TEST SEES IF MXF CAN BE SET BY A MOVE
3908      ;*INSTRUCTION AND THAT TRE AND SC ARE SET IN
3909      ;*RHCS1.MXF CAN BE SET THIS WAY IN AN RH11 BUT CN
3910      ;*NOT BE SET THIS WAY IN AN RH70.....
3911      ;*****
3911 023372 000004      TST30: SCOPE
3912 023374 005701      TST   R1              ;IS IT A 70 OR 11
3913 023376 100402      BMI  LEAP            ;IT'S AN RH11 DO THE TEST
3914 023400 000137 024124      JMP  FROG            ;RH70,EXIT TEST
3915 023404 012777 000007 157726 LEAP:  MOV  #7,@RHCS2    ;SETUP UNIT 7
3916 023412 052777 001000 157720      BIS  #MXF,@RHCS2    ;SET MXF
3917 023420 005037 003446      CLR  BITCNT          ;CLEAR BIT COUNTER
3918 023424 032777 001000 157706 18$:  BIT  #MXF,@RHCS2    ;IS MXF SET
3919 023432 001015          BNE  MIXIT           ;BIT IS SET
3920 023434 005237 003446      INC  BITCNT          ;COUNT UP
3921 023440 001371          BNE  18$            ;NOT FINISHED COUNTING
3922 023442 005037 003446      CLR  BITCNT          ;GET READY TO DO IT AGAIN
3923 023446 032777 001000 157664 19$:  BIT  #MXF,@RHCS2    ;IS IT SET YET?
3924 023454 001004          BNE  MIXIT           ;YES
3925 023456 005237 003446      INC  BITCNT          ;COUNT UP
3926 023462 001401          BEQ  MIXIT           ;BIT IS NOT GOING TO SET
3927 023464 000770          BR   19$
3928 023466
3929 023466 017737 157636 001162 MIXIT: MOV  @RHCS1,$REGO    ;SET UP NEEDED BITS ONLY
3930 023474 042737 027777 001162      BIC  #GO!IE!RDY!A16!A17!PSEL!DVA!MCPE!READ6,$REGO
3931
3932 023502 017737 157622 003420      MOV  @RHCS1,CS1     ;SAVE RHCS1
3933 023510 017737 157616 003444      MOV  @RHWC,WC       ;SAVE WORD COUNT
3934 023516 017737 157612 003414      MOV  @RHBA,BA       ;SAVE BUS ADDRESS
3935 023524 005701          TST  R1              ;IS IT AN RH11
3936 023526 001406          BEQ  87$            ;NO IT'S A 70
3937 023530 005037 003416      CLR  BAE             ;CLEAR BAE
3938 023534 005037 003424      CLR  CS3            ;CLEAR CS3
3939 023540 000137 023560          JMP  86$            ;CONTINUE
3940 023544 017737 157610 003416 87$:  MOV  @RHBAE,BAE     ;SAVE BUS ADDRESS EXTENSION
3941 023552 017737 157604 003424      MOV  @RHCS3,CS3     ;SAVE RHCS3
3942 023560 017737 157554 003422 86$:  MOV  @RHCS2,CS2     ;SAVE CS2
3943 023566 017737 157550 003432      MOV  @RHST,DS1      ;SAVE TESTER STATUS
3944 023574 017737 157544 003436      MOV  @RHER,ER1      ;SAVE ERROR REGISTER
3945 023602 017737 157542 003442      MOV  @RHTDB,TDR     ;SAVE TESTER DATA REG.
3946 023610 017737 157522 003440      MOV  @RHMR2,TC      ;SAVE MR2 TESTER REG.
3947 023616 032777 000200 157504      BIT  #RDY,@RHCS1    ;IS READY SET
3948 023624 001003          BNE  99$            ;YES CONTINUE TEST
3949 023626 104102          ERROR 102          ;READY NOT SET
3950 023630 004737 007224      JSR  R7,WHYFO       ;ANY ERRORS SET
3951 023634 032777 001000 157476 99$:  BIT  #MXF,@RHCS2    ;IS MXF SET
3952 023642 001016          BNE  1$             ;YES CHECK TRE AND SC
3953 023644 022737 140000 001162      CMP  #SC!TRE,$REGO  ;IS THE SC AND TRE BITS SET

```

```

3954 023652 001460          BEQ      2$          ;YES MXF IS IN ERROR
3955 023654 032737 040000 001162 BIT      #TRE,$REGO ;IS JUST THE TRE BIT SET
3956 023662 001060          BNE      3$          ;TRE BIT MUST BE IN ERROR
3957 023664 032737 100000 001162 BIT      #SC,$REGO  ;IS JUST THE SC BIT SET
3958 023672 001060          BNE      4$          ;SC BIT SET ERRONIOUSLY
3959 023674 104030          ERROR    30         ;MXF NOT SET IN RHCS2
3960 023676 000467          BR       8$          ;SET UP TO TEST AGAIN
3961 023700 022737 140000 001162 1$:  CMP      #SC!TRE,$REGO ;IS SC AND TRE SET
3962 023706 001030          BNE      22$         ;FIND THE ERROR
3963 023710 013737 004124 004124 MOV      $CS1,$CS1   ;TEST FOR SHORTS
3964 023716 012737 176400 004126 MOV      #MPE!PGE!NEM!NED!UPE!WCE!DLT,$CS2
3965 023724 013737 004130 004130 MOV      $CS3,$CS3
3966 023732 013737 004132 004132 MOV      $ST,$ST
3967 023740 013737 004134 004134 MOV      $ER,$ER
3968 023746 012737 177777 004122 MOV      #-1,BEFORE ;TELL WHYFO ITS FOR SHORTS
3969 023754 004737 007224 JSR      R7,WHYFO   ;TEST FOR SHORTS
3970 023760 005037 004122 CLR      BEFORE    ;WE HAVE CHECKED FOR SHORTS
3971 023764 000137 024056 JMP      8$          ;LEAVE THE TEST
3972 023770 032737 040000 001162 22$: BIT      #TRE,$REGO ;THEN IS THE TRE BIT SET
3973 023776 001022          BNE      6$          ;SC BIT DID NOT SEE TRE BIT
3974 024000 032737 100000 001162 BIT      #SC,$REGO  ;IS THE SC BIT SET
3975 024006 001022          BNE      7$          ;TRE HAS AN OPEN GOING TO BUS
3976 024010 104006          ERROR    6          ;TRE SET LOGIC NOT WORKING
3977 024012 000421          BR       8$          ;SET UP TO TEST AGAIN
3978 024014 104031          ERROR    31         ;MXF HAS OPEN IN LINE GOING TO BUS
3979 024016 004737 007224 JSR      R7,WHYFO   ;SEE IF ANY OTHER ERROR BIT IS
3980                                ;SET OTHER THAN MXF
3981 024022 000415          BR       8$          ;SET UP TO TEST AGAIN
3982 024024 104032          ERROR    32         ;SOMTHING WRONG WITH TRE BIT
3983 024026 004737 007224 JSR      R7,WHYFO   ;SEE IF AN ERROR BIT IS SET
3984                                ;OR BOTH MXF IN RHCS2 AND SC IN
3985                                ;RHCS1 HAS AN OPEN BETWEEN IT AND THE BUS
3986 024032 000411          BR       8$          ;SET UP TO TEST AGAIN
3987 024034 104011          ERROR    11         ;SC BIT WAS SET BY EITHER ATTN OR
3988 024036 004737 007224 JSR      R7,WHYFO   ;FIND WHAT ERROR BIT IS SET
3989                                ;MCPE ERROR OR SC IS SHORTED TO +5 VOLTS
3990                                ;SETUP TO TEST AGAIN
3991 024044 104033          ERROR    33         ;TRE WAS SET BY OTHER THAN MXF
3992 024046 004737 007224 JSR      R7,WHYFO   ;FIND ERROR BIT THAT SET TRE
3993 024052 000401          BR       8$          ;SETUP TO TEST AGAIN
3994 024054 104013          ERROR    13         ;TRE HAS AN OPEN GOING TO THE BUS
3995 024056 032737 041400 177570 8$:  BIT      #SW14!SW9!SW8,@#177570 ;ANY LOOPING BEEING DONE
3996 024064 001003          BNE      21$         ;YES,LOAD TRE NO MATTER WHAT
3997 024066 105737 001103 TSTB    $ERFLG     ;WAS THERE AN ERROR
3998 024072 001010          BNE      9$          ;SKIP TRE CHECK
3999 024074 112777 000100 157262 21$: MOVB    #TREB,@RHCS1B ;LOAD TRE
4000 024102 032777 001000 157230 BIT      #MXF,@RHCS2 ;DID ERROR CLEAR
4001 024110 001401          BEQ      9$          ;YES EXIT TEST
4002 024112 104050          ERROR    50         ;LOADING TRE DID NOT CLEAR ERROR
4003 024114 004737 006572 9$:  JSR      R7,CLEER  ;SEE IF ERRORS ARE CLEARED
4004 024120 004737 050202 JSR      R7,ERRTST
4005 024124
4006
4007
4008
4009
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.....

```

```

4010
4011 024124 000004
4012 024126 012777 000007 157204
4013 024134 012777 000010 157212
4014 024142 013777 001162 157200
4015 024150 013777 001162 157172
4016 024156 005037 003446
4017 024162 032777 000200 157140 18$:
4018 024170 001015
4019 024172 005237 003446
4020 024176 001371
4021 024200 005037 003446
4022 024204 032777 000200 157116 19$:
4023 024212 001004
4024 024214 005237 003446
4025 024220 001401
4026 024222 000770
4027 024224
4028 024224 017737 157100 003420
4029 024232 017737 157074 003444
4030 024240 017737 157070 003414
4031 024246 005701
4032 024250 001406
4033 024252 005037 003416
4034 024256 005037 003424
4035 024262 000137 024302
4036 024266 017737 157066 003416 87$:
4037 024274 017737 157062 003424
4038 024302 017737 157032 003422 86$:
4039 024310 017737 157026 003432
4040 024316 017737 157022 003436
4041 024324 017737 157020 003442
4042 024332 017737 157000 003440
4043 024340 032777 000200 156762
4044 024346 001003
4045 024350 104102
4046 024352 004737 007224
4047 024356 032777 020000 156744 MPETST:
4048 024364 001425
4049 024366 032777 100000 156734
4050 024374 001416
4051 024376 012737 040000 004124
4052 024404 012737 177400 004126
4053 024412 012737 177777 004122
4054 024420 004737 007224
4055 024424 005037 004122
4056 024430 000406
4057 024432 104130 22$:
4058
4059
4060
4061 024434 000137 024446
4062 024440 104131 1$:
4063 024442 004737 007224
4064 024446 004737 006572
4065 024452 004737 050202 ERR30:

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

MCPET:
MOV @RHCS1,CS1 ;SAVE RHCS1
MOV @RHWC,WC ;SAVE WORD COUNT
MOV @RHBA,BA ;SAVE BUS ADDRESS
TST R1 ;IS IT AN RH11
BEQ 87$ ;NO IT'S A 70
CLR BAE ;CLEAR BAE
CLR CS3 ;CLEAR CS3
JMP 86$ ;CONTINUE
MOV @RHBAE,BAE ;SAVE BUS ADDRESS EXTENSION
MOV @RHCS3,CS3 ;SAVE RHCS3
MOV @RHCS2,CS2 ;SAVE CS2
MOV @RHST,DS1 ;SAVE TESTER STATUS
MOV @RHER,ER1 ;SAVE ERROR REGISTER
MOV @RHTDB,TDR ;SAVE TESTER DATA REG.
MOV @RHMR2,TC ;SAVE MR2 TESTER REG.
BIT #RDY,@RHCS1 ;IS READY SET
BNE MPETST ;YES,TEST MCPE
ERROR 102 ;READY IS NOT SET
JSR R7,WHYFO ;ANY ERRORS SET
BIT #MCPE,@RHCS1 ;IS MCPE SET
BEQ 1$
BIT #SC,@RHCS1 ;IS SC SET
BEQ 22$ ;SC NOT SET
MOV #TRE,$CS1 ;GET READY TO TEST FOR SHORTS
MOV #MPE!MXF!PGE!NEM!NED!UPE!WCE!DLT,$CS2
MOV #-1,BEFORE
JSR R7,WHYFO ;SEE IF ANY SHORTS
CLR BEFORE
BR ERR30 ;GET OUT OF TEST
22$: ERROR 130 ;MCPE ERROR OK BUT SC DID
;NOT SET SC HAS OPEN TO
;BUS OR MCPE GOING TO OR
;GATE FOR SC WAS NOT SEEN

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

```

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4066
4067
4068
4069
4070
4071
4072
4073 024456 000004
4074 024460 005701
4075 024462 100532
4076 024464 012777 177777 156640
4077 024472 012777 004000 156634
4078 024500 012777 000000 156652
4079 024506 012777 000007 156624
4080 024514 012777 000061 156606
4081 024522 005037 003446
4082 024526 032777 000200 156574 18$:
4083 024534 001015
4084 024536 005237 003446
4085 024542 001371
4086 024544 005037 003446
4087 024550 032777 000200 156552 19$:
4088 024556 001004
4089 024560 005237 003446
4090 024564 001401
4091 024566 000770
4092 024570
4093 024570 017737 156534 003420
4094 024576 017737 156530 003444
4095 024604 017737 156524 003414
4096 024612 005701
4097 024614 001406
4098 024616 005037 003416
4099 024622 005037 003424
4100 024626 000137 024646
4101 024632 017737 156522 003416 87$:
4102 024640 017737 156516 003424
4103 024646 017737 156466 003422 86$:
4104 024654 017737 156462 003432
4105 024662 017737 156456 003436
4106 024670 017737 156454 003442
4107 024676 017737 156434 003440
4108 024704 032777 000200 156416
4109 024712 001003
4110 024714 104102
4111 024716 004737 007224
4112 024722 032777 002000 156432 1$:
4113 024730 001403
4114 024732 104125
4115 024734 004737 007224
4116 024740 004737 006572
4117 024744 004737 050202
4118
4119
4120
4121

```

```

*****
*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
      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   125        ;DBL DID SET ON A 1 WORD TRANSFER
      JSR     R7,WHYFO    ;TELL WHY NOT
      JSR     R7,CLEER    ;CLEAR ERRORS
      JSR     R7,ERRTST

*****
*TEST 33      DOUBLES TEST FOR TWO WORD BASE 4 ADDRESS
:*THIS TEST CHECKS THAT DOUBLE WILL SET FOR A
:*TWO WORD TRANSFER STARTING FROM AN ADDRESS

```

4122
4123
4124 024750 000004
4125 024752 005701
4126 024754 100524
4127 024756 012777 177776 156346
4128 024764 012777 004000 156342
4129 024772 012777 000061 156330
4130 025000 005037 003446
4131 025004 032777 000200 156316 18\$:
4132 025012 001015
4133 025014 005237 003446
4134 025020 001371
4135 025022 005037 003446
4136 025026 032777 000200 156274 19\$:
4137 025034 001004
4138 025036 005237 003446
4139 025042 001401
4140 025044 000770
4141 025046
4142 025046 017737 156256 003420
4143 025054 017737 156252 003444
4144 025062 017737 156246 003414
4145 025070 005701
4146 025072 001406
4147 025074 005037 003416
4148 025100 005037 003424
4149 025104 000137 025124
4150 025110 017737 156244 003416 87\$:
4151 025116 017737 156240 003424
4152 025124 017737 156210 003422 86\$:
4153 025132 017737 156204 003432
4154 025140 017737 156200 003436
4155 025146 017737 156176 003442
4156 025154 017737 156156 003440
4157 025162 032777 000200 156140
4158 025170 001003
4159 025172 104102
4160 025174 004737 007224
4161 025200 032777 002000 156154 FOOEY:
4162 025206 001003
4163 025210 104127
4164 025212 004737 007224
4165 025216 004737 006572
4166 025222 004737 050202
4167
4168
4169
4170
4171
4172
4173
4174 025226 000004
4175 025230 005701
4176 025232 100524
4177 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 ; TELL 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 @RHTDB,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
```



```

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

```

```

4234 025554 001371          BNE      18$          ;NOT FINISHED COUNTING
4235 025556 005037 003446   CLR      BITCNT      ;GET READY TO DO IT AGAIN
4236 025562 032777 000200 155540 19$:  BIT      #RDY,@RHCS1 ;IS IT SET YET?
4237 025570 001004          BNE      DBLED       ;YES
4238 025572 005237 003446   INC      BITCNT      ;COUNT UP
4239 025576 001401          BEQ      DBLED       ;BIT IS NOT GOING TO SET
4240 025600 000770          BR       19$
4241 025602          DBLED:
4242 025602 017737 155522 003420   MOV      @RHCS1,CS1  ;SAVE RHCS1
4243 025610 017737 155516 003444   MOV      @RHWC,WC    ;SAVE WORD COUNT
4244 025616 017737 155512 003414   MOV      @RHBA,BA    ;SAVE BUS ADDRESS
4245 025624 005701          TST      R1          ;IS IT AN RH11
4246 025626 001406          BEQ      87$        ;NO IT'S A 70
4247 025630 005037 003416   CLR      BAE         ;CLEAR BAE
4248 025634 005037 003424   CLR      CS3        ;CLEAR CS3
4249 025640 000137 025660          JMP      86$        ;CONTINUE
4250 025644 017737 155510 003416 87$:  MOV      @RHBAE,BAE  ;SAVE BUS ADDRESS EXTENSION
4251 025652 017737 155504 003424   MOV      @RHCS3,CS3 ;SAVE RHCS3
4252 025660 017737 155454 003422 86$:  MOV      @RHCS2,CS2 ;SAVE CS2
4253 025666 017737 155450 003432   MOV      @RHST,DS1  ;SAVE TESTER STATUS
4254 025674 017737 155444 003436   MOV      @RHER,ER1  ;SAVE ERROR REGISTER
4255 025702 017737 155442 003442   MOV      @RHTDB,TDR ;SAVE TESTER DATA REG.
4256 025710 017737 155422 003440   MOV      @RHMR2,TC  ;SAVE MR2 TESTER REG.
4257 025716 032777 000200 155404   BIT      #RDY,@RHCS1 ;IS READY SET
4258 025724 001003          BNE      DAYAMS     ;RDY IS SET
4259 025726 104102          ERROR   102        ;RDY DID NOT SET
4260 025730 004737 007224   JSR      R7,WHYFO   ;WHAT ERRORS ARE SET
4261 025734 032777 002000 155420 DAYAMS: BIT      #DBL,@RHCS3 ;IS DOUBLE SET
4262 025742 001003          BNE      ERR29     ;TEST IS OK
4263 025744 104124          ERROR   124        ;DOUBLE DID NOT SET AFTER A 4 WORD
4264 025746 004737 007224   JSR      R7,WHYFO   ;SEE IF ANY ERROR ARE SET
4265 025752 004737 006572 ERR29: JSR      R7,CLEER   ;CLEAR ERRORS
4266 025756 004737 050202   JSR      R7,ERRTST
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::*****
:*TEST 36      DOUBLE TEST 1WORD TRANSFER READ
; *THESE TEST CHECK DBL IN RHCS3 WITHREAD FWD AND REV
; *WRITE FWD AND REV AND WITH BAI SET IN RHCS2
; *OPERATION BEING PREFORMED WILL BE PRINTED OUT
; *IN ERROR MESSAGE.
; *.....RH70 ONLY.....
::*****

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4277 025762 000004          TST36: SCOPE
4278 025764 005701          TST      R1          ;IS IN AN RH11
4279 025766 100532          BMI      TST37      ;:GET OUT OF TEST
4280 025770 012777 177777 155334   MOV      #-1,@RHWC  ;SET UP WC FOR ONE WORD
4281 025776 012777 004000 155330   MOV      #EVENAD,@RHBA ;SETUP BUS ADDRESS
4282 026004 012777 000000 155346   MOV      #ZERO,@RHBAE ;SETUP BUS ADDRESS EXTENSION
4283 026012 012777 000007 155320   MOV      #7,@RHCS2  ;DEVICE 7
4284 026020 012777 000071 155302   MOV      #READ0,@RHCS1 ;TELL IT TO READ0
4285 026026 005037 003446   CLR      BITCNT      ;CLEAR BIT COUNTER
4286 026032 032777 000200 155270 18$:  BIT      #RDY,@RHCS1 ;IS RDY SET
4287 026040 001015          BNE      3$        ;BIT IS SET
4288 026042 005237 003446   INC      BITCNT      ;COUNT UP
4289 026046 001371          BNE      18$        ;NOT FINISHED COUNTING

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4290 026050 005037 003446          CLR      BITCNT          ;GET READY TO DO IT AGAIN
4291 026054 032777 000200 155246 19$: BIT      #RDY,@RHCS1    ;IS IT SET YET?
4292 026062 001004          BNE      3$              ;YES
4293 026064 005237 003446          INC      BITCNT          ;COUNT UP
4294 026070 001401          BEQ      3$              ;BIT IS NOT GOING TO SET
4295 026072 000770          BR       19$
4296 026074          3$:
4297 026074 017737 155230 003420      MOV      @RHCS1,CS1      ;SAVE RHCS1
4298 026102 017737 155224 003444      MOV      @RHWC,WC        ;SAVE WORD COUNT
4299 026110 017737 155220 003414      MOV      @RHBA,BA        ;SAVE BUS ADDRESS
4300 026116 005701          TST      R1              ;IS IT AN RH11
4301 026120 001406          BEQ      87$             ;NO IT'S A 70
4302 026122 005037 003416          CLR      BAE              ;CLEAR BAE
4303 026126 005037 003424          CLR      CS3             ;CLEAR CS3
4304 026132 000137 026152          JMP      86$             ;CONTINUE
4305 026136 017737 155216 003416 87$: MOV      @RHBAE,BAE      ;SAVE BUS ADDRESS EXTENSION
4306 026144 017737 155212 003424      MOV      @RHCS3,CS3      ;SAVE RHCS3
4307 026152 017737 155162 003422 86$: MOV      @RHCS2,CS2      ;SAVE CS2
4308 026160 017737 155156 003432      MOV      @RHST,DS1       ;SAVE TESTER STATUS
4309 026166 017737 155152 003436      MOV      @RHER,ER1       ;SAVE ERROR REGISTER
4310 026174 017737 155150 003442      MOV      @RHTDB,TDR      ;SAVE TESTER DATA REG.
4311 026202 017737 155130 003440      MOV      @RHMR2,TC       ;SAVE MR2 TESTER REG.
4312 026210 032777 000200 155112      BIT      #RDY,@RHCS1    ;IS READY SET
4313 026216 001003          BNE      1$              ;RDY SET CONT. TEST
4314 026220 104102          ERROR   102             ;READY DID NOT SET
4315 026222 004737 007224          JSR      R7,WHYFO        ;ANY ERRORS SET
4316 026226 032777 002000 155126 1$: BIT      #DBL,@RHCS3    ;IS DOUBLE SET
4317 026234 001403          BEQ      2$              ;DBL SET
4318 026236 104154          ERROR   154             ;DBL DID SET ON A 1 WORD TRANSFER
4319 026240 004737 007224          JSR      R7,WHYFO        ;TELL WHY NOT
4320 026244 004737 006572          JSR      R7,CLEER        ;CLEAR ERRORS
4321 026250 004737 050202          JSR      R7,ERRTST
4322          ;*****
4323          ;*TEST 37      DOUBLE TEST WITH 2 WORD TRANSFER AND BAI SET
4324          ;*THESE TEST CHECK DBL IN RHCS3 WITHREAD FWD AND REV
4325          ;*WRITE FWD AND REV AND WITH BAI SET IN RHCS2
4326          ;*OPERATION BEING PREFORMED WILL BE PRINTED OUT
4327          ;*IN ERROR MESSAGE.
4328          ;*.....RH70 ONLY.....
4329          ;*****
4330 026254 000004      TST37: SCOPE
4331 026256 005701          TST      R1              ;IS IN AN RH11
4332 026260 100532          BMI     TST40            ;;GET OUT OF TEST
4333 026262 012777 177776 155042      MOV      #-2,@RHWC       ;SET UP WC FOR TWO WORD
4334 026270 012777 004000 155036      MOV      #EVENAD,@RHBA   ;SETUP BUS ADDRESS
4335 026276 012777 000000 155054      MOV      #ZERO,@RHBAE    ;SETUP BUS ADDRESS EXTENSION
4336 026304 012777 000017 155026      MOV      #7!BAI,@RHCS2   ;DEVICE 7
4337 026312 012777 000061 155010      MOV      #WRITE0,@RHCS1  ;TELL IT TO WRITE0
4338 026320 005037 003446          CLR      BITCNT          ;CLEAR BIT COUNTER
4339 026324 032777 000200 154776 18$: BIT      #RDY,@RHCS1    ;IS RDY SET
4340 026332 001015          BNE      3$              ;BIT IS SET
4341 026334 005237 003446          INC      BITCNT          ;COUNT UP
4342 026340 001371          BNE      18$            ;NOT FINISHED COUNTING
4343 026342 005037 003446          CLR      BITCNT          ;GET READY TO DO IT AGAIN
4344 026346 032777 000200 154754 19$: BIT      #RDY,@RHCS1    ;IS IT SET YET?
4345 026354 001004          BNE      3$              ;YES
```

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4346 026356 005237 003446      INC      BITCNT      ;COUNT UP
4347 026362 001401              BEQ      3$          ;BIT IS NOT GOING TO SET
4348 026364 000770              BR       19$
4349 026366                    3$:
4350 026366 017737 154736 003420      MOV      @RHCS1,CS1  ;SAVE RHCS1
4351 026374 017737 154732 003444      MOV      @RHWC,WC    ;SAVE WORD COUNT
4352 026402 017737 154726 003414      MOV      @RHBA,BA    ;SAVE BUS ADDRESS
4353 026410 005701              TST      R1          ;IS IT AN RH11
4354 026412 001406              BEQ      87$         ;NO IT'S A 70
4355 026414 005037 003416      CLR      BAE         ;CLEAR BAE
4356 026420 005037 003424      CLR      CS3        ;CLEAR CS3
4357 026424 000137 026444      JMP      86$         ;CONTINUE
4358 026430 017737 154724 003416 87$:      MOV      @RHBAE,BAE  ;SAVE BUS ADDRESS EXTENSION
4359 026436 017737 154720 003424      MOV      @RHCS3,CS3  ;SAVE RHCS3
4360 026444 017737 154670 003422 86$:      MOV      @RHCS2,CS2  ;SAVE CS2
4361 026452 017737 154664 003432      MOV      @RHST,DS1   ;SAVE TESTER STATUS
4362 026460 017737 154660 003436      MOV      @RHER,ER1   ;SAVE ERROR REGISTER
4363 026466 017737 154656 003442      MOV      @RHTDB,TDR  ;SAVE TESTER DATA REG.
4364 026474 017737 154636 003440      MOV      @RHMR2,TC   ;SAVE MR2 TESTER REG.
4365 026502 032777 000200 154620      BIT      #RDY,@RHCS1 ;IS READY SET
4366 026510 001003              BNE     1$          ;RDY SET CONT. TEST
4367 026512 004102              ERROR   102        ;READY DID NOT SET
4368 026514 004737 007224      JSR     R7,WHYFO    ;ANY ERRORS SET
4369 026520 032777 002000 154634 1$:      BIT      #DBL,@RHCS3 ;IS DOUBLE SET
4370 026526 001403              BEQ     2$          ;DBL SET
4371 026530 104153              ERROR   153        ;DBL DID SET ON A 2 WORD TRANSFER
4372 026532 004737 007224      JSR     R7,WHYFO    ;TELL WHY NOT
4373 026536 004737 006572 2$:      JSR     R7,CLEER    ;CLEAR ERRORS
4374 026542 004737 050202      JSR     R7,ERRTST
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4382
4383 026546 000004      TST40: SCOPE
4384 026550 005701      TST     R1          ;IS IN AN RH11
4385 026552 100532      BMI     TST41      ;;GET OUT OF TEST
4386 026554 012777 177776 154550      MOV     #-2,@RHWC   ;SET UP WC FOR TWO WORD
4387 026562 012777 004000 154544      MOV     #EVENAD,@RHBA ;SETUP BUS ADDRESS
4388 026570 012777 000000 154562      MOV     #ZERO,@RHBAE ;SETUP BUS ADDRESS EXTENSION
4389 026576 012777 000017 154534      MOV     #7!BAI,@RHCS2 ;DEVICE 7
4390 026604 012777 000067 154516      MOV     #WRITE6,@RHCS1 ;TELL IT TO WRITE6
4391 026612 005037 003446      CLR     BITCNT      ;CLEAR BIT COUNTER
4392 026616 032777 000200 154504 18$:      BIT     #RDY,@RHCS1 ;IS RDY SET
4393 026624 001015              BNE     3$          ;BIT IS SET
4394 026626 005237 003446      INC     BITCNT      ;COUNT UP
4395 026632 001371              BNE     18$        ;NOT FINISHED COUNTING
4396 026634 005037 003446      CLR     BITCNT      ;GET READY TO DO IT AGAIN
4397 026640 032777 000200 154462 19$:      BIT     #RDY,@RHCS1 ;IS IT SET YET?
4398 026646 001004              BNE     3$          ;YES
4399 026650 005237 003446      INC     BITCNT      ;COUNT UP
4400 026654 001401              BEQ     3$          ;BIT IS NOT GOING TO SET
4401 026656 000770              BR      19$

```

```

*****
;*TEST 40      DBL TEST 2 WORD TRANSFER WITH BAI AND WRITE REV
;*THESE TEST CHECK DBL IN RHCS3 WITHREAD FWD AND REV
;*WRITE FWD AND REV AND WITH BAI SET IN RHCS2
;*OPERATION BEING PREFORMED WILL BE PRINTED OUT
;*IN ERROR MESSAGE.
*.....RH70 ONLY.....
*****

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```
4402 026660
4403 026660 017737 154444 003420
4404 026666 017737 154440 003444
4405 026674 017737 154434 003414
4406 026702 005701
4407 026704 001406
4408 026706 005037 003416
4409 026712 005037 003424
4410 026716 000137 026736
4411 026722 017737 154432 003416 87$:
4412 026730 017737 154426 003424
4413 026736 017737 154376 003422 86$:
4414 026744 017737 154372 003432
4415 026752 017737 154366 003436
4416 026760 017737 154364 003442
4417 026766 017737 154344 003440
4418 026774 032777 000200 154326
4419 027002 001003
4420 027004 104102
4421 027006 004737 007224
4422 027012 032777 002000 154342 1$:
4423 027020 001403
4424 027022 104155
4425 027024 004737 007224
4426 027030 004737 006572
4427 027034 004737 050202
4428
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4434
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4436 027040 000004
4437 027042 005701
4438 027044 100532
4439 027046 012777 177776 154256
4440 027054 012777 004002 154252
4441 027062 012777 000000 154270
4442 027070 012777 000007 154242
4443 027076 012777 000061 154224
4444 027104 005037 003446
4445 027110 032777 000200 154212 18$:
4446 027116 001015
4447 027120 005237 003446
4448 027124 001371
4449 027126 005037 003446
4450 027132 032777 000200 154170 19$:
4451 027140 001004
4452 027142 005237 003446
4453 027146 001401
4454 027150 000770
4455 027152
4456 027152 017737 154152 003420
4457 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
87$: MOV @RHBAE,BAE ;SAVE BUS ADDRESS EXTENSION
MOV @RHCS3,CS3 ;SAVE RHCS3
86$: MOV @RHCS2,CS2 ;SAVE CS2
MOV @RHST,DS1 ;SAVE TESTER STATUS
MOV @RHER,ER1 ;SAVE ERROR REGISTER
MOV @RHTDB,TDR ;SAVE TESTER DATA REG.
MOV @RHMR2,TC ;SAVE MR2 TESTER REG.
BIT #RDY,@RHCS1 ;IS READY SET
BNE 1$ ;RDY SET CONT. TEST
ERROR 102 ;READY DID NOT SET
JSR R7,WHYFO ;ANY ERRORS SET
1$: BIT #DBL,@RHCS3 ;IS DOUBLE SET
BEQ 2$ ;DBL SET
ERROR 155 ;DBL DID SET ON A 2 WORD TRANSFER
JSR R7,WHYFO ;TELL WHY NOT
2$: JSR R7,CLEER ;CLEAR ERRORS
JSR R7,ERTST

;*****
;*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. . . . .
;*****
TST41: SCOPE
TST R1 ;IS IN AN RH11
BMT TST42 ;:GET OUT OF TEST
MOV #-2,@RHWC ;SET UP WC FOR TWO WORD
MOV #ODDAD,@RHBA ;SETUP BUS ADDRESS
MOV #ZERO,@RHBAE ;SETUP BUS ADDRESS EXTENSION
MOV #7,@RHCS2 ;DEVICE 7
MOV #WRITE0,@RHCS1 ;TELL IT TO WRITE0
CLR BITCNT ;CLEAR BIT COUNTER
18$: BIT #RDY,@RHCS1 ;IS RDY SET
BNE 3$ ;BIT IS SET
INC BITCNT ;COUNT UP
BNE 18$ ;NOT FINISHED COUNTING
CLR BITCNT ;GET READY TO DO IT AGAIN
19$: BIT #RDY,@RHCS1 ;IS IT SET YET?
BNE 3$ ;YES
INC BITCNT ;COUNT UP
BEQ 3$ ;BIT IS NOT GOING TO SET
BR 19$
3$: MOV @RHCS1,CS1 ;SAVE RHCS1
MOV @RHWC,WC ;SAVE WORD COUNT
```

```
4458 027166 017737 154142 003414      MOV      @RHBA,BA      ;SAVE BUS ADDRESS
4459 027174 005701                    TST      R1           ;IS IT AN RH11
4460 027176 001406                    BEQ      87$         ;NO IT'S A 70
4461 027200 005037 003416      CLR      BAE         ;CLEAR BAE
4462 027204 005037 003424      CLR      CS3        ;CLEAR CS3
4463 027210 000137 027230      JMP      86$         ;CONTINUE
4464 027214 017737 154140 003416 87$:  MOV      @RHBAE,BAE   ;SAVE BUS ADDRESS EXTENSION
4465 027222 017737 154134 003424      MOV      @RHCS3,CS3  ;SAVE RHCS3
4466 027230 017737 154104 003422 86$:  MOV      @RHCS2,CS2  ;SAVE CS2
4467 027236 017737 154100 003432      MOV      @RHST,DS1   ;SAVE TESTER STATUS
4468 027244 017737 154074 003436      MOV      @RHER,ER1   ;SAVE ERROR REGISTER
4469 027252 017737 154072 003442      MOV      @RHTDB,TDR  ;SAVE TESTER DATA REG.
4470 027260 017737 154052 003440      MOV      @RHMR2,TC   ;SAVE MR2 TESTER REG.
4471 027266 032777 000200 154034      BIT      #RDY,@RHCS1 ;IS READY SET
4472 027274 001003                    BNE      1$         ;RDY SET CONT. TEST
4473 027276 104102                    ERROR    102        ;READY DID NOT SET
4474 027300 004737 007224      JSR      R7,WHYFO    ;ANY ERRORS SET
4475 027304 032777 002000 154050 1$:  BIT      #DBL,@RHCS3 ;IS DOUBLE SET
4476 027312 001403                    BEQ      2$         ;DBL SET
4477 027314 104156                    ERROR    156        ;DBL DID SET ON A 2 WORD TRANSFER
4478 027316 004737 007224      JSR      R7,WHYFO    ;TELL WHY NOT
4479 027322 004737 006572      JSR      R7,CLEER    ;CLEAR ERRORS
4480 027326 004737 050202      JSR      R7,ERRST
4481
4482      ;*****
4483      ;*TEST 42      DBL TEST EVEN ADD. WRITE FWD
4484      ;*THESE TEST CHECK DBL IN RHCS3 WITHREAD FWD AND REV
4485      ;*WRITE FWD AND REV AND WITH BAI SET IN RHCS2
4486      ;*OPERATION BEING PREFORMED WILL BE PRINTED OUT
4487      ;*IN ERROR MESSAGE.
4488      ;*.....RH70 ONLY.....
4489      ;*****
4489 027332 000004      TST42: SCOPE
4490 027334 005701      TST      R1           ;IS IN AN RH11
4491 027336 100532      BMI      TST43      ;;GET OUT OF TEST
4492 027340 012777 177776 153764      MOV      #-2,@RHWC   ;SET UP WC FOR TWO WORD
4493 027346 012777 004000 153760      MOV      #EVENAD,@RHBA ;SETUP BUS ADDRESS
4494 027354 012777 000000 153776      MOV      #ZERO,@RHBAE ;SETUP BUS ADDRESS EXTENSION
4495 027362 012777 000007 153750      MOV      #7,@RHCS2   ;DEVICE 7
4496 027370 012777 000067 153732      MOV      #WRITE6,@RHCS1 ;TELL IT TO WRITE6
4497 027376 005037 003446      CLR      BITCNT     ;CLEAR BIT COUNTER
4498 027402 032777 000200 153720 18$:  BIT      #RDY,@RHCS1 ;IS RDY SET
4499 027410 001015                    BNE      3$         ;BIT IS SET
4500 027412 005237 003446      INC      BITCNT     ;COUNT UP
4501 027416 001371                    BNE      18$        ;NOT FINISHED COUNTING
4502 027420 005037 003446      CLR      BITCNT     ;GET READY TO DO IT AGAIN
4503 027424 032777 000200 153676 19$:  BIT      #RDY,@RHCS1 ;IS IT SET YET?
4504 027432 001004                    BNE      3$         ;YES
4505 027434 005237 003446      INC      BITCNT     ;COUNT UP
4506 027440 001401                    BEQ      3$         ;BIT IS NOT GOING TO SET
4507 027442 000770                    BR       19$
4508 027444
4509 027444 017737 153660 003420 3$:  MOV      @RHCS1,CS1  ;SAVE RHCS1
4510 027452 017737 153654 003444      MOV      @RHWC,WC    ;SAVE WORD COUNT
4511 027460 017737 153650 003414      MOV      @RHBA,BA    ;SAVE BUS ADDRESS
4512 027466 005701                    TST      R1           ;IS IT AN RH11
4513 027470 001406                    BEQ      87$         ;NO IT'S A 70
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4514 027472 005037 003416 CLR BAE ;CLEAR BAE
4515 027476 005037 003424 CLR CS3 ;CLEAR CS3
4516 027502 000137 027522 JMP 86$ ;CONTINUE
4517 027506 017737 153646 003416 87$: MOV @RHBAE,BAE ;SAVE BUS ADDRESS EXTENSION
4518 027514 017737 153642 003424 MOV @RHCS3,CS3 ;SAVE RHCS3
4519 027522 017737 153612 003422 86$: MOV @RHCS2,CS2 ;SAVE CS2
4520 027530 017737 153606 003432 MOV @RHST,DS1 ;SAVE TESTER STATUS
4521 027536 017737 153602 003436 MOV @RHER,ER1 ;SAVE ERROR REGISTER
4522 027544 017737 153600 003442 MOV @RHTDB,TDR ;SAVE TESTER DATA REG.
4523 027552 017737 153560 003440 MOV @RHMR2,TC ;SAVE MR2 TESTER REG.
4524 027560 032777 000200 153542 BIT #RDY,@RHCS1 ;IS READY SET
4525 027566 001003 BNE 1$ ;RDY SET CONT. TEST
4526 027570 104102 ERROR 102 ;READY DID NOT SET
4527 027572 004737 007224 JSR R7,WHYFO ;ANY ERRORS SET
4528 027576 032777 002000 153556 1$: BIT #DBL,@RHCS3 ;IS DOUBLE SET
4529 027604 001403 BEQ 2$ ;DBL SET
4530 027606 104157 ERROR 157 ;DBL DID SET ON A 2 WORD TRANSFER
4531 027610 004737 007224 JSR R7,WHYFO ;TELL WHY NOT
4532 027614 004737 006572 2$: JSR R7,CLEER ;CLEAR ERRORS
4533 027620 004737 050202 JSR R7,ERRTST
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4542 027624 000004
4543 027626 005701
4544 027630 100532
4545 027632 012777 177776 153472
4546 027640 012777 004002 153466
4547 027646 012777 000000 153504
4548 027654 012777 000007 153456
4549 027662 012777 000067 153440
4550 027670 005037 003446
4551 027674 032777 000200 153426 18$:
4552 027702 001015
4553 027704 005237 003446
4554 027710 001371
4555 027712 005037 003446
4556 027716 032777 000200 153404 19$:
4557 027724 001004
4558 027726 005237 003446
4559 027732 001401
4560 027734 000770
4561 027736
4562 027736 017737 153366 003420 3$:
4563 027744 017737 153362 003444
4564 027752 017737 153356 003414
4565 027760 005701
4566 027762 001406
4567 027764 005037 003416
4568 027770 005037 003424
4569 027774 000137 030014

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*****
*TEST 43 DBL TEST 2 WORD ODD ADD. WRITE REV
*THESE TEST CHECK DBL IN RHCS3 WITHREAD FWD AND REV
*WRITE FWD AND REV AND WITH BAI SET IN RHCS2
*OPERATION BEING PREFORMED WILL BE PRINTED OUT
*IN ERROR MESSAGE.
*.....RH70 ONLY.....
*****

```

```

TST43: SCOPE
TST R1 ;IS IN AN RH11
BMI TST44 ;: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 #WRITE6,@RHCS1 ;TELL IT TO WRITE6
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 'IP
BEQ 3$ ;BIT IS NOT GOING TO SET
BR 19$

MOV @RHCS1,CS1 ;SAVE RHCS1
MOV @RHWC,WC ;SAVE WORD COUNT
MOV @RHBA,BA ;SAVE BUS ADDRESS
TST R1 ;IS IT AN RH11
BEQ 87$ ;NO IT'S A 70
CLR BAE ;CLEAR BAE
CLR CS3 ;CLEAR CS3
JMP 86$ ;CONTINUE

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```
4570 030000 017737 153354 003416 87$: MOV @RHBAE,BAE ;SAVE BUS ADDRESS EXTENSION
4571 030006 017737 153350 003424 MOV @RHCS3,CS3 ;SAVE RHCS3
4572 030014 017737 153320 003422 86$: MOV @RHCS2,CS2 ;SAVE CS2
4573 030022 017737 153314 003432 MOV @RHST,DS1 ;SAVE TESTER STATUS
4574 030030 017737 153310 003436 MOV @RHER,ER1 ;SAVE ERROR REGISTER
4575 030036 017737 153306 003442 MOV @RHTDB,TDR ;SAVE TESTER DATA REG.
4576 030044 017737 153266 003440 MOV @RHMR2,TC ;SAVE MR2 TESTER REG.
4577 030052 032777 000200 153250 BIT #RDY,@RHCS1 ;IS READY SET
4578 030060 001003 BNE 1$ ;RDY SET CONT. TEST
4579 030062 104102 ERROR 102 ;READY DID NOT SET
4580 030064 004737 007224 JSR R7,WHYFO ;ANY ERRORS SET
4581 030070 032777 002000 153264 1$: BIT #DBL,@RHCS3 ;IS DOUBLE SET
4582 030076 001003 BNE 2$ ;DBL SET
4583 030100 104160 ERROR 160 ;DBL DIDN'T SET ON A 2 WORD TRANSFER
4584 030102 004737 007224 JSR R7,WHYFO ;TELL WHY NOT
4585 030106 004737 006572 2$: JSR R7,CLEER ;CLEAR ERRORS
4586 030112 004737 050202 JSR R7,ERRTST
4587
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4595 030116 000004
4596 030120 005701
4597 030122 100532
4598 030124 012777 177775 153200
4599 030132 012777 004002 153174
4600 030140 012777 000000 153212
4601 030146 012777 000007 153164
4602 030154 012777 000067 153146
4603 030162 005037 003446
4604 030166 032777 000200 153134 18$: BIT #RDY,@RHCS1 ;IS RDY SET
4605 030174 001015 BNE 3$ ;BIT IS SET
4606 030176 005237 003446 INC BITCNT ;COUNT UP
4607 030202 001371 BNE 18$ ;NOT FINISHED COUNTING
4608 030204 005037 003446 CLR BITCNT ;GET READY TO DO IT AGAIN
4609 030210 032777 000200 153112 19$: BIT #RDY,@RHCS1 ;IS IT SET YET?
4610 030216 001004 BNE 3$ ;YES
4611 030220 005237 003446 INC BITCNT ;COUNT UP
4612 030224 001401 BEQ 3$ ;BIT IS NOT GOING TO SET
4613 030226 000770
4614 030230
4615 030230 017737 153074 003420 3$: MOV @RHCS1,CS1 ;SAVE RHCS1
4616 030236 017737 153070 003444 MOV @RHWC,WC ;SAVE WORD COUNT
4617 030244 017737 153064 003414 MOV @RHBA,BA ;SAVE BUS ADDRESS
4618 030252 005701 TST R1 ;IS IT AN RH11
4619 030254 001406 BEQ 87$ ;NO IT'S A 70
4620 030256 005037 003416 CLR BAE ;CLEAR BAE
4621 030262 005037 003424 CLR CS3 ;CLEAR CS3
4622 030266 000137 030306 JMP 86$ ;CONTINUE
4623 030272 017737 153062 003416 87$: MOV @RHBAE,BAE ;SAVE BUS ADDRESS EXTENSION
4624 030300 017737 153056 003424 MOV @RHCS3,CS3 ;SAVE RHCS3
4625 030306 017737 153026 003422 86$: MOV @RHCS2,CS2 ;SAVE CS2
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4626 030314 017737 153022 003432      MOV      @RHST,DS1      ;SAVE TESTER STATUS
4627 030322 017737 153016 003436      MOV      @RHER,CR1     ;SAVE ERROR REGISTER
4628 030330 017737 153014 003442      MOV      @RHTDB,TDR    ;SAVE TESTER DATA REG.
4629 030336 017737 152774 003440      MOV      @RHMR2,TC     ;SAVE MR2 TESTER REG.
4630 030344 032777 000200 152756      BIT      #RDY,@RHCS1   ;IS READY SET
4631 030352 001003          BNE      1$           ;RDY SET CONT. TEST
4632 030354 104102          ERROR    102         ;READY DID NOT SET
4633 030356 004737 007224          JSR      R7,WHYFO      ;ANY ERRORS SET
4634 030362 032777 002000 152772 1$:      BIT      #DBL,@RHCS3   ;IS DOUBLE SET
4635 030370 001403          BEQ      2$           ;DBL SET
4636 030372 104161          ERROR    161         ;DBL DID SET ON A 3 WORD TRANSFER
4637 030374 004737 007224          JSR      R7,WHYFO      ;TELL WHY NOT
4638 030400 004737 006572          JSR      R7,CLEER      ;CLEAR ERRORS
4639 030404 004737 050202          JSR      R7,ERRTST
4640
4641
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4644
4645
4646
4647
4648 030410 000004          ;*****
4649 030412 005701          ;*TEST 45      DBL TEST 2 WORD READ FWD
4650 030414 100532          ;*THESE TEST CHECK DBL IN RHCS3 WITHREAD FWD AND REV
4651 030416 012777 177776 152706          ;*WRITE FWD AND REV AND WITH BAI SET IN RHCS2
4652 030424 012777 004000 152702          ;*OPERATION BEING PREFORMED WILL BE PRINTED OUT
4653 030432 012777 000000 152720          ;*IN ERROR MESSAGE.
4654 030440 012777 000007 152672          ;*.....RH70 ONLY.....
4655 030446 012777 000071 152654          ;*****
4656 030454 005037 003446          TST45:  SCOPE
4657 030460 032777 000200 152642 18$:      TST      R1           ;IS IN AN RH11
4658 030466 001015          BMI      TST46        ;:GET OUT OF TEST
4659 030470 005237 003446          MOV      #-2,@RHWC     ;SET UP WC FOR TWO WORD
4660 030474 001371          MOV      #EVENAD,@RHBA ;SETUP BUS ADDRESS
4661 030476 005037 003446          MOV      #ZERO,@RHBAE  ;SETUP BUS ADDRESS EXTENSION
4662 030502 032777 000200 152620 19$:      MOV      #7,@RHCS2     ;DEVICE 7
4663 030510 001004          MOV      #READ0,@RHCS1 ;TELL IT TO READ0
4664 030512 005237 003446          CLR      BITCNT        ;CLEAR BIT COUNTER
4665 030516 001401          BIT      #RDY,@RHCS1   ;IS RDY SET
4666 030520 000770          BNE      3$           ;BIT IS SET
4667 030522          INC      BITCNT        ;COUNT UP
4668 030522 017737 152602 003420 3$:      BNE      18$         ;NOT FINISHED COUNTING
4669 030530 017737 152576 003444          CLR      BITCNT        ;GET READY TO DO IT AGAIN
4670 030536 017737 152572 003414          BIT      #RDY,@RHCS1   ;IS IT SET YET?
4671 030544 005701          BNE      3$           ;YES
4672 030546 001406          INC      BITCNT        ;COUNT UP
4673 030550 005037 003416          BEQ      3$           ;BIT IS NOT GOING TO SET
4674 030554 005037 003424          BR       19$
4675 030560 000137 030600          MOV      @RHCS1,CS1    ;SAVE RHCS1
4676 030564 017737 152570 003416 87$:      MOV      @RHWC,WC      ;SAVE WORD COUNT
4677 030572 017737 152564 003424          MOV      @RHBA,BA      ;SAVE BUS ADDRESS
4678 030600 017737 152534 003422 86$:      TST      R1           ;IS IT AN RH11
4679 030606 017737 152530 003432          BEQ      87$         ;NO IT'S A 70
4680 030614 017737 152524 003436          CLR      BAE          ;CLEAR BAE
4681 030622 017737 152522 003442          CLR      CS3          ;CLEAR CS3
                                JMP      86$          ;CONTINUE
                                MOV      @RHBAE,BAE      ;SAVE BUS ADDRESS EXTENSION
                                MOV      @RHCS3,CS3      ;SAVE RHCS3
                                MOV      @RHCS2,CS2      ;SAVE CS2
                                MOV      @RHST,DS1      ;SAVE TESTER STATUS
                                MOV      @RHER,ER1      ;SAVE ERROR REGISTER
                                MOV      @RHTDB,TDR      ;SAVE TESTER DATA REG.
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4682 030630 017737 152502 003440      MOV      @RHMR2,TC      ;SAVE MR2 TESTER REG.
4683 030636 032777 000200 152464      BIT      #RDY,@RHCS1   ;IS READY SET
4684 030644 001003                BNE      1$           ;RDY SET CONT. TEST
4685 030646 104102                ERROR    102         ;READY DID NOT SET
4686 030650 004737 007224                JSR      R7,WHYFO     ;ANY ERRORS SET
4687 030654 032777 002000 152500 1$:    BIT      #DBL,@RHCS3   ;IS DOUBLE SET
4688 030662 001003                BNE      2$           ;DBL SET
4689 030664 104162                ERROR    162         ;DBL DIDN'T SET ON A 2 WORD TRANSFER
4690 030666 004737 007224                JSR      R7,WHYFO     ;TELL WHY NOT
4691 030672 004737 006572                JSR      R7,CLEER     ;CLEAR ERRORS
4692 030676 004737 050202                JSR      R7,ERRTST
4693                                     ;*****
4694                                     ;*TEST 46      DBL TEST 2 WORD ODD ADD. READ FWD
4695                                     ;*THESE TEST CHECK DBL IN RHCS3 WITHREAD FWD AND REV
4696                                     ;*WRITE FWD AND REV AND WITH BAI SET IN RHCS2
4697                                     ;*OPERATION BEING PREFORMED WILL BE PRINTED OUT
4698                                     ;*IN ERROR MESSAGE.
4699                                     ;*.....RH70 ONLY.....
4700                                     ;*****
4701 030702 000004      TST46: SCOPE
4702 030704 005701      TST      R1           ;IS IN AN RH11
4703 030706 100532      BMI      TST47      ;;GET OUT OF TEST
4704 030710 012777 177776 152414      MOV      #-2,@RHWC   ;SET UP WC FOR TWO WORD
4705 030716 012777 004002 152410      MOV      #ODDAD,@RHBA ;SETUP BUS ADDRESS
4706 030724 012777 000000 152426      MOV      #ZERO,@RHBAE ;SETUP BUS ADDRESS EXTENSION
4707 030732 012777 000007 152400      MOV      #7,@RHCS2   ;DEVICE 7
4708 030740 012777 000071 152362      MOV      #READO,@RHCS1 ;TELL IT TO READO
4709 030746 005037 003446                CLR      BITCNT      ;CLEAR BIT COUNTER
4710 030752 032777 000200 152350 18$:    BIT      #RDY,@RHCS1 ;IS RDY SET
4711 030760 001015                BNE      3$           ;BIT IS SET
4712 030762 005237 003446                INC      BITCNT      ;COUNT UP
4713 030766 001371                BNE      18$         ;NOT FINISHED COUNTING
4714 030770 005037 003446                CLR      BITCNT      ;GET READY TO DO IT AGAIN
4715 030774 032777 000200 152326 19$:    BIT      #RDY,@RHCS1 ;IS IT SET YET?
4716 031002 001004                BNE      3$           ;YES
4717 031004 005237 003446                INC      BITCNT      ;COUNT UP
4718 031010 001401                BEQ      3$           ;BIT IS NOT GOING TO SET
4719 031012 000770                BR       19$
4720 031014                3$:
4721 031014 017737 152310 003420      MOV      @RHCS1,CS1   ;SAVE RHCS1
4722 031022 017737 152304 003444      MOV      @RHWC,WC     ;SAVE WORD COUNT
4723 031030 017737 152300 003414      MOV      @RHBA,BA     ;SAVE BUS ADDRESS
4724 031036 005701                TST      R1           ;IS IT AN RH11
4725 031040 001406                BEQ      87$         ;NO IT'S A 70
4726 031042 005037 003416                CLR      BAE         ;CLEAR BAE
4727 031046 005037 003424                CLR      CS3         ;CLEAR CS3
4728 031052 000137 031072                JMP      86$         ;CONTINUE
4729 031056 017737 152276 003416 87$:    MOV      @RHBAE,BAE   ;SAVE BUS ADDRESS EXTENSION
4730 031064 017737 152272 003424      MOV      @RHCS3,CS3   ;SAVE RHCS3
4731 031072 017737 152242 003422 86$:    MOV      @RHCS2,CS2   ;SAVE CS2
4732 031100 017737 152236 003432      MOV      @RHST,DS1    ;SAVE TESTER STATUS
4733 031106 017737 152232 003436      MOV      @RHER,ER1    ;SAVE ERROR REGISTER
4734 031114 017737 152230 003442      MOV      @RHTDB,TDR   ;SAVE TESTER DATA REG.
4735 031122 017737 152210 003440      MOV      @RHMR2,TC    ;SAVE MR2 TESTER REG.
4736 031130 032777 000200 152172      BIT      #RDY,@RHCS1 ;IS READY SET
4737 031136 001003                BNE      1$           ;RDY SET CONT. TEST

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4738 031140 104102          ERROR 102          ;READY DID NOT SET
4739 031142 004737 007224    JSR R7,WHYFO      ;ANY ERRORS SET
4740 031146 032777 002000 152206 1$: BIT #DBL,@RHCS3   ;IS DOUBLE SET
4741 031154 001403          BEQ 2$           ;DBL SET
4742 031156 104163          ERROR 163        ;DBL DID SET ON A 2 WORD TRANSFER
4743 031160 004737 007224    JSR R7,WHYFO      ;TELL WHY NOT
4744 031164 004737 006572    2$: JSR R7,CLEER   ;CLEAR ERRORS
4745 031170 004737 050202    JSR R7,ERRTST
4746
4747
4748
4749
4750
4751
4752
4753
4754 031174 000004          ;*****
4755 031176 005701          ;*TEST 47 DBL TEST 2 WORD EVEN ADD. READ REV
4756 031200 100532          ;*THESE TEST CHECK DBL IN RHCS3 WITHREAD FWD AND REV
4757 031202 012777 177776 152122  MOV #-2,@RHWC     ;*WRITE FWD AND REV AND WITH BAI SET IN RHCS2
4758 031210 012777 004000 152116  MOV #EVENAD,@RHBA ;*OPERATION BEING PREFORMED WILL BE PRINTED OUT
4759 031216 012777 000000 152134  MOV #ZERO,@RHBAE  ;*IN ERROR MESSAGE.
4760 031224 012777 000007 152106  MOV #7,@RHCS2     ;*.....RH70 ONLY.....
4761 031232 012777 000077 152070  MOV #READ6,@RHCS1
4762 031240 005037 003446          TST47: SCOPE
4763 031244 032777 000200 152056 18$: BIT #RDY,@RHCS1 ;IS IN AN RH11
4764 031252 001015          BMI TST50        ;:GET OUT OF TEST
4765 031254 005237 003446          MOV #-2,@RHWC   ;SET UP WC FOR TWO WORD
4766 031260 001371          MOV #EVENAD,@RHBA ;SETUP BUS ADDRESS
4767 031262 005037 003446          MOV #ZERO,@RHBAE ;SETUP BUS ADDRESS EXTENSION
4768 031266 032777 000200 152034 19$: BIT #RDY,@RHCS1 ;DEVICE 7
4769 031274 001004          BNE 3$          ;TELL IT TO READ6
4770 031276 005237 003446          INC BITCNT      ;CLEAR BIT COUNTER
4771 031302 001401          BEQ 3$          ;IS RDY SET
4772 031304 000770          BR 19$         ;BIT IS SET
4773 031306          ;COUNT UP
4774 031306 017737 152016 003420  MOV @RHCS1,CS1  ;NOT FINISHED COUNTING
4775 031314 017737 152012 003444  MOV @RHWC,WC    ;GET READY TO DO IT AGAIN
4776 031322 017737 152006 003414  MOV @RHBA,BA    ;IS IT SET YET?
4777 031330 005701          TST R1         ;YES
4778 031332 001406          BEQ 87$        ;COUNT UP
4779 031334 005037 003416          CLR BAE        ;BIT IS NOT GOING TO SET
4780 031340 005037 003424          CLR CS3
4781 031344 000137 031364          JMP 86$
4782 031350 017737 152004 003416 87$: MOV @RHBAE,BAE  ;SAVE RHCS1
4783 031356 017737 152000 003424  MOV @RHCS3,CS3 ;SAVE WORD COUNT
4784 031364 017737 151750 003422 86$: MOV @RHCS2,CS2 ;SAVE BUS ADDRESS
4785 031372 017737 151744 003432  MOV @RHST,DS1  ;IS IT AN RH11
4786 031400 017737 151740 003436  MOV @RHER,ER1  ;NO IT'S A 70
4787 031406 017737 151736 003442  MOV @RHTDB,TDR ;CLEAR BAE
4788 031414 017737 151716 003440  MOV @RHMR2,TC  ;CLEAR CS3
4789 031422 032777 000200 151700  BIT #RDY,@RHCS1 ;CONTINUE
4790 031430 001003          BNE 1$        ;SAVE BUS ADDRESS EXTENSION
4791 031432 104102          ERROR 102      ;SAVE RHCS3
4792 031434 004737 007224          JSR R7,WHYFO   ;SAVE CS2
4793 031440 032777 002000 151714 1$: BIT #DBL,@RHCS3 ;SAVE TESTER STATUS
                                ;SAVE ERROR REGISTER
                                ;SAVE TESTER DATA REG.
                                ;SAVE MR2 TESTER REG.
                                ;IS READY SET
                                ;RDY SET CONT. TEST
                                ;READY DID NOT SET
                                ;ANY ERRORS SET
                                ;IS DOUBLE SET
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4794 031446 001403
4795 031450 104164
4796 031452 004737 007224
4797 031456 004737 006572
4798 031462 004737 050202

BEQ 2\$;DBL SET
ERROR 164 ;DBL DID SET ON A 2 WORD TRANSFER
JSR R7,WHYFO ;TELL WHY NOT
2\$: JSR R7,CLEER ;CLEAR ERRORS
JSR R7,ERTST

4799
4800
4801
4802
4803
4804
4805
4806

:*TEST 50 DBL TEST 2 WORD ODD ADD. READ REV
:*THESE TEST CHECK DBL IN RHCS3 WITHREAD FWD AND REV
:*WRITE FWD AND REV AND WITH BAI SET IN RHCS2
:*OPERATION BEING PREFORMED WILL BE PRINTED OUT
:*IN ERROR MESSAGE.
*.....RH70 ONLY.....

4807 031466 000004
4808 031470 005701
4809 031472 100532
4810 031474 012777 177776 151630
4811 031502 012777 004002 151624
4812 031510 012777 000000 151642
4813 031516 012777 000007 151614
4814 031524 012777 000077 151576
4815 031532 005037 003446
4816 031536 032777 000200 151564 18\$:
4817 031544 001015
4818 031546 005237 003446
4819 031552 001371
4820 031554 005037 003446
4821 031560 032777 000200 151542 19\$:
4822 031566 001004
4823 031570 005237 003446
4824 031574 001401
4825 031576 000770

TST50: SCOPE
TST R1 ;IS IN AN RH11
BMI TST51 ;:GET OUT OF TEST
MOV #-2,@RHWC ;SET UP WC FOR TWO WORD
MOV #ODDAD,@RHBA ;SETUP BUS ADDRESS
MOV #ZERO,@RHBAE ;SETUP BUS ADDRESS EXTENSION
MOV #7,@RHCS2 ;DEVICE 7
MOV #READ6,@RHCS1 ;TELL IT TO READ6
CLR BITCNT ;CLEAR BIT COUNTER
18\$: BIT #RDY,@RHCS1 ;IS RDY SET
BNE 3\$;BIT IS SET
INC BITCNT ;COUNT UP
BNE 18\$;NOT FINISHED COUNTING
CLR BITCNT ;GET READY TO DO IT AGAIN
19\$: BIT #RDY,@RHCS1 ;IS IT SET YET?
BNE 3\$;YES
INC BITCNT ;COUNT UP
BEQ 3\$;BIT IS NOT GOING TO SET
BR 19\$

4826 031600
4827 031600 017737 151524 003420
4828 031606 017737 151520 003444
4829 031614 017737 151514 003414
4830 031622 005701
4831 031624 001406
4832 031626 005037 003416
4833 031632 005037 003424
4834 031636 000137 031656
4835 031642 017737 151512 003416 87\$:
4836 031650 017737 151506 003424
4837 031656 017737 151456 003422 86\$:
4838 031664 017737 151452 003432
4839 031672 017737 151446 003436
4840 031700 017737 151444 003442
4841 031706 017737 151424 003440
4842 031714 032777 000200 151406
4843 031722 001003
4844 031724 104102
4845 031726 004737 007224
4846 031732 032777 002000 151422 1\$:
4847 031740 001003
4848 031742 104165
4849 031744 004737 007224

3\$: MOV @RHCS1,CS1 ;SAVE RHCS1
MOV @RHWC,WC ;SAVE WORD COUNT
MOV @RHBA,BA ;SAVE BUS ADDRESS
TST R1 ;IS IT AN RH11
BEQ 87\$;NO IT'S A 70
CLR BAE ;CLEAR BAE
CLR CS3 ;CLEAR CS3
JMP 86\$;CONTINUE
87\$: MOV @RHBAE,BAE ;SAVE BUS ADDRESS EXTENSION
MOV @RHCS3,CS3 ;SAVE RHCS3
86\$: MOV @RHCS2,CS2 ;SAVE CS2
MOV @RHST,DS1 ;SAVE TESTER STATUS
MOV @RHER,ER1 ;SAVE ERROR REGISTER
MOV @RHTDB,TDR ;SAVE TESTER DATA REG.
MOV @RHMR2,TC ;SAVE MR2 TESTER REG.
BIT #RDY,@RHCS1 ;IS READY SET
BNE 1\$;RDY SET CONT. TEST
ERROR 102 ;READY DID NOT SET
JSR R7,WHYFO ;ANY ERRORS SET
1\$: BIT #DBL,@RHCS3 ;IS DOUBLE SET
BNE 2\$;DBL SET
ERROR 165 ;DBL DIDN'T SET ON A 2 WORD TRANSFER
JSR R7,WHYFO ;TELL WHY NOT

4850	031750	004737	006572		
4851	031754	004737	050202		
4852					
4853					
4854					
4855					
4856					
4857					
4858					
4859					
4860	031760	000004			
4861	031762	005701			
4862	031764	100532			
4863	031766	012777	177775	151336	
4864	031774	012777	004000	151332	
4865	032002	012777	000000	151350	
4866	032010	012777	000007	151322	
4867	032016	012777	000071	151304	
4868	032024	005037	003446		
4869	032030	032777	000200	151272	18\$:
4870	032036	001015			
4871	032040	005237	003446		
4872	032044	001371			
4873	032046	005037	003446		
4874	032052	032777	000200	151250	19\$:
4875	032060	001004			
4876	032062	005237	003446		
4877	032066	001401			
4878	032070	000770			
4879	032072				3\$:
4880	032072	017737	151232	003420	
4881	032100	017737	151226	003444	
4882	032106	017737	151222	003414	
4883	032114	005701			
4884	032116	001406			
4885	032120	005037	003416		
4886	032124	005037	003424		
4887	032130	000137	032150		
4888	032134	017737	151220	003416	87\$:
4889	032142	017737	151214	003424	
4890	032150	017737	151164	003422	86\$:
4891	032156	017737	151160	003432	
4892	032164	017737	151154	003436	
4893	032172	017737	151152	003442	
4894	032200	017737	151132	003440	
4895	032206	032777	000200	151114	
4896	032214	001003			
4897	032216	104102			
4898	032220	004737	007224		
4899	032224	032777	002000	151130	1\$:
4900	032232	001403			
4901	032234	104166			
4902	032236	004737	007224		
4903	032242	004737	006572		
4904	032246	004737	050202		
4905					

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2$: JSR R7,CLEER ;CLEAR ERRORS
JSR R7,ERRTST
;*****
;*TEST 51 DBL TEST 3 WORD EVEN ADD. READ FWD
;*THESE TEST CHECK DBL IN RHCS3 WITHREAD FWD AND REV
;*WRITE FWD AND REV AND WITH BAI SET IN RHCS2
;*OPERATION BEING PREFORMED WILL BE PRINTED OUT
;*IN ERROR MESSAGE.
;*****RH70 ONLY*****
;*****
TST51: SCOPE
TST R1 ;IS IN AN RH11
BMI TST52 ;:GET OUT OF TEST
MOV #-3,@RHWC ;SET UP WC FOR THREE WORD
MOV #EVENAD,@RHBA ;SETUP BUS ADDRESS
MOV #ZERO,@RHBAE ;SETUP BUS ADDRESS EXTENSION
MOV #7,@RHCS2 ;DEVICE 7
MOV #READO,@RHCS1 ;TELL IT TO READO
CLR BITCNT ;CLEAR BIT COUNTER
18$: BIT #RDY,@RHCS1 ;IS RDY SET
BNE 3$ ;BIT IS SET
INC BITCNT ;COUNT UP
BNE 18$ ;NOT FINISHED COUNTING
CLR BITCNT ;GET READY TO DO IT AGAIN
19$: BIT #RDY,@RHCS1 ;IS IT SET YET?
BNE 3$ ;YES
INC BITCNT ;COUNT UP
BEQ 3$ ;BIT IS NOT GOING TO SET
BR 19$

3$: MOV @RHCS1,CS1 ;SAVE RHCS1
MOV @RHWC,WC ;SAVE WORD COUNT
MOV @RHBA,BA ;SAVE BUS ADDRESS
TST R1 ;IS IT AN RH11
BEQ 87$ ;NO IT'S A 70
CLR BAE ;CLEAR BAE
CLR CS3 ;CLEAR CS3
JMP 86$ ;CONTINUE

87$: MOV @RHBAE,BAE ;SAVE BUS ADDRESS EXTENSION
MOV @RHCS3,CS3 ;SAVE RHCS3
86$: MOV @RHCS2,CS2 ;SAVE CS2
MOV @RHST,DS1 ;SAVE TESTER STATUS
MOV @RHER,ER1 ;SAVE ERROR REGISTER
MOV @RHTDB,TDR ;SAVE TESTER DATA REG.
MOV @RHMR2,TC ;SAVE MR2 TESTER REG.
BIT #RDY,@RHCS1 ;IS READY SET
BNE 1$ ;RDY SET CONT. TEST
ERROR 102 ;READY DID NOT SET
JSR R7,WHYFO ;ANY ERRORS SET
1$: BIT #DBL,@RHCS3 ;IS DOUBLE SET
BEQ 2$ ;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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4913 032252 000004
4914 032254 005701
4915 032256 100532
4916 032260 012777 177775 151044
4917 032266 012777 004000 151040
4918 032274 012777 000000 151056
4919 032302 012777 000007 151030
4920 032310 012777 000077 151012
4921 032316 005037 003446
4922 032322 032777 000200 151000 18\$:
4923 032330 001015
4924 032332 005237 003446
4925 032336 001371
4926 032340 005037 003446
4927 032344 032777 000200 150756 19\$:
4928 032352 001004
4929 032354 005237 003446
4930 032360 001401
4931 032362 000770
4932 032364
4933 032364 017737 150740 003420 3\$:
4934 032372 017737 150734 003444
4935 032400 017737 150730 003414
4936 032406 005701
4937 032410 001406
4938 032412 005037 003416
4939 032416 005037 003424
4940 032422 000137 032442
4941 032426 017737 150726 003416 87\$:
4942 032434 017737 150722 003424
4943 032442 017737 150672 003422 86\$:
4944 032450 017737 150666 003432
4945 032456 017737 150662 003436
4946 032464 017737 150660 003442
4947 032472 017737 150640 003440
4948 032500 032777 000200 150622
4949 032506 001003
4950 032510 104102
4951 032512 004737 007224
4952 032516 032777 002000 150636 1\$:
4953 032524 001003
4954 032526 104167
4955 032530 004737 007224
4956 032534 004737 006572 2\$:
4957 032540 004737 050202
4958
4959
4960
4961

```
;*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 PERFORMED WILL BE PRINTED OUT
;*IN ERROR MESSAGE.
*.....RH70 ONLY.....
*****
TST52: SCOPE
TST R1 ;IS IN AN RH11
BMI TST53 ;;GET OUT OF TEST
MOV #-3,@RHWC ;SET UP WC FOR THREE WORD
MOV #EVENAD,@RHBA ;SETUP BUS ADDRESS
MOV #ZERO,@RHBAE ;SETUP BUS ADDRESS EXTENSION
MOV #7,@RHCS2 ;DEVICE 7
MOV #READ6,@RHCS1 ;TELL IT TO READ6
CLR BITCNT ;CLEAR BIT COUNTER
BIT #RDY,@RHCS1 ;IS RDY SET
BNE 3$ ;BIT IS SET
INC BITCNT ;COUNT UP
BNE 18$ ;NOT FINISHED COUNTING
CLR BITCNT ;GET READY TO DO IT AGAIN
BIT #RDY,@RHCS1 ;IS IT SET YET?
BNE 3$ ;YES
INC BITCNT ;COUNT UP
BEQ 3$ ;BIT IS NOT GOING TO SET
BR 19$

3$:
MOV @RHCS1,CS1 ;SAVE RHCS1
MOV @RHWC,WC ;SAVE WORD COUNT
MOV @RHBA,BA ;SAVE BUS ADDRESS
TST R1 ;IS IT AN RH11
BEQ 87$ ;NO IT'S A 70
CLR BAE ;CLEAR BAE
CLR CS3 ;CLEAR CS3
JMP 86$ ;CONTINUE
MOV @RHBAE,BAE ;SAVE BUS ADDRESS EXTENSION
MOV @RHCS3,CS3 ;SAVE RHCS3
MOV @RHCS2,CS2 ;SAVE CS2
MOV @RHST,DS1 ;SAVE TESTER STATUS
MOV @RHER,ER1 ;SAVE ERROR REGISTER
MOV @RHTDB,TDR ;SAVE TESTER DATA REG.
MOV @RHMR2,TC ;SAVE MR2 TESTER REG.
BIT #RDY,@RHCS1 ;IS READY SET
BNE 1$ ;RDY SET CONT. TEST
ERROR 102 ;READY DID NOT SET
JSR R7,WHYFO ;ANY ERRORS SET
BIT #DBL,@RHCS3 ;IS DOUBLE SET
BNE 2$ ;DBL SET
ERROR 167 ;DBL DIDN'T SET ON A 3 WORD TRANSFER
JSR R7,WHYFO ;TELL WHY NOT
JSR R7,CLEER ;CLEAR ERRORS
JSR R7,ERRST

*****
;*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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4962 ;*IT ALSO CHECKS THAT WCEHI DOES NOT SET
4963 ;*WITH WCELO IN RHCS3.....
4964 ;*.....RH70 ONLY.....
4965 ;*****
4966 032544 000004 TST53: SCOPE
4967 032546 012737 000001 001212 MOV #1,$TIMES ;;DO 1 ITERATION
4968 032554 005701 TST R1 ;IS IT AN RH11
4969 032556 001402 BEQ 1$ ;IT'S AN RH70
4970 032560 000137 033330 JMP FANG ;IT'S AN RH11, EXIT TEST
4971 032564 012777 000007 150546 1$: MOV #7,@RHCS2 ;SET DEVICE 7
4972 032572 012777 000000 150560 MOV #ZERO,@RHBAE ;SETUP BUS ADDRESS EXT.
4973 032600 012777 004000 150526 MOV #EVENAD,@RHBA ;SETUP BUS ADDRESS
4974 032606 012777 177776 150516 MOV #-2,@RHWC ;FOR TWO WORD TRANSFER
4975 032614 012777 000061 150506 MOV #WRITE0,@RHCS1 ;TELL IT TO WRITE
4976 032622 005037 003446 CLR BITCNT ;CLEAR BIT COUNTER
4977 032626 032777 000200 150474 18$: BIT #RDY,@RHCS1 ;IS RDY SET
4978 032634 001015 BNE MITE ;BIT IS SET
4979 032636 005237 003446 INC BITCNT ;COUNT UP
4980 032642 001371 BNE 18$ ;NOT FINISHED COUNTING
4981 032644 005037 003446 CLR BITCNT ;GET READY TO DO IT AGAIN
4982 032650 032777 000200 150452 19$: BIT #RDY,@RHCS1 ;IS IT SET YET?
4983 032656 001004 BNE MITE ;YES
4984 032660 005237 003446 INC BITCNT ;COUNT UP
4985 032664 001401 BEQ MITE ;BIT IS NOT GOING TO SET
4986 032666 000770 BR 19$
4987 032670 MITE:
4988 032670 017737 150434 003420 MOV @RHCS1,CS1 ;SAVE RHCS1
4989 032676 017737 150430 003444 MOV @RHWC,WC ;SAVE WORD COUNT
4990 032704 017737 150424 003414 MOV @RHBA,BA ;SAVE BUS ADDRESS
4991 032712 005701 TST R1 ;IS IT AN RH11
4992 032714 001406 BEQ 87$ ;NO IT'S A 70
4993 032716 005037 003416 CLR BAE ;CLEAR BAE
4994 032722 005037 003424 CLR CS3 ;CLEAR CS3
4995 032726 000137 032746 JMP 86$ ;CONTINUE
4996 032732 017737 150422 003416 87$: MOV @RHBAE,BAE ;SAVE BUS ADDRESS EXTENSION
4997 032740 017737 150416 003424 MOV @RHCS3,CS3 ;SAVE RHCS3
4998 032746 017737 150366 003422 86$: MOV @RHCS2,CS2 ;SAVE CS2
4999 032754 017737 150362 003432 MOV @RHST,DS1 ;SAVE TESTER STATUS
5000 032762 017737 150356 003436 MOV @RHER,ER1 ;SAVE ERROR REGISTER
5001 032770 017737 150354 003442 MOV @RHTDB,TDR ;SAVE TESTER DATA REG.
5002 032776 017737 150334 003440 MOV @RHMR2,TC ;SAVE MR2 TESTER REG.
5003 033004 032777 000200 150316 BIT #RDY,@RHCS1 ;IS READY SET
5004 033012 001003 BNE VOUS ;RDY IS SET
5005 033014 104102 ERROR 102 ;RDY DID NOT SET
5006 033016 004737 007224 JSR R7,WHYFO ;ANY ERRORS SET
5007 033022 005137 004000 VOUS: COM EVENAD ;INVERT BITS FOR WCELO
5008 033026 012777 004000 150300 MOV #EVENAD,@RHBA ;FIX BUS ADDRESS
5009 033034 012777 177776 150270 MOV #-2,@RHWC ;FIX WORD COUNT
5010 033042 012777 000051 150260 MOV #WRCHO,@RHCS1 ;TELL IT TO WRITE CHECK
5011 033050 005037 003446 CLR BITCNT ;CLEAR BIT COUNTER
5012 033054 032777 000200 150246 18$: BIT #RDY,@RHCS1 ;IS RDY SET
5013 033062 001015 BNE FAST ;BIT IS SET
5014 033064 005237 003446 INC BITCNT ;COUNT UP
5015 033070 001371 BNE 18$ ;NOT FINISHED COUNTING
5016 033072 005037 003446 CLR BITCNT ;GET READY TO DO IT AGAIN
5017 033076 032777 000200 150224 19$: BIT #RDY,@RHCS1 ;IS IT SET YET?

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5018 033104 001004          BNE    FAST          ;YES
5019 033106 005237 003446   INC    BITCNT        ;COUNT UP
5020 033112 001401          BEQ    FAST          ;BIT IS NOT GOING TO SET
5021 033114 000770          BR     19$
5022 033116          FAST:
5023 033116 017737 150206 003420   MOV    @RHCS1,CS1    ;SAVE RHCS1
5024 033124 017737 150202 003444   MOV    @RHWC,WC      ;SAVE WORD COUNT
5025 033132 017737 150176 003414   MOV    @RHBA,BA      ;SAVE BUS ADDRESS
5026 033140 005701          TST    R1            ;IS IT AN RH11
5027 033142 001406          BEQ    87$           ;NO IT'S A 70
5028 033144 005037 003416   CLR    BAE           ;CLEAR BAE
5029 033150 005037 003424   CLR    CS3          ;CLEAR CS3
5030 033154 000137 033174   JMP    86$           ;CONTINUE
5031 033160 017737 150174 003416 87$:   MOV    @RHBAE,BAE    ;SAVE BUS ADDRESS EXTENSION
5032 033166 017737 150170 003424   MOV    @RHCS3,CS3    ;SAVE RHCS3
5033 033174 017737 150140 003422 86$:   MOV    @RHCS2,CS2    ;SAVE CS2
5034 033202 017737 150134 003432   MOV    @RHST,DS1     ;SAVE TESTER STATUS
5035 033210 017737 150130 003436   MOV    @RHER,ER1     ;SAVE ERROR REGISTER
5036 033216 017737 150126 003442   MOV    @RHTDB,TDR    ;SAVE TESTER DATA REG.
5037 033224 017737 150106 003440   MOV    @RHMR2,TC     ;SAVE MR2 TESTER REG.
5038 033232 032777 000200 150070   BIT    #RDY,@RHCS1  ;IS READY SET
5039 033240 001003          BNE    SUPER        ;RDY IS SET
5040 033242 104102          ERROR 102           ;RDY DID NOT SET
5041 033244 004737 007224   JSR    R7,WHYFO      ;ANY ERRORS SET
5042 033250 032777 004000 150104 SUPER: BIT    #WCELO,@RHCS3 ;IS WCELO SET
5043 033256 001006          BNE    RITEON       ;WCELO IS SET
5044 033260 104132          ERROR 132           ;WCELO DID NOT SET IN RHCS3
5045 033262 004737 007224   JSR    R7,WHYFO      ;ANY ERRORS SET
5046 033266 105737 001103   TSTB   $ERFLG        ;WAS THERE AN ERROR
5047 033272 001005          BNE    TWANG        ;YES
5048 033274 032777 010000 150060 RITEON: BIT    #WCEHI,@RHCS3 ;IS WCEHI SET
5049 033302 001406          BEQ    TWANGY       ;WCEHI DID NOT SET
5050 033304 104133          ERROR 133           ;WCEHI SET WITH WCELO
5051 033306 032777 040000 150024 TWANG: BIT    #WCE,@RHCS2 ;DID WCE SET IN CS2
5052 033314 001001          BNE    TWANGY       ;YES,IT SHOULD BE
5053 033316 104134          ERROR 134           ;WCE DID NOT SET IN RHCS2
5054 033320 004737 006572   JSR    R7,CLEER     ;CLEAR ERRORS
5055 033324 004737 050202   JSR    R7,ERRTST
5056 033330          FANG:
5057 *****
5058 ;*TEST 54      WCE OW ERROR TEST (WCEHI)
5059 ;*THIS TEST CHECKS THAT WCEHI SETS IN RHCS3
5060 ;*AND THAT WCE SETS IN RHCS1 ,IT ALSO TESTS
5061 ;*THAT WCELO DOES NOT SET WITH WCEHI.....
5062 ;*.....RH70 ONLY.....
5063 *****
5064 TST54: SCOPE
5065 TST    R1            ;IS IT AN 11 OR A 70
5066 BEQ    1$           ;IT'S AN RH70
5067 JMP    FANGY        ;IT'S AN RH11, EXIT TEST
5068 1$:   MOV    #7,@RHCS2    ;SET DEVICE 7
5069     MOV    #-2,@RHWC ;TWO WORD TRANSFER
5070     MOV    #EVENAD,@RHBA ;SETUP BUS ADDRESS
5071     MOV    ODDAD,EVENAD ;DUP ODDAD
5072     MOV    #WRITE0,@RHCS1 ;TELL IT TO WRITE
5073     CLR    BITCNT    ;CLEAR BIT COUNTER
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5074	033404	032777	000200	147716	18\$:	BIT	#RDY,@RHCS1	:IS RDY SET	
5075	033412	001015				BNE	WCEOWT	:BIT IS SET	
5076	033414	005237	003446			INC	BITCNT	:COUNT UP	
5077	033420	001371				BNE	18\$:NOT FINISHED COUNTING	
5078	033422	005037	003446			CLR	BITCNT	:GET READY TO DO IT AGAIN	
5079	033426	032777	000200	147674	19\$:	BIT	#RDY,@RHCS1	:IS IT SET YET?	
5080	033434	001004				BNE	WCEOWT	:YES	
5081	033436	005237	003446			INC	BITCNT	:COUNT UP	
5082	033442	001401				BEQ	WCEOWT	:BIT IS NOT GOING TO SET	
5083	033444	000770				BR	19\$		
5084	033446								
5085	033446	017737	147656	003420		WCEOWT:	MOV	@RHCS1,CS1	:SAVE RHCS1
5086	033454	017737	147652	003444			MOV	@RHWC,WC	:SAVE WORD COUNT
5087	033462	017737	147646	003414			MOV	@RHBA,BA	:SAVE BUS ADDRESS
5088	033470	005701					TST	R1	:IS IT AN RH11
5089	033472	001406					BEQ	87\$:NO IT'S A 70
5090	033474	005037	003416				CLR	BAE	:CLEAR BAE
5091	033500	005037	003424				CLR	CS3	:CLEAR CS3
5092	033504	000137	033524				JMP	86\$:CONTINUE
5093	033510	017737	147644	003416	87\$:		MOV	@RHBAE,BAE	:SAVE BUS ADDRESS EXTENSION
5094	033516	017737	147640	003424			MOV	@RHCS3,CS3	:SAVE RHCS3
5095	033524	017737	147610	003422	86\$:		MOV	@RHCS2,CS2	:SAVE CS2
5096	033532	017737	147604	003432			MOV	@RHST,DS1	:SAVE TESTER STATUS
5097	033540	017737	147600	003436			MOV	@RHER,ER1	:SAVE ERROR REGISTER
5098	033546	017737	147576	003442			MOV	@RHTDB,TDR	:SAVE TESTER DATA REG.
5099	033554	017737	147556	003440			MOV	@RHMR2,TC	:SAVE MR2 TESTER REG.
5100	033562	032777	000200	147540			BIT	#RDY,@RHCS1	:IS READY SET
5101	033570	001003					BNE	BEAU	:RDY IS SET
5102	033572	104102					ERROR	102	:RDY DID NOT SET
5103	033574	004737	007224				JSR	R7,WHYFO	:ANY ERRORS SET
5104	033600	052777	000040	147532	BEAU:		BIS	#40,@RHCS2	:DO A CONTROLLER CLEAR
5105	033606	005037	003446				CLR	BITCNT	:SET UP FOR DELAY
5106	033612	005237	003446		17\$:		INC	BITCNT	:COUNT UP
5107	033616	001375					BNE	17\$	
5108	033620	012777	000007	147512			MOV	#7,@RHCS2	:SELECT UNIT #7
5109	033626	005137	004002				COM	ODDAD	:REVERSE BITS IN ODDAD
5110	033632	012777	004000	147474			MOV	#EVENAD,@RHBA	:CORRECT BUS ADDRESS
5111	033640	012777	177776	147464			MOV	#-2,@RHWC	:CORRECT WC
5112	033646	012777	000051	147454			MOV	#WRCHO,@RHCS1	:TELL IT TO WRITE CHECK
5113	033654	005037	003446				CLR	BITCNT	:CLEAR BIT COUNTER
5114	033660	032777	000200	147442	18\$:		BIT	#RDY,@RHCS1	:IS RDY SET
5115	033666	001015					BNE	WCEERR	:BIT IS SET
5116	033670	005237	003446				INC	BITCNT	:COUNT UP
5117	033674	001371					BNE	18\$:NOT FINISHED COUNTING
5118	033676	005037	003446				CLR	BITCNT	:GET READY TO DO IT AGAIN
5119	033702	032777	000200	147420	19\$:		BIT	#RDY,@RHCS1	:IS IT SET YET?
5120	033710	001004					BNE	WCEERR	:YES
5121	033712	005237	003446				INC	BITCNT	:COUNT UP
5122	033716	001401					BEQ	WCEERR	:BIT IS NOT GOING TO SET
5123	033720	000770					BR	19\$	
5124	033722								
5125	033722	017737	147402	003420		WCEERR:	MOV	@RHCS1,CS1	:SAVE RHCS1
5126	033730	017737	147376	003444			MOV	@RHWC,WC	:SAVE WORD COUNT
5127	033736	017737	147372	003414			MOV	@RHBA,BA	:SAVE BUS ADDRESS
5128	033744	005701					TST	R1	:IS IT AN RH11
5129	033746	001406					BEQ	87\$:NO IT'S A 70

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5130 033750 005037 003416 CLR BAE ;CLEAR BAE
5131 033754 005037 003424 CLR CS3 ;CLEAR CS3
5132 033760 000137 034000 JMP 86$ ;CONTINUE
5133 033764 017737 147370 003416 87$: MOV @RHBAE,BAE ;SAVE BUS ADDRESS EXTENSION
5134 033772 017737 147364 003424 MOV @RHCS3,CS3 ;SAVE RHCS3
5135 034000 017737 147334 003422 86$: MOV @RHCS2,CS2 ;SAVE CS2
5136 034006 017737 147330 003432 MOV @RHST,DS1 ;SAVE TESTER STATUS
5137 034014 017737 147324 003436 MOV @RHER,ER1 ;SAVE ERROR REGISTER
5138 034022 017737 147322 003442 MOV @RHTDB,TDR ;SAVE TESTER DATA REG.
5139 034030 017737 147302 003440 MOV @RHMR2,TC ;SAVE MR2 TESTER REG.
5140 034036 032777 000200 147264 BIT #RDY,@RHCS1 ;IS READY SET
5141 034044 001003 BNE ERTIP ;RDY IS SET
5142 034046 104102 ERROR 102 ;RDY DID NOT SET
5143 034050 004737 007224 JSR R7,WHYFO ;ANY ERRORS SET
5144 034054 032777 010000 147300 ERTIP: BIT #WCEHI,@RHCS3 ;IS WCEHI SET
5145 034062 001006 BNE BUSH ;WCEHI IS SET
5146 034064 104135 ERROR 135 ;WCEHI DID NOT SET IN RHCS3
5147 034066 004737 007224 JSR R7,WHYFO ;ANY OTHER ERRORS SET
5148 034072 105737 001103 TSTB $ERFLG ;WAS THERE AN ERROR
5149 034076 001012 BNE LEAGUE ;YES
5150 034100 032777 004000 147254 BUSH: BIT #WCELO,@RHCS3 ;IS WCELO SET
5151 034106 001406 BEQ LEAGUE ;NO,WCELO IS OK
5152 034110 104137 ERROR 137 ;WCELO SET WITH WCEHI
5153 034112 032777 040000 147220 LEFOUT: BIT #WCE,@RHCS2 ;DID WCE SET
5154 034120 001001 BNE LEAGUE ;WCE IS SET IN RHCS2
5155 034122 104136 ERROR 136 ;WCE DID NOT SET IN RHCS2
5156 034124 004737 006572 LEAGUE: JSR R7,CLEER ;CLEAR ERRORS
5157 034130 004737 050202 JSR R7,ERRTST
5158 034134 FANGY:
5159 ;*****
5160 ;*TEST 55 INTERUPT ENABLE TEST
5161 ;*THIS TEST VERIFYS THAT IE WILL SET IN RHCS1
5162 ;*AND IT WILL CAUSE AN INTERUPT WHEN RDY IS SET
5163 ;*****
5164 034134 000004 TST55: SCOPE
5165 034136 012777 000007 147174 MOV #7,@RHCS2 ;SETUP UNIT NUMBER
5166 034144 012777 004000 147162 MOV #EVENAD,@RHBA ;SETUP BUS ADDRESS
5167 034152 005701 TST R1 ;RH11 OR RH70 ?
5168 034154 100403 BMI READY ;ITS AN RH11
5169 034156 012777 000000 147174 MOV #ZERO,@RHBAE ;ZERO THE BAE
5170 034164 012777 034446 147214 READY: MOV #IETST,@VECADD ;SET UP VECTOR ADDRESS
5171 034172 012737 000340 177776 MOV #340,PS ;SET PRIORITY 7
5172 034200 012777 177777 147124 MOV #-1,@RHWC ;SET FOR ONE WORD
5173 034206 012777 000161 147114 MOV #WRITEO!IE,@RHCS1 ;TELL IT TO WRITE
5174 034214 032777 000100 147106 BIT #IE,@RHCS1 ;IS IE SET
5175 034222 001001 BNE 2$ ;YES CONTINUE TEST
5176 034224 104174 ERROR 174 ;IE WILL NOT SET
5177 034226 005037 177776 2$: CLR @#177776
5178 034232 005037 003446 CLR BITCNT ;CLEAR BIT COUNTER
5179 034236 032777 000200 147064 18$: BIT #RDY,@RHCS1 ;IS RDY SET
5180 034244 001015 BNE TSTIE ;BIT IS SET
5181 034246 005237 003446 INC BITCNT ;COUNT UP
5182 034252 001371 BNE 18$ ;NOT FINISHED COUNTING
5183 034254 005037 003446 CLR BITCNT ;GET READY TO DO IT AGAIN
5184 034260 032777 000200 147042 19$: BIT #RDY,@RHCS1 ;IS IT SET YET?
5185 034266 001004 BNE TSTIE ;YES
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5186	034270	005237	003446			INC	BITCNT	:COUNT UP
5187	034274	001401				BEQ	TSTIE	:BIT IS NOT GOING TO SET
5188	034276	000770				BR	19\$	
5189	034300							
5190	034300	017737	147024	003420	TSTIE:	MOV	@RHCS1,CS1	:SAVE RHCS1
5191	034306	017737	147020	003444		MOV	@RHWC,WC	:SAVE WORD COUNT
5192	034314	017737	147014	003414		MOV	@RHBA,BA	:SAVE BUS ADDRESS
5193	034322	005701				TST	R1	:IS IT AN RH11
5194	034324	001406				BEQ	87\$:NO IT'S A 70
5195	034326	005037	003416			CLR	BAE	:CLEAR BAE
5196	034332	005037	003424			CLR	CS3	:CLEAR CS3
5197	034336	000137	034356			JMP	86\$:CONTINUE
5198	034342	017737	147012	003416	87\$:	MOV	@RHBAE,BAE	:SAVE BUS ADDRESS EXTENSION
5199	034350	017737	147006	003424		MOV	@RHCS3,CS3	:SAVE RHCS3
5200	034356	017737	146756	003422	86\$:	MOV	@RHCS2,CS2	:SAVE CS2
5201	034364	017737	146752	003432		MOV	@RHST,DS1	:SAVE TESTER STATUS
5202	034372	017737	146746	003436		MOV	@RHER,ER1	:SAVE ERROR REGISTER
5203	034400	017737	146744	003442		MOV	@RHTDB,TDR	:SAVE TESTER DATA REG.
5204	034406	017737	146724	003440		MOV	@RHMR2,TC	:SAVE MR2 TESTER REG.
5205	034414	032777	000200	146706		BIT	#RDY,@RHCS1	:IS READY SET ?
5206	034422	001003				BNE	1\$:YES
5207	034424	104102				ERROR	102	:READY DID NOT SET
5208	034426	000137	034460			JMP	SPLIT	:EXIT TEST
5209	034432	105737	001103		1\$:	TSTB	\$ERFLG	:WAS IE SET
5210	034436	001010				BNE	SPLIT	:NO,EXIT TEST
5211	034440	104173				ERROR	173	:RDY DID NOT CAUSE AN INTERRUPT
5212	034442	000137	034460			JMP	SPLIT	:EXIT TEST
5213	034446	022626			IETST:	CMP	(SP)+,(SP)+	:CORRECT STACK

MASSBUS RH70 AND RH11 DIAGNOSTIC
CZRHBD.P11 02-MAY-78 10:01

MACY11 30A(1052) 02-MAY-78 10:03 PAGE 99
T55 INTERRUPT ENABLE TEST

SEQ 0099

5214 034450 105737 001103
5215 034454 001401
5216 034456 104175
5217 034460 004737 006572
5218 034464 004737 050202

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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5227 034470 000004
5228 034472 012777 000007 146640
5229 034500 012777 177777 146624
5230 034506 012777 004100 146620
5231 034514 012737 000000 004100
5232 034522 012777 125252 146620
5233 034530 005701
5234 034532 100403
5235 034534 012777 000000 146616
5236 034542 012777 000071 146560 1$:
5237 034550 005037 003446
5238 034554 032777 000200 146546 18$:
5239 034562 001015
5240 034564 005237 003446
5241 034570 001371
5242 034572 005037 003446
5243 034576 032777 000200 146524 19$:
5244 034604 001004
5245 034606 005237 003446
5246 034612 001401
5247 034614 000770
5248 034616
5249 034616 017737 146506 003420 2$:
5250 034624 017737 146502 003444
5251 034632 017737 146476 003414
5252 034640 005701
5253 034642 001406
5254 034644 005037 003416
5255 034650 005037 003424
5256 034654 000137 034674
5257 034660 017737 146474 003416 87$:
5258 034666 017737 146470 003424
5259 034674 017737 146440 003422 86$:
5260 034702 017737 146434 003432
5261 034710 017737 146430 003436
5262 034716 017737 146426 003442
5263 034724 017737 146406 003440
5264 034732 017737 146412 001162
5265 034740 032777 000200 146362
5266 034746 001003
5267 034750 104102
5268 034752 004737 007224
5269 034756 023777 004100 146364 3$:
5270 034764 001407
5271 034766 005737 004100
5272 034772 001403
5273 034774 104147
5274
```

: *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
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

5275 034776 000137 035004
5276 035002 104150
5277
5278 035004 004737 007224
5279 035010 105737 001103
5280 035014 001402
5281 035016 104146
5282 035020 104170
5283 035022 004737 006572
5284 035026 004737 050202
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5293 035032 000004
5294 035034 012777 000007 146276
5295 035042 012737 125252 004000
5296 035050 012777 000003 146276
5297 035056 012777 177777 146246
5298 035064 005701
5299 035066 100403
5300 035070 012777 000000 146262
5301 035076 012777 004000 146230
5302 035104 012777 000061 146216
5303 035112 012777 000001 146234
5304 035120 005037 003446
5305 035124 005237 003446
5306 035130 022737 000015 003446
5307 035136 001372
5308 035140 012777 000003 146206
5309 035146 012777 000001 146200
5310 035154 012777 000003 146172
5311 035162 012777 000001 146164
5312 035170 012777 000000 146156
5313 035176 005037 003446
5314 035202 032777 000200 146120
5315 035210 001015
5316 035212 005237 003446
5317 035216 001371
5318 035220 005037 003446
5319 035224 032777 000200 146076
5320 035232 001004
5321 035234 005237 003446
5322 035240 001401
5323 035242 000770
5324 035244
5325 035244 017737 146060 003420
5326 035252 017737 146054 003444
5327 035260 017737 146050 003414
5328 035266 005701
5329 035270 001406
5330 035272 005037 003416

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JMP 4$ :EXIT TEST
5$: ERROR 150 :READ0 OPERATION DID NOT WORK
: NO BITS WHERE LOADED TO RBUF
4$: JSR R7,WHYFO :ANY ERRORS SET
TSTB $ERFLG :ANY ERRORS ?
BEQ 6$ :NO,EXIT TEST
ERROR 146 :PRINT REGISTERS
ERROR 170
6$: JSR R7,CLEER :CLEAR ERRORS
JSR R7,ERRTST
:*****
:*TEST 57 RH OPERATIONAL WRITE TEST #1
:*THESE TESTS VERIFY ALL READ AND WRITE CODES
:*WHETHER IT BE A READ REV. OR FWD OR A WRITE REV. OR FWD
:*DURING THESE TESTS THE TESTER TIMING IS MARGINED AND
:*NO ERRORS SHOULD OCCUR
:*****
TST57: SCOPE
MOV #7,@RHCS2 :SETUP UNIT SEVEN
MOV #OAB,EVENAD :SETUP INFORMATION
MOV #DMD!MCLK,@RHMR1 :SETUP DIAG. MODE
MOV #-1,@RHWC :FOR ONE WORD
TST R1 :IS IT A 11 OR 70
BMI 1$ :IT'S AN 11
MOV #ZERO,@RHBAE :ZERO BAE
1$: MOV #EVENAD,@RHBA :SETUP BA
MOV #WRITE0,@RHCS1 :TELL IT TO WRITETO
MOV #DMD,@RHMR1 :MANIPULATE CLOCK
CLR BITCNT :CLEAR LOOP COUNTER
2$: INC BITCNT :INCREMENT LOOP COUNTER
CMP #15,BITCNT :IS IT THIRD LOOP FOR 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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5331	035276	005037	003424			CLR	CS3	:CLEAR CS3
5332	035302	000137	035322			JMP	86\$:CONTINUE
5333	035306	017737	146046	003416	87\$:	MOV	@RHBAE,BAE	:SAVE BUS ADDRESS EXTENSION
5334	035314	017737	146042	003424		MOV	@RHCS3,CS3	:SAVE RHCS3
5335	035322	017737	146012	003422	86\$:	MOV	@RHCS2,CS2	:SAVE CS2
5336	035330	017737	146006	003432		MOV	@RHST,DS1	:SAVE TESTER STATUS
5337	035336	017737	146002	003436		MOV	@RHER,ER1	:SAVE ERROR REGISTER
5338	035344	017737	146000	003442		MOV	@RHTDB,TDR	:SAVE TESTER DATA REG.
5339	035352	017737	145760	003440		MOV	@RHMR2,TC	:SAVE MR2 TESTER REG.
5340	035360	017737	145764	001162		MOV	@RHTDB,\$REGO	:GET DATA
5341	035366	032777	000200	145734		BIT	#RDY,@RHCS1	:IS READY SET
5342	035374	001001				BNE	8\$:YES,CONTINUE TEST
5343	035376	104102				ERROR	102	:READY DID NOT SET
5344	035400	022777	177777	145724	8\$:	CMP	#-1,@RHWC	:DID WC INCREMENT
5345	035406	001001				BNE	3\$:YES,CONT TEST
5346	035410	104140				ERROR	140	:WRITETO OPERATION DID NOT INC WC
5347	035412	022777	004002	145714	3\$:	CMP	#ODDAD,@RHBA	:DID BA INCREMENT
5348	035420	001401				BEQ	4\$:YES CONT TEST
5349	035422	104141				ERROR	141	:BA DID NOT INCREMENT AFTER AN WRITETO OPERATION
5350	035424	023777	004000	145716	4\$:	CMP	EVENAD,@RHTDB	:DID INFO WRITETO TESTER
5351	035432	001401				BEQ	5\$:YES,CONT
5352	035434	104142				ERROR	142	:INFO DID NOT WRITETO TESTER
5353	035436	004737	007224		5\$:	JSR	R7,WHYFO	:ARE ANY ERROR BITS SET
5354	035442	105737	001103			TSTB	\$ERFLG	:WAS THER AN ERROR
5355	035446	001402				BEQ	6\$:NO EXIT TEST
5356	035450	104146				ERROR	146	:THESE ARE THE CONTENTS OF ALL RH70 REG.
5357	035452	104170				ERROR	170	:THIS IS TO COMPLETE ERROR PRINTOUT
5358	035454	004737	006572		6\$:	JSR	R7,CLEER	:CLEER ERRORS IF ANY
5359	035460	004737	050202			JSR	R7,ERRTST	

:*TEST 60 READ OPERATIONAL TEST (NORMAL) #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

TST60: SCOPE
5368 035464 000004 :SETUP UNIT SEVEN
5369 035466 012777 000007 145644 :FOR ONE WORD
5370 035474 012777 177777 145630 :SRTUP BA
5371 035502 012777 004100 145624 :SETUP DATA
5372 035510 012737 000000 004100 :SETUP TESTER DB
5373 035516 012777 125252 145624 :IS IT AN 11 OR A 70
5374 035524 005701 :IT'S AN RH11
5375 035526 100403 :ZERO BAE
5376 035530 012777 000000 145622 :TELL IT TO READ2
5377 035536 012777 000073 145564 1\$: :CLEAR BIT COUNTER
5378 035544 005037 003446 :IS RDY SET
5379 035550 032777 000200 145552 18\$: :BIT IS SET
5380 035556 001015 :COUNT UP
5381 035560 005237 003446 :NOT FINISHED COUNTING
5382 035564 001371 :GET READY TO DO IT AGAIN
5383 035566 005037 003446 :IS IT SET YET?
5384 035572 032777 000200 145530 19\$: :YES
5385 035600 001004 :COUNT UP
5386 035602 005237 003446

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5387 035606 001401          BEQ      2$          ;BIT IS NOT GOING TO SET
5388 035610 000770          BR       19$
5389 035612          2$:
5390 035612 017737 145512 003420  MOV     @RHCS1,CS1    ;SAVE RHCS1
5391 035620 017737 145506 003444  MOV     @RHWC,WC      ;SAVE WORD COUNT
5392 035626 017737 145502 003414  MOV     @RHBA,BA     ;SAVE BUS ADDRESS
5393 035634 005701          TST     R1           ;IS IT AN RH11
5394 035636 001406          BEQ     87$         ;NO IT'S A 70
5395 035640 005037 003416  CLR     BAE          ;CLEAR BAE
5396 035644 005037 003424  CLR     CS3         ;CLEAR CS3
5397 035650 000137 035670  JMP     86$         ;CONTINUE
5398 035654 017737 145500 003416 87$:  MOV     @RHBAE,BAE   ;SAVE BUS ADDRESS EXTENSION
5399 035662 017737 145474 003424  MOV     @RHCS3,CS3   ;SAVE RHCS3
5400 035670 017737 145444 003422 86$:  MOV     @RHCS2,CS2   ;SAVE CS2
5401 035676 017737 145440 003432  MOV     @RHST,DS1    ;SAVE TESTER STATUS
5402 035704 017737 145434 003436  MOV     @RHER,ER1    ;SAVE ERROR REGISTER
5403 035712 017737 145432 003442  MOV     @RHTDB,TDR   ;SAVE TESTER DATA REG.
5404 035720 017737 145412 003440  MOV     @RHMR2,TC    ;SAVE MR2 TESTER REG.
5405 035726 017737 145416 001162  MOV     @RHTDB,$REGO ;GET DATA
5406 035734 032777 000200 145366  BIT     #RDY,@RHCS1 ;IS OR SET
5407 035742 001003          BNE     3$          ;YES RDY IS SET
5408 035744 104102          ERROR   102        ;READY DID NOT SET
5409 035746 004737 007224  JSR     R7,WHYFO    ;ARE ANY ERRORS SET
5410 035752 023777 004100 145370 3$:  CMP     RBUF,@RHTDB ;DID INFO GET WRITTEN OR READ
5411 035760 001407          BEQ     4$          ;INFO GOT LOADED
5412 035762 005737 004100  TST     RBUF        ;DOES RBUF = 0
5413 035766 001403          BEQ     5$          ;YES INFO DID NOT LOAD
5414 035770 104147          ERROR   147        ;ALL BITS DID NOT LOAD DURING
5415          ;AN READ2 OPERATION
5416 035772 000137 036000  JMP     4$          ;EXIT TEST
5417 035776 104150          5$:  ERROR   150        ;READ2 OPERATION DID NOT WORK
5418          ;NO BITS WHERE LOADED TO RBUF
5419 036000 004737 007224 4$:  JSR     R7,WHYFO    ;ANY ERRORS SET
5420 036004 105737 001103  TSTB   $ERFLG      ;ANY ERRORS ?
5421 036010 001402          BEQ     6$          ;NO,EXIT TEST
5422 036012 104146          ERROR   146        ;PRINT REGISTERS
5423 036014 104170          ERROR   170
5424 036016 004737 006572 6$:  JSR     R7,CLEER    ;CLEAR ERRORS
5425 036022 004737 050202  JSR     R7,ERRTST
5426          ;*****
5427          ;*TEST 61 READ OPERATIONAL TEST #1
5428          ;*THESE TESTS VERIFY ALL READ AND WRITE CODES
5429          ;*WHETHER IT BE A READ REV. OR FWD OR A WRITE REV. OR FWD
5430          ;*DURING THESE TESTS THE TESTER TIMING IS MARGINED AND
5431          ;*NO ERRORS SHOULD OCCUR
5432          ;*****
5433          ;*****
5434 036026 000004          TST61: SCOPE
5435 036030 012777 000007 145302  MOV     #7,@RHCS2   ;SETUP UNIT SEVEN
5436 036036 012777 052525 145304  MOV     #AB,@RHTDB  ;SETUP INFORMATION
5437 036044 012777 000003 145302  MOV     #DMD!MCLK,@RHMR1 ;SETUP DIAG. MODE
5438 036052 012777 177777 145252  MOV     #-1,@RHWC   ;FOR ONE WORD
5439 036060 005701          TST     R1           ;IS IT A 11 OR 70
5440 036062 100403          BMI     1$          ;IT'S AN 11
5441 036064 012777 000000 145266  MOV     #ZERO,@RHBAE ;ZERO BAE
5442 036072 012777 004000 145234 1$:  MOV     #EVENAD,@RHBA ;SETUP BA

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5443	036100	012777	000071	145222		MOV	#READ0,@RHCS1	:TELL IT TO READFROM
5444	036106	012777	000001	145240		MOV	#DMD,@RHMR1	:MANIPULATE CLOCK
5445	036114	005037	003446			CLR	BITCNT	:CLEAR LOOP COUNTER
5446	036120	005237	003446		2\$:	INC	BITCNT	:INCREMENT LOOP COUNTER
5447	036124	022737	090015	003446		CMP	#15,BITCNT	:IS IT THIRD LOOP FOR 5USEC WAIT
5448	036132	001372				BNE	2\$:NO LOOP AGAIN
5449	036134	012777	000003	145212		MOV	#DMD!MCLK,@RHMR1	:START CHANGING CLOCK
5450	036142	012777	000001	145204		MOV	#DMD,@RHMR1	:CHANGE CLOCK AGAIN
5451	036150	012777	000003	145176		MOV	#DMD!MCLK,@RHMR1	:CHANGE CLOCK AGAIN
5452	036156	012777	000001	145170		MOV	#DMD,@RHMR1	:CHANGE CLOCK AGAIN
5453	036164	012777	000000	145162		MOV	#ZERO,@RHMR1	:GET OUT OF DIAG MODE
5454	036172	005037	003446			CLR	BITCNT	:CLEAR BIT COUNTER
5455	036176	032777	000200	145124	18\$:	BIT	#RDY,@RHCS1	:IS RDY SET
5456	036204	001015				BNE	7\$:BIT IS SET
5457	036206	005237	003446			INC	BITCNT	:COUNT UP
5458	036212	001371				BNE	18\$:NOT FINISHED COUNTING
5459	036214	005037	003446			CLR	BITCNT	:GET READY TO DO IT AGAIN
5460	036220	032777	000200	145102	19\$:	BIT	#RDY,@RHCS1	:IS IT SET YET?
5461	036226	001004				BNE	7\$:YES
5462	036230	005237	003446			INC	BITCNT	:COUNT UP
5463	036234	001401				BEQ	7\$:BIT IS NOT GOING TO SET
5464	036236	000770				BR	19\$	
5465	036240				7\$:			
5466	036240	017737	145064	003420		MOV	@RHCS1,CS1	:SAVE RHCS1
5467	036246	017737	145060	003444		MOV	@RHWC,WC	:SAVE WORD COUNT
5468	036254	017737	145054	003414		MOV	@RHBA,BA	:SAVE BUS ADDRESS
5469	036262	005701				TST	R1	:IS IT AN RH11
5470	036264	001406				BEQ	87\$:NO IT'S A 70
5471	036266	005037	003416			CLR	BAE	:CLEAR BAE
5472	036272	005037	003424			CLR	CS3	:CLEAR CS3
5473	036276	000137	036316			JMP	86\$:CONTINUE
5474	036302	017737	145052	003416	87\$:	MOV	@RHBAE,BAE	:SAVE BUS ADDRESS EXTENSION
5475	036310	017737	145046	003424		MOV	@RHCS3,CS3	:SAVE RHCS3
5476	036316	017737	145016	003422	86\$:	MOV	@RHCS2,CS2	:SAVE CS2
5477	036324	017737	145012	003432		MOV	@RHST,DS1	:SAVE TESTER STATUS
5478	036332	017737	145006	003436		MOV	@RHER,ER1	:SAVE ERROR REGISTER
5479	036340	017737	145004	003442		MOV	@RHTDB,TDR	:SAVE TESTER DATA REG.
5480	036346	017737	144764	003440		MOV	@RHMR2,TC	:SAVE MR2 TESTER REG.
5481	036354	017737	144770	001162		MOV	@RHTDB,\$REGO	:GET DATA
5482	036362	032777	000200	144740		BIT	#RDY,@RHCS1	:IS READY SET
5483	036370	001001				BNE	8\$:YES,CONTINUE TEST
5484	036372	104102				ERROR	102	:READY DID NOT SET
5485	036374	022777	177777	144730	8\$:	CMP	#-1,@RHWC	:DID WC INCREMENT
5486	036402	001001				BNE	3\$:YES,CONT TEST
5487	036404	104143				ERROR	143	:READFROM OPERATION DID NOT INC WC
5488	036406	022777	004002	144720	3\$:	CMP	#ODDAD,@RHBA	:DID BA INCREMENT
5489	036414	001401				BEQ	4\$:YES CONT TEST
5490	036416	104144				ERROR	144	:BA DID NOT INCREMENT AFTER AN READFROM OPERATIO
5491	036420	023777	004000	144722	4\$:	CMP	EVENAD,@RHTDB	:DID INFO READFROM TESTER
5492	036426	001401				BEQ	5\$:YES,CONT
5493	036430	104145				ERROR	145	:INFO DID NOT READFROM TESTER
5494	036432	004737	007224		5\$:	JSR	R7,WHYFO	:ARE ANY ERROR BITS SET
5495	036436	105737	001103			TSTB	\$ERFLG	:WAS THER AN ERROR
5496	036442	001402				BEQ	6\$:NO EXIT TEST
5497	036444	104146				ERROR	146	:THESE ARE THE CONTENTS OF ALL RH70 REG.
5498	036446	104170				ERROR	170	:THIS IS TO COMPLETE ERROR PRINTOUT

5499 036450 004737 006572
5500 036454 004737 050202
5501
5502
5503
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5509 036460 000004
5510 036462 012777 000007 144650
5511 036470 012777 177777 144634
5512 036476 012777 004100 144630
5513 036504 012737 000000 004100
5514 036512 012777 125252 144630
5515 036520 005701
5516 036522 100403
5517 036524 012777 000000 144626
5518 036532 012777 000075 144570
5519 036540 005037 003446
5520 036544 032777 000200 144556
5521 036552 001015
5522 036554 005237 003446
5523 036560 001371
5524 036562 005037 003446
5525 036566 032777 000200 144534
5526 036574 001004
5527 036576 005237 003446
5528 036602 001401
5529 036604 000770
5530 036606
5531 036606 017737 144516 003420
5532 036614 017737 144512 003444
5533 036622 017737 144506 003414
5534 036630 005701
5535 036632 001406
5536 036634 005037 003416
5537 036640 005037 003424
5538 036644 000137 036664
5539 036650 017737 144504 003416
5540 036656 017737 144500 003424
5541 036664 017737 144450 003422
5542 036672 017737 144444 003432
5543 036700 017737 144440 003436
5544 036706 017737 144436 003442
5545 036714 017737 144416 003440
5546 036722 017737 144422 001162
5547 036730 032777 000200 144372
5548 036736 001003
5549 036740 104102
5550 036742 004737 007224
5551 036746 023777 004100 144374
5552 036754 001407
5553 036756 005737 004100
5554 036762 001403

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

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

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5575 037022 000004

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

::*****
TST63: SCOPE

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

5632	037414	023777	004000	143726	4\$:	CMP	EVENAD,@RHTDB		:DID INFO WRITETO TESTER
5633	037422	001401				BEQ	5\$:YES,CONT
5634	037424	104142				ERROR	142		:INFO DID NOT WRITETO TESTER
5635	037426	004737	007224		5\$:	JSR	R7,WHYFO		:ARE ANY ERROR BITS SET
5636	037432	105737	001103			TSTB	\$ERFLG		:WAS THER AN ERROR
5637	037436	001402				BEQ	6\$:NO EXIT TEST
5638	037440	104146				ERROR	146		:THESE ARE THE CONTENTS OF ALL RH70 REG.
5639	037442	104170				ERROR	170		:THIS IS TO COMMMLETE ERROR PRINTOUT
5640	037444	004737	006572		6\$:	JSR	R7,CLEER		:CLEER ERRORS IF ANY
5641	037450	004737	050202			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
```

```
::*****  
TST64: SCOPE  
MOV #7,@RHCS2 ;SETUP UNIT SEVEN  
MOV #-1,@RHWC ;FOR ONE WORD  
MOV #RBUF,@RHBA ;SRTUP BA  
MOV #ZERO,RBUF ;SETUP DATA  
MOV #OAB,@RHTDB ;SETUP TESTER DB  
TST R1 ;IS IT AN 11 OR A 70  
BMI 1$ ;IT'S AN RH11  
MOV #ZERO,@RHBAE ;ZERO BAE  
1$: MOV #READ6,@RHCS1 ;TELL IT TO READ6  
CLR BITCNT ;CLEAR BIT COUNTER  
18$: BIT #RDY,@RHCS1 ;IS RDY SET  
BNE 2$ ;BIT IS SET  
INC BITCNT ;COUNT UP  
BNE 18$ ;NOT FINISHED COUNTING  
CLR BITCNT ;GET READY TO DO IT AGAIN  
19$: BIT #RDY,@RHCS1 ;IS IT SET YET?  
BNE 2$ ;YES  
INC BITCNT ;COUNT UP  
BEQ 2$ ;BIT IS NOT GOING TO SET  
BR 19$  
2$: MOV @RHCS1,CS1 ;SAVE RHCS1  
MOV @RHWC,WC ;SAVE WORD COUNT  
MOV @RHBA,BA ;SAVE BUS ADDRESS  
TST R1 ;IS IT AN RH11  
BEQ 87$ ;NO IT'S A 70  
CLR BAE ;CLEAR BAE  
CLR CS3 ;CLEAR CS3  
JMP 86$ ;CONTINUE  
87$: MOV @RHBAE,BAE ;SAVE BUS ADDRESS EXTENSION  
MOV @RHCS3,CS3 ;SAVE RHCS3  
86$: MOV @RHCS2,CS2 ;SAVE CS2  
MOV @RHST,DS1 ;SAVE TESTER STATUS  
MOV @RHER,ER1 ;SAVE ERROR REGISTER  
MOV @RHTDB,TDR ;SAVE TESTER DATA REG.  
MOV @RHMR2,TC ;SAVE MR2 TESTER REG.  
MOV @RHTDB,$REGO ;GET DATA
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5688 037724 032777 000200 143376      BIT      #RDY,@RHCS1      ;IS OR SET
5689 037732 001003                BNE      3$             ;YES RDY IS SET
5690 037734 104102                ERROR   102            ;READY DID NOT SET
5691 037736 004737 007224                JSR     R7,WHYFO       ;ARE ANY ERRORS SET
5692 037742 023777 004100 143400 3$:  CMP     RBUF,@RHDTDB   ;DID INFO GET WRITTEN OR READ
5693 037750 001407                BEQ     4$             ;INFO GOT LOADED
5694 037752 005737 004100                TST    RBUF           ;DOES RBUF = 0
5695 037756 001403                BEQ     5$             ;YES INFO DID NOT LOAD
5696 037760 104115                ERROR   115           ;ALL BITS DID NOT LOAD DURING
5697                                ;AN READ6 OPERATION
5698 037762 000137 037770                JMP     4$             ;EXIT TEST
5699 037766 104107                5$:  ERROR   107         ;READ6 OPERATION DID NOT WORK
5700                                ;NO BITS WERE LOADED TO RBUF
5701 037770 004737 007224                4$:  JSR     R7,WHYFO   ;ANY ERRORS SET
5702 037774 105737 001103                TSTB   $ERFLG        ;ANY ERRORS ?
5703 040000 001402                BEQ     6$             ;NO,EXIT TEST
5704 040002 104146                ERROR   146           ;PRINT REGISTERS
5705 040004 104170                ERROR   170
5706 040006 004737 006572                6$:  JSR     R7,CLEER   ;CLEAR ERRORS
5707 040012 004737 050202                JSR     R7,ERRTST
5708                                ;*****
5709                                ;*TEST 65      RH OPERATIONAL READ TEST #2
5710                                ;*THESE TESTS VERIFY ALL READ AND WRITE CODES
5711                                ;*WHETHER IT BE A READ REV. OR FWD OR A WRITE REV. OR FWD
5712                                ;*DURING THESE TESTS THE TESTER TIMING IS MARGINED AND
5713                                ;*NO ERRORS SHOULD OCCUR
5714                                ;*****
5715                                ;*****
5716 040016 000004                TST65: SCOPE
5717 040020 012777 000007 143312      MOV     #7,@RHCS2     ;SETUP UNIT SEVEN
5718 040026 012777 052525 143314      MOV     #AB,@RHDTDB   ;SETUP INFORMATION
5719 040034 012777 001003 143312      MOV     #DMD!MCLK!SLKM,@RHMR1 ;SETUP DIAG. MODE
5720 040042 012777 177777 143262      MOV     #-1,@RHWC     ;FOR ONE WORD
5721 040050 005701                TST    R1             ;IS IT A 11 OR 70
5722 040052 100403                BMI    1$             ;IT'S AN 11
5723 040054 012777 000000 143276      MOV     #ZERO,@RHBAE  ;ZERO BAE
5724 040062 012777 004000 143244      1$:  MOV     #EVENAD,@RHBA ;SETUP BA
5725 040070 012777 000073 143232      MOV     #READ2,@RHCS1 ;TELL IT TO READFROM
5726 040076 012777 001001 143250      MOV     #DMD!SLKM,@RHMR1 ;MANIPULATE CLOCK
5727 040104 005037 003446                CLR    BITCNT         ;CLEAR LOOP COUNTER
5728 040110 005237 003446                2$:  INC    BITCNT       ;INCREMENT LOOP COUNTER
5729 040114 022737 000015 003446      CMP     #15,BITCNT    ;IS IT THIRD LOOP FOR 5USEC WAIT
5730 040122 001372                BNE    2$             ;NO LOOP AGAIN
5731 040124 012777 001003 143222      MOV     #DMD!MCLK!SLKM,@RHMR1 ;START CHANGING CLOCK
5732 040132 012777 001001 143214      MOV     #DMD!SLKM,@RHMR1 ;CHANGE CLOCK AGAIN
5733 040140 012777 001003 143206      MOV     #DMD!MCLK!SLKM,@RHMR1 ;CHANGE CLOCK AGAIN
5734 040146 012777 001001 143200      MOV     #DMD!SLKM,@RHMR1 ;CHANGE CLOCK AGAIN
5735 040154 012777 000000 143172      MOV     #ZERO,@RHMR1 ;GET OUT OF DIAG MODE
5736 040162 005037 003446                CLR    BITCNT         ;CLEAR BIT COUNTER
5737 040166 032777 000200 143134      18$:  BIT     #RDY,@RHCS1  ;IS RDY SET
5738 040174 001015                BNE    7$             ;BIT IS SET
5739 040176 005237 003446                INC    BITCNT         ;COUNT UP
5740 040202 001371                BNE    18$           ;NOT FINISHED COUNTING
5741 040204 005037 003446                CLR    BITCNT         ;GET READY TO DO IT AGAIN
5742 040210 032777 000200 143112      19$:  BIT     #RDY,@RHCS1  ;IS IT SET YET?
5743 040216 001004                BNE    7$             ;YES

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5744 040220 005237 003446          INC      BITCNT          :COUNT UP
5745 040224 001401          BEQ      7$              :BIT IS NOT GOING TO SET
5746 040226 000770          BR       19$
5747 040230          7$:
5748 040230 017737 143074 003420      MOV      @RHCS1,CS1      :SAVE RHCS1
5749 040236 017737 143070 003444      MOV      @RHWC,WC        :SAVE WORD COUNT
5750 040244 017737 143064 003414      MOV      @RHBA,BA        :SAVE BUS ADDRESS
5751 040252 005701          TST      R1              :IS IT AN RH11
5752 040254 001406          BEQ      87$            :NO IT'S A 70
5753 040256 005037 003416      CLR      BAE             :CLEAR BAE
5754 040262 005037 003424      CLR      CS3            :CLEAR CS3
5755 040266 000137 040306      JMP      86$            :CONTINUE
5756 040272 017737 143062 003416 87$:      MOV      @RHBAE,BAE      :SAVE BUS ADDRESS EXTENSION
5757 040300 017737 143056 003424      MOV      @RHCS3,CS3     :SAVE RHCS3
5758 040306 017737 143026 003422 86$:      MOV      @RHCS2,CS2     :SAVE CS2
5759 040314 017737 143022 003432      MOV      @RHST,DS1      :SAVE TESTER STATUS
5760 040322 017737 143016 003436      MOV      @RHER,ER1      :SAVE ERROR REGISTER
5761 040330 017737 143014 003442      MOV      @RHTDB,TDR     :SAVE TESTER DATA REG.
5762 040336 017737 142774 003440      MOV      @RHMR2,TC      :SAVE MR2 TESTER REG.
5763 040344 017737 143000 001162      MOV      @RHTDB,$REGO   :GET DATA
5764 040352 032777 000200 142750      BIT      #RDY,@RHCS1    :IS READY SET
5765 040360 001001          BNE      8$              :YES,CONTINUE TEST
5766 040362 104102          ERROR   102             :READY DID NOT SET
5767 040364 022777 177777 142740 8$:      CMP      #-1,@RHWC      :DID WC INCREMENT
5768 040372 001001          BNE      3$              :YES,CONT TEST
5769 040374 104143          ERROR   143            :READFROM OPERATION DID NOT INC WC
5770 040376 022777 004002 142730 3$:      CMP      #ODDAD,@RHBA   :DID BA INCREMENT
5771 040404 001401          BEQ      4$              :YES CONT TEST
5772 040406 104144          ERROR   144            :BA DID NOT INCREMENT AFTER AN READFROM OPERATIO
5773 040410 023777 004000 142732 4$:      CMP      EVENAD,@RHTDB  :DID INFO READFROM TESTER
5774 040416 001401          BEQ      5$              :YES,CONT
5775 040420 104145          ERROR   145            :INFO DID NOT READFROM TESTER
5776 040422 004737 007224 5$:      JSR      R7,WHYFO       :ARE ANY ERROR BITS SET
5777 040426 105737 001103          TSTB    $ERFLG         :WAS THER AN ERROR
5778 040432 001402          BEQ      6$              :NO EXIT TEST
5779 040434 104146          ERROR   146            :THESE ARE THE CONTENTS OF ALL RH70 REG.
5780 040436 104170          ERROR   170            :THIS IS TO COMPLETE ERROR PRINTOUT
5781 040440 004737 006572 6$:      JSR      R7,CLEER      :CLEER ERRORS IF ANY
5782 040444 004737 050202          JSR      R7,ERRTST
5783
5784 *****
5785 :*TEST 66      WRITE OPERATIONAL TEST (NORMAL) #1
5786 :*THESE TESTS VERIFY ALL READ AND WRITE CODES
5787 :*WHETHER IT BE A READ REV. OR FWD OR A WRITE REV. OR FWD
5788 :*DURING THESE TESTS THE TESTER TIMING IS MARGINED AND
5789 :*NO ERRORS SHOULD OCCUR
5790 *****
5791 TST66:  SCOPE
5792 040450 000004          MOV      #7,@RHCS2      :SETUP UNIT SEVEN
5793 040452 012777 000007 142660      MOV      #-1,@RHWC      :FOR ONE WORD
5794 040460 012777 177777 142644      MOV      #RBUF,@RHBA    :SRTUP BA
5795 040466 012777 004100 142640      MOV      #OAB,RBUF      :SETUP DATA
5796 040474 012737 125252 004100      MOV      #ZERO,@RHTDB   :SETUP TESTER DB
5797 040502 012777 000000 142640      TST      R1              :IS IT AN 11 OR A 70
5798 040510 005701          BMI     1$              :IT'S AN RH11
5799 040512 100403          MOV     #ZERO,@RHBAE    :ZERO BAE
5799 040514 012777 000000 142636

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5800 040522 012777 000061 142600 1$: MOV #WRITE0,@RHCS1 ;TELL IT TO WRITE0
5801 040530 005037 003446 CLR BITCNT ;CLEAR BIT COUNTER
5802 040534 032777 000200 142566 18$: BIT #RDY,@RHCS1 ;IS RDY SET
5803 040542 001015 BNE 2$ ;BIT IS SET
5804 040544 005237 003446 INC BITCNT ;COUNT UP
5805 040550 001371 BNE 18$ ;NOT FINISHED COUNTING
5806 040552 005037 003446 CLR BITCNT ;GET READY TO DO IT AGAIN
5807 040556 032777 000200 142544 19$: BIT #RDY,@RHCS1 ;IS IT SET YET?
5808 040564 001004 BNE 2$ ;YES
5809 040566 005237 003446 INC BITCNT ;COUNT UP
5810 040572 001401 BEQ 2$ ;BIT IS NOT GOING TO SET
5811 040574 000770 BR 19$
5812 040576 2$:
5813 040576 017737 142526 003420 MOV @RHCS1,CS1 ;SAVE RHCS1
5814 040604 017737 142522 003444 MOV @RHWC,W C ;SAVE WORD COUNT
5815 040612 017737 142516 003414 MOV @RHBA,BA ;SAVE BUS ADDRESS
5816 040620 005701 TST R1 ;IS IT AN RH11
5817 040622 001406 BEQ 87$ ;NO IT'S A 70
5818 040624 005037 003416 CLR BAE ;CLEAR BAE
5819 040630 005037 003424 CLR CS3 ;CLEAR CS3
5820 040634 000137 040654 JMP 86$ ;CONTINUE
5821 040640 017737 142514 003416 87$: MOV @RHBAE,BAE ;SAVE BUS ADDRESS EXTENSION
5822 040646 017737 142510 003424 MOV @RHCS3,CS3 ;SAVE RHCS3
5823 040654 017737 142460 003422 86$: MOV @RHCS2,CS2 ;SAVE CS2
5824 040662 017737 142454 003432 MOV @RHST,DS1 ;SAVE TESTER STATUS
5825 040670 017737 142450 003436 MOV @RHER,ER1 ;SAVE ERROR REGISTER
5826 040676 017737 142446 003442 MOV @RHTDB,TDR ;SAVE TESTER DATA REG.
5827 040704 017737 142426 003440 MOV @RHMR2,TC ;SAVE MR2 TESTER REG.
5828 040712 017737 142432 001162 MOV @RHTDB,$REGO ;GET DATA
5829 040720 032777 000200 142402 BIT #RDY,@RHCS1 ;IS OR SET
5830 040726 001003 BNE 3$ ;YES RDY IS SET
5831 040730 104102 ERROR 102 ;READY DID NOT SET
5832 040732 004737 007224 JSR R7,WHYFO ;ARE ANY ERRORS SET
5833 040736 023777 004100 142404 3$: CMP RBUF,@RHTDB ;DID INFO GET WRITTEN OR READ
5834 040744 001407 BEQ 4$ ;INFO GOT LOADED
5835 040746 005777 142376 TST @RHTDB ;DOES @RHTDB = 0
5836 040752 001403 BEQ 5$ ;YES INFO DID NOT LOAD
5837 040754 104151 ERROR 151 ;ALL BITS DID NOT LOAD DURING
5838 ;AN WRITE0 OPERATION
5839 040756 000137 040764 JMP 4$ ;EXIT TEST
5840 040762 104152 5$: ERROR 152 ;WRITE0 OPERATION DID NOT WORK
5841 ;NO BITS WHERE LOADED TO @RHTDB
5842 040764 004737 007224 4$: JSR R7,WHYFO ;ANY ERRORS SET
5843 040770 105737 001103 TSTB $ERFLG ;ANY ERRORS ?
5844 040774 001402 BEQ 6$ ;NO,EXIT TEST
5845 040776 104146 ERROR 146 ;PRINT REGISTERS
5846 041000 104170 ERROR 170
5847 041002 004737 006572 6$: JSR R7,CLEER ;CLEAR ERRORS
5848 041006 004737 050202 JSR R7,ERRTST
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::*****
:*TEST 67 RH OPERATIONAL WRITE TEST #3
;*THESE TESTS VERIFY ALL READ AND WRITE CODES
;*WHETHER IT BE A READ REV. OR FWD OR A WRITE REV. OR FWD
;*DURING THESE TESTS THE TESTER TIMING IS MARGINED AND
;*NO ERRORS SHOULD OCCUR
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5857 041012 000004
5858 041014 012777 000007 142316
5859 041022 012737 125252 004000
5860 041030 012777 003003 142316
5861 041036 012777 177777 142266
5862 041044 005701
5863 041046 100403
5864 041050 012777 000000 142302
5865 041056 012777 004000 142250 1$:
5866 041064 012777 000065 142236
5867 041072 012777 003001 142254
5868 041100 005037 003446
5869 041104 005237 003446 2$:
5870 041110 022737 000015 003446
5871 041116 001372
5872 041120 012777 003003 142226
5873 041126 012777 003001 142220
5874 041134 012777 003003 142212
5875 041142 012777 003001 142204
5876 041150 012777 000000 142176
5877 041156 005037 003446
5878 041162 032777 000200 142140 18$:
5879 041170 001015
5880 041172 005237 003446
5881 041176 001371
5882 041200 005037 003446
5883 041204 032777 000200 142116 19$:
5884 041212 001004
5885 041214 005237 003446
5886 041220 001401
5887 041222 000770
5888 041224 7$:
5889 041224 017737 142100 003420
5890 041232 017737 142074 003444
5891 041240 017737 142070 003414
5892 041246 005701
5893 041250 001406
5894 041252 005037 003416
5895 041256 005037 003424
5896 041262 000137 041302
5897 041266 017737 142066 003416 87$:
5898 041274 017737 142062 003424
5899 041302 017737 142032 003422 86$:
5900 041310 017737 142026 003432
5901 041316 017737 142022 003436
5902 041324 017737 142020 003442
5903 041332 017737 142000 003440
5904 041340 017737 142004 001162
5905 041346 032777 000200 141754
5906 041354 001001
5907 041356 104102
5908 041360 022777 177777 141744 8$:
5909 041366 001001
5910 041370 104140
5911 041372 022777 004002 141734 3$:

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:*****
TST67: SCOPE
MOV #7,@RHCS2 ;SETUP UNIT SEVEN
MOV #OAB,EVENAD ;SETUP INFORMATION
MOV #DMD!MCLK!SLKM!ISLK,@RHMR1 ;SETUP DIAG. MODE
MOV #-1,@RHWC ;FOR ONE WORD
TST R1 ;IS IT A 11 OR 70
BMI 1$ ;IT'S AN 11
MOV #ZERO,@RHBAE ;ZERO BAE
MOV #EVENAD,@RHBA ;SETUP BA
MOV #WRITE4,@RHCS1 ;TELL IT TO WRITETO
MOV #DMD!SLKM!ISLK,@RHMR1 ;MANIPULATE CLOCK
CLR BITCNT ;CLEAR LOOP COUNTER
INC BITCNT ;INCREMENT LOOP COUNTER
CMP #15,BITCNT ;IS IT THIRD LOOP FOR 5USEC WAIT
BNE 2$ ;NO LOOP AGAIN
MOV #DMD!MCLK!SLKM!ISLK,@RHMR1 ;START CHANGING CLOCK
MOV #DMD!SLKM!ISLK,@RHMR1 ;CHANGE CLOCK AGAIN
MOV #DMD!MCLK!SLKM!ISLK,@RHMR1 ;CHANGE CLOCK AGAIN
MOV #DMD!SLKM!ISLK,@RHMR1 ;CHANGE CLOCK AGAIN
MOV #ZERO,@RHMR1 ;GET OUT OF DIAG MODE
CLR BITCNT ;CLEAR BIT COUNTER
BIT #RDY,@RHCS1 ;IS RDY SET
BNE 7$ ;BIT IS SET
INC BITCNT ;COUNT UP
BNE 18$ ;NOT FINISHED COUNTING
CLR BITCNT ;GET READY TO DO IT AGAIN
BIT #RDY,@RHCS1 ;IS IT SET YET?
BNE 7$ ;YES
INC BITCNT ;COUNT UP
BEQ 7$ ;BIT IS NOT GOING TO SET
BR 19$

MOV @RHCS1,CS1 ;SAVE RHCS1
MOV @RHWC,WC ;SAVE WORD COUNT
MOV @RHBA,BA ;SAVE BUS ADDRESS
TST R1 ;IS IT AN RH11
BEQ 87$ ;NO IT'S A 70
CLR BAE ;CLEAR BAE
CLR CS3 ;CLEAR CS3
JMP 86$ ;CONTINUE
MOV @RHBAE,BAE ;SAVE BUS ADDRESS EXTENSION
MOV @RHCS3,CS3 ;SAVE RHCS3
MOV @RHCS2,CS2 ;SAVE CS2
MOV @RHST,DS1 ;SAVE TESTER STATUS
MOV @RHER,ER1 ;SAVE ERROR REGISTER
MOV @RHTDB,TDR ;SAVE TESTER DATA REG.
MOV @RHMR2,TC ;SAVE MR2 TESTER REG.
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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5912	041400	001401				BEQ	4\$:YES CONT TEST
5913	041402	104141				ERROR	141		:BA DID NOT INCREMENT AFTER AN WRITETO OPERATION
5914	041404	023777	004000	141736	4\$:	CMP	EVENAD,@RHTDB		:DID INFO WRITETO TESTER
5915	041412	001401				BEQ	5\$:YES,CONT
5916	041414	104142				ERROR	142		:INFO DID NOT WRITETO TESTER
5917	041416	004737	007224		5\$:	JSR	R7,WHYFO		:ARE ANY ERROR BITS SET
5918	041422	105737	001103			TSTB	\$ERFLG		:WAS THER AN ERROR
5919	041426	001402				BEQ	6\$:NO EXIT TEST
5920	041430	104146				ERROR	146		:THESE ARE THE CONTENTS OF ALL RH70 REG.
5921	041432	104170				ERROR	170		:THIS IS TO COMMPLETE ERROR PRINTOUT
5922	041434	004737	006572		6\$:	JSR	R7,CLEER		:CLEER ERRORS IF ANY
5923	041440	004737	050202			JSR	R7,ERRTST		

: *TEST 70 WRITE OPERATIONAL TEST (NORMAL) #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

TST70: SCOPE
5932 041444 000004
5933 041446 012777 000007 141664 MOV #7,@RHCS2 :SETUP UNIT SEVEN
5934 041454 012777 177777 141650 MOV #-1,@RHWC :FOR ONE WORD
5935 041462 012777 004100 141644 MOV #RBUF,@RHBA :SRTUP BA
5936 041470 012737 125252 004100 MOV #OAB,RBUF :SETUP DATA
5937 041476 012777 000000 141644 MOV #ZERO,@RHTDB :SETUP TESTER DB
5938 041504 005701 TST R1 :IS IT AN 11 OR A 70
5939 041506 100403 BMI 1\$:IT'S AN RH11
5940 041510 012777 000000 141642 MOV #ZERO,@RHBAE :ZERO BAE
5941 041516 012777 000063 141604 1\$: MOV #WRITE2,@RHCS1 :TELL IT TO WRITE2
5942 041524 005037 003446 CLR BITCNT :CLEAR BIT COUNTER
5943 041530 032777 000200 141572 18\$: BIT #RDY,@RHCS1 :IS RDY SET
5944 041536 001015 BNE 2\$:BIT IS SET
5945 041540 005237 003446 INC BITCNT :COUNT UP
5946 041544 001371 BNE 18\$:NOT FINISHED COUNTING
5947 041546 005037 003446 CLR BITCNT :GET READY TO DO IT AGAIN
5948 041552 032777 000200 141550 19\$: BIT #RDY,@RHCS1 :IS IT SET YET?
5949 041560 001004 BNE 2\$:YES
5950 041562 005237 003446 INC BITCNT :COUNT UP
5951 041566 001401 BEQ 2\$:BIT IS NOT GOING TO SET
5952 041570 000770 BR 19\$
5953 041572 2\$:
5954 041572 017737 141532 003420 MOV @RHCS1,CS1 :SAVE RHCS1
5955 041600 017737 141526 003444 MOV @RHWC,WC :SAVE WORD COUNT
5956 041606 017737 141522 003414 MOV @RHBA,BA :SAVE BUS ADDRESS
5957 041614 005701 TST R1 :IS IT AN RH11
5958 041616 001406 BEQ 87\$:NO IT'S A 70
5959 041620 005037 003416 CLR BAE :CLEAR BAE
5960 041624 005037 003424 CLR CS3 :CLEAR CS3
5961 041630 000137 041650 JMP 86\$:CONTINUE
5962 041634 017737 141520 003416 87\$: MOV @RHBAE,BAE :SAVE BUS ADDRESS EXTENSION
5963 041642 017737 141514 003424 MOV @RHCS3,CS3 :SAVE RHCS3
5964 041650 017737 141464 003422 86\$: MOV @RHCS2,CS2 :SAVE CS2
5965 041656 017737 141460 003432 MOV @RHST,DS1 :SAVE TESTER STATUS
5966 041664 017737 141454 003436 MOV @RHER,ER1 :SAVE ERROR REGISTER
5967 041672 017737 141452 003442 MOV @RHTDB,TDR :SAVE TESTER DATA REG.

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

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

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6073 042440 000004
6074 042442 012777 000007 140670
6075 042450 012777 177777 140654
6076 042456 012777 004100 140650
6077 042464 012737 125252 004100
6078 042472 012777 000000 140650
6079 042500 005701
6080 042502 100403
6081 042504 012777 000000 140646
6082 042512 012777 000065 140610 1\$:
6083 042520 005037 003446
6084 042524 032777 000200 140576 18\$:
6085 042532 001015
6086 042534 005237 003446
6087 042540 001371
6088 042542 005037 003446
6089 042546 032777 000200 140554 19\$:
6090 042554 001004
6091 042556 005237 003446
6092 042562 001401
6093 042564 000770
6094 042566
6095 042566 017737 140536 003420 2\$:
6096 042574 017737 140532 003444
6097 042602 017737 140526 003414
6098 042610 005701
6099 042612 001406
6100 042614 005037 003416
6101 042620 005037 003424
6102 042624 000137 042644
6103 042630 017737 140524 003416 87\$:
6104 042636 017737 140520 003424
6105 042644 017737 140470 003422 86\$:
6106 042652 017737 140464 003432
6107 042660 017737 140460 003436
6108 042666 017737 140456 003442
6109 042674 017737 140436 003440
6110 042702 017737 140442 001162
6111 042710 032777 000200 140412
6112 042716 001003
6113 042720 104102
6114 042722 004737 007224
6115 042726 023777 004100 140414 3\$:
6116 042734 001407
6117 042736 005777 140406
6118 042742 001403
6119 042744 104151
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::*****  
:*TEST 72 WRITE OPERATIONAL TEST (NORMAL) #3  
:*THESE TESTS VERIFY ALL READ AND WRITE CODES  
:*WHETHER IT BE A READ REV. OR FWD OR A WRITE REV. OR FWD  
:*DURING THESE TESTS THE TESTER TIMING IS MARGINED AND  
:*NO ERRORS SHOULD OCCUR  
::*****  
TST72: SCOPE  
MOV #7,@RHCS2 ;SETUP UNIT SEVEN  
MOV #-1,@RHWC ;FOR ONE WORD  
MOV #RBUF,@RHBA ;SRTUP BA  
MOV #OAB,RBUF ;SETUP DATA  
MOV #ZERO,@RHTDB ;SETUP TESTER DB  
TST R1 ;IS IT AN 11 OR A 70  
BMI 1$ ;IT'S AN RH11  
MOV #ZERO,@RHBAE ;ZERO BAE  
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  
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 @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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6121 042746 000137 042754
6122 042752 104152
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6124 042754 004737 007224
6125 042760 105737 001103
6126 042764 001402
6127 042766 104146
6128 042770 104170
6129 042772 004737 006572
6130 042776 004737 050202
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6139 043002 000004
6140 043004 012777 000007 140326
6141 043012 012737 125252 004000
6142 043020 012777 000003 140326
6143 043026 012777 177777 140276
6144 043034 005701
6145 043036 100403
6146 043040 012777 000000 140312
6147 043046 012777 004000 140260
6148 043054 012777 000067 140246
6149 043062 012777 000001 140264
6150 043070 005037 003446
6151 043074 005237 003446
6152 043100 022737 000015 003446
6153 043106 001372
6154 043110 012777 000003 140236
6155 043116 012777 000001 140230
6156 043124 012777 000003 140222
6157 043132 012777 000001 140214
6158 043140 012777 000000 140206
6159 043146 005037 003446
6160 043152 032777 000200 140150
6161 043160 001015
6162 043162 005237 003446
6163 043166 001371
6164 043170 005037 003446
6165 043174 032777 000200 140126
6166 043202 001004
6167 043204 005237 003446
6168 043210 001401
6169 043212 000770
6170 043214
6171 043214 017737 140110 003420
6172 043222 017737 140104 003444
6173 043230 017737 140100 003414
6174 043236 005701
6175 043240 001406
6176 043242 005037 003416
    
```

```

JMP 4$ ;EXIT TEST
5$: ERROR 152 ;WRITE4 OPERATION DID NOT WORK
;NO BITS WERE LOADED TO @RH7DB
;ANY ERRORS SET
4$: JSR R7,WHYFO ;ANY ERRORS ?
TSTB $ERFLG ;NO,EXIT TEST
BEQ 6$ ;PRINT REGISTERS
ERROR 146
ERROR 170
6$: JSR R7,CLEER ;CLEAR ERRORS
JSR R7,ERRTST
;*****
;*TEST 73 RH OPERATIONAL WRITE TEST #4
;*THESE TESTS VERIFY ALL READ AND WRITE CODES
;*WHETHER IT BE A READ REV. OR FWD OR A WRITE REV. OR FWD
;*DURING THESE TESTS THE TESTER TIMING IS MARGINED AND
;*NO ERRORS SHOULD OCCUR
;*****
TST73: SCOPE
MOV #7,@RHCS2 ;SETUP UNIT SEVEN
MOV #0AB,EVENAD ;SETUP INFORMATION
MOV #DMD!MCLK,@RHMR1 ;SETUP DIAG. MODE
MOV #-1,@RHWC ;FOR ONE WORD
TST R1 ;IS IT A 11 OR 70
BMI 1$ ;IT'S AN 11
MOV #ZERO,@RHBAE ;ZERO BAE
1$: MOV #EVENAD,@RHBA ;SETUP BA
MOV #WRITE6,@RHCS1 ;TELL IT TO WRITETO
MOV #DMD,@RHMR1 ;MANIPULATE CLOCK
CLR BITCNT ;CLEAR LOOP COUNTER
2$: INC BITCNT ;INCREMENT LOOP COUNTER
CMP #15,BITCNT ;IS IT THIRD LOOP FOR 5USEC WAIT
BNE 2$ ;NO LOOP AGAIN
MOV #DMD!MCLK,@RHMR1 ;START CHANGING CLOCK
MOV #DMD,@RHMR1 ;CHANGE CLOCK AGAIN
MOV #DMD!MCLK,@RHMR1 ;CHANGE CLOCK AGAIN
MOV #DMD,@RHMR1 ;CHANGE CLOCK AGAIN
MOV #ZERO,@RHMR1 ;GET OUT OF DIAG MODE
CLR BITCNT ;CLEAR BIT COUNTER
18$: BIT #RDY,@RHCS1 ;IS RDY SET
BNE 7$ ;BIT IS SET
INC BITCNT ;COUNT UP
BNE 18$ ;NOT FINISHED COUNTING
CLR BITCNT ;GET READY TO DO IT AGAIN
19$: BIT #RDY,@RHCS1 ;IS IT SET YET?
BNE 7$ ;YES
INC BITCNT ;COUNT UP
BEQ 7$ ;BIT IS NOT GOING TO SET
BR 19$
7$: MOV @RHCS1,CS1 ;SAVE RHCS1
MOV @RHWC,WC ;SAVE WORD COUNT
MOV @RHBA,BA ;SAVE BUS ADDRESS
TST R1 ;IS IT AN RH11
BEQ 87$ ;NO IT'S A 70
CLR BAE ;CLEAR BAE
    
```

6177	043246	005037	003424			CLR	CS3	:CLEAR CS3
6178	043252	000137	043272			JMP	86\$:CONTINUE
6179	043256	017737	140076	003416	87\$:	MOV	@RHBAE,BAE	:SAVE BUS ADDRESS EXTENSION
6180	043264	017737	140072	003424		MOV	@RHCS3,CS3	:SAVE RHCS3
6181	043272	017737	140042	003422	86\$:	MOV	@RHCS2,CS2	:SAVE CS2
6182	043300	017737	140036	003432		MOV	@RHST,DS1	:SAVE TESTER STATUS
6183	043306	017737	140032	003436		MOV	@RHER,ER1	:SAVE ERROR REGISTER
6184	043314	017737	140030	003442		MOV	@RHTDB,TDR	:SAVE TESTER DATA REG.
6185	043322	017737	140010	003440		MOV	@RHM2,TC	:SAVE MR2 TESTER REG.
6186	043330	017737	140014	001162		MOV	@RHTDB,\$REGO	:GET DATA
6187	043336	032777	000200	137764		BIT	#RDY,@RHCS1	:IS READY SET
6188	043344	001001				BNE	8\$:YES,CONTINUE TEST
6189	043346	104102				ERROR	102	:READY DID NOT SET
6190	043350	022777	177777	137754	8\$:	CMP	#-1,@RHWC	:DID WC INCREMENT
6191	043356	001001				BNE	3\$:YES,CONT TEST
6192	043360	104140				ERROR	140	:WRITETO OPERATION DID NOT INC WC
6193	043362	022777	003776	137744	3\$:	CMP	#EVENAD-2,@RHBA	:DID BA INCREMENT
6194	043370	001401				BEQ	4\$:YES CONT TEST
6195	043372	104141				ERROR	141	:BA DID NOT INCREMENT AFTER AN WRITETO OPERATION
6196	043374	023777	004000	137746	4\$:	CMP	EVENAD,@RHTDB	:DID INFO WRITETO TESTER
6197	043402	001401				BEQ	5\$:YES,CONT
6198	043404	104142				ERROR	142	:INFO DID NOT WRITETO TESTER
6199	043406	004737	007224		5\$:	JSR	R7,WHYFO	:ARE ANY ERROR BITS SET
6200	043412	105737	001103			TSTB	\$ERFLG	:WAS THER AN ERROR
6201	043416	001402				BEQ	6\$:NO EXIT TEST
6202	043420	104146				ERROR	146	:THESE ARE THE CONTENTS OF ALL RH70 REG.
6203	043422	104170				ERROR	170	:THIS IS TO COMPLETE ERROR PRINTOUT
6204	043424	004737	006572		6\$:	JSR	R7,CLEER	:CLEER ERRORS IF ANY
6205	043430	004737	050202			JSR	R7,ERRTST	

: *TEST 74 WRITE 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

TST74: SCOPE
6214 043434 000004
6215 043436 012777 000007 137674
6216 043444 012777 177777 137660
6217 043452 012777 004100 137654
6218 043460 012737 125252 004100
6219 043466 012777 000000 137654
6220 043474 005701
6221 043476 100403
6222 043500 012777 000000 137652
6223 043506 012777 000067 137614 1\$:
6224 043514 005037 003446
6225 043520 032777 000200 137602 18\$:
6226 043526 001015
6227 043530 005237 003446
6228 043534 001371
6229 043536 005037 003446
6230 043542 032777 000200 137560 19\$:
6231 043550 001004
6232 043552 005237 003446

MOV	#7,@RHCS2	:SETUP UNIT SEVEN
MOV	#-1,@RHWC	:FOR ONE WORD
MOV	#RBUF,@RHBA	:SRTUP BA
MOV	#OAB,RBUF	:SETUP DATA
MOV	#ZERO,@RHTDB	:SETUP TESTER DB
TST	R1	:IS IT AN 11 OR A 70
BMI	1\$:IT'S AN RH11
MOV	#ZERO,@RHBAE	:ZERO BAE
MOV	#WRITE6,@RHCS1	:TELL IT TO WRITE6
CLR	BITCNT	:CLEAR BIT COUNTER
BIT	#RDY,@RHCS1	:IS RDY SET
BNE	2\$:BIT IS SET
INC	BITCNT	:COUNT UP
BNE	18\$:NOT FINISHED COUNTING
CLR	BITCNT	:GET READY TO DO IT AGAIN
BIT	#RDY,@RHCS1	:IS IT SET YET?
BNE	2\$:YES
INC	BITCNT	:COUNT UP


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

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

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6345 044420 004737 006572
6346 044424 004737 050202
6347
6348
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6352
6353 044430 000004
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6355
6356 044432 012777 000007 136700
6357 044440 005037 177776
6358 044444 005037 003452
6359 044450 005037 003450
6360 044454 005701
6361 044456 100403
6362 044460 012777 000000 136672
6363 044466 012777 005000 136640
6364 044474 012777 174000 136630
6365 044502 012777 050326 136676
6366
6367 044510 005701
6368 044512 001412
6369 044514 005737 003452
6370 044520 001407
6371 044522 032737 000002 177570
6372 044530 001571
6373 044532 004737 047616
6374 044536 000434
6375 044540 012777 000161 136562
6376
6377 044546 005037 003446
6378 044552 032777 000200 136550
6379 044560 001015
6380 044562 005237 003446
6381 044566 001371
6382 044570 005037 003446
6383 044574 032777 000200 136526
6384 044602 001004
6385 044604 005237 003446
6386 044610 001401
6387 044612 000770
6388
6389 044614 032777 000200 136506
6390 044622 001001
6391 044624 104102
6392 044626 104205
6393 044630
6394 044630 017737 136474 003420
6395 044636 017737 136470 003444
6396 044644 017737 136464 003414
6397 044652 005701
6398 044654 001406
6399 044656 005037 003416
6400 044662 005037 003424

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6$: JSR R7,CLEER ;CLEAR ERRORS IF ANY
JSR R7,ERR:ST
:*****
:*TEST 76 LARGE TRANSFER TEST
;THIS TEST DOES A 4K (OCTAL) WORD TRANSFER
;THE SECOND TIME THROUGH THE TEST SYNC CLOCK
;IS MARGINED TO MAKE SURE NO ERRORS OCCUR
:*****
TST76: SCOPE

MOV #7,@RHCS2
CLR @#PSW
CLR PASS
BLITZ: CLR LOOCNT ;CLEAR THE LOOP COUNTER
IN: TST R1 ;IS IT AN 11 OR 70
BMI 1$ ;IT IS AN 11
MOV #ZERO,@RHBAE ;IT'S A 70 ZERO THE SAE
1$: MOV #5000,@RHBA ;SET THE BUS ADDRESS
MOV #-4000,@RHWC
MOV #BLITZ,@VFCADD ;USE IT IN INTERRUPT MODE

TST R1
BEQ BLIP
TST PASS
BEQ BLIP
BIT #BIT1,@#177570
BEQ BOTTOM
JSR R7,DUPORT
BR RHNINT
BLIP: MOV #WRITEO!IE,@RHCS1 ;SET INTERRUPT AND TELL IT TO WRITE

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

2$: BIT #RDY,@RHCS1 ;DID READY SET
BNE 25$ ;YES READY SET
ERROR 102 ;READY DID NOT SET
25$: ERROR 205 ;IT DID NOT INTERRUPT
RHNINT: MOV @RHCS1,CS1 ;SAVE RHCS1
MOV @RHWC,WC ;SAVE WORD COUNT
MOV @RHBA,BA ;SAVE BUS ADDRESS
TST R1 ;IS IT AN RH11
BEQ 87$ ;NO IT'S A 70
CLR BAE ;CLEAR BAE
CLR CS3 ;CLEAR CS3

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6401 044666 000137 044706          JMP      86$          ;CONTINUE
6402 044672 017737 136462 003416 87$:  MOV     @RHBAE,BAE   ;SAVE BUS ADDRESS EXTENSION
6403 044700 017737 136456 003424      MOV     @RHCS3,CS3   ;SAVE RHCS3
6404 044706 017737 136426 003422 86$:  MOV     @RHCS2,CS2   ;SAVE CS2
6405 044714 017737 136422 003432      MOV     @RHST,DS1    ;SAVE TESTER STATUS
6406 044722 017737 136416 003436      MOV     @RHER,ER1    ;SAVE ERROR REGISTER
6407 044730 017737 136414 003442      MOV     @RHTDB,TDR   ;SAVE TESTER DATA REG.
6408 044736 017737 136374 003440      MOV     @RHMR2,TC    ;SAVE MR2 TESTER REG.
6409 044744 032777 140000 136370 9$:   BIT     #ATA!ERR,@RHST ;IS ATTEN OR ERROR SET
6410 044752 001033                BNE     3$           ;YES THERE WAS A PROBLEM
6411 044754 032777 000200 136346      BIT     #RDY,@RHCS1  ;DID RDY SET
6412 044762 001001                BNE     4$           ;YES IT SET
6413 044764 104102                ERROR   102          ;RDY DID NOT SET
6414 044766 022777 015000 136340 4$:  CMP     #5000+<4000*2>,@RHBA ;DID BA INC PROPERLY
6415 044774 001401                BEQ     5$           ;YES
6416 044776 104203                ERROR   203          ;BA DID NOT INC PROPERLY
6417 045000 023777 014776 136342 5$:  CMP     @#14776,@RHTDB ;WAS CORRECT INFO WRITTEN
6418 045006 001401                BEQ     6$           ;YES
6419 045010 104204                ERROR   204          ;CORRECT INFO NOT IN RHTDB
6420 045012 005777 136314          6$:   TST     @RHWC        ;IS WC 0
6421 045016 001401                BEQ     7$           ;YES
6422 045020 104206                ERROR   206          ;RHWC IS NOT ZERO
6423 045022 105737 001103          7$:   TSTB   $ERFLG      ;WAS THERE ANY ERRORS
6424 045026 001407                BEQ     8$           ;NO
6425 045030 032777 002000 136272      BIT     #PSEL,@RHCS1
6426 045036 001401                BEQ     3$           ;OUTPUT THE REGISTERS
6427 045040 104207                ERROR   207
6428 045042 104146                ERROR   146
6429 045044 104170                ERROR   170
6430 045046 005737 003450          8$:   TST     LOOCNT      ;IS IT FIRST PASS IN TEST
6431 045052 001007                BNE     11$          ;NO
6432 045054 005237 003450          INC     LOOCNT      ;MAKE IT SECOND PASS
6433 045060 012777 000017 136250      MOV     #SCLK!7,@RHMR2
6434                                ;SET THE SYNC CLOCK BIT AND 441 BLK SIZE
6435 045066 000137 044454          JMP     IN           ;DO THE TEST AGAIN
6436 045072 005037 003450          11$:  CLR     LOOCNT      ;CLEAR THE COUNTER
6437 045076 005737 003452          TST     PASS
6438 045102 001004                BNE     BOTTOM
6439 045104 005237 003452          INC     PASS
6440 045110 000137 044450          JMP     BLITZ
6441 045114 004737 007224          BOTTOM: JSR    R7,WHYFO ;TO SEE WHY IT DIED
6442 045120 004737 006572          JSR    R7,CLEER    ;CLEAR THE REGISTERS
6443 045124 004737 050202          JSR    R7,ERRTST  ;UNDERLINE ERROR MESGES
6444                                ;IF NEEDED
6445                                ;*****
6446                                ;*TEST 77      HERE IS WHERE I HANDLE 4 RH'S
6447                                ;*THIS IS THE ROUTINE THAT ALLOWS THE
6448                                ;*THE DIAGNOSTIC TO TEST FOUR RH'S
6449                                ;*****
6450 045130 000004          TST77: SCOPE
6451
6452 045132 005237 003376          ENDPAS: INC    DEVCNT ;INCREMENT THE DEVICE COUNT
6453 045136 022737 000001 003376      CMP     #1,DEVCNT  ;IS IT DEVICE 2
6454 045144 001552                BEQ     CLEVER      ;YES
6455 045146 022737 000002 003376      CMP     #2,DEVCNT  ;IS IT DEVICE 3
6456 045154 001002                BNE     1$

```

```

6457 045156 000137 045576          JMP      ROTEEN          :YES
6458 045162 022737 000003 003376 1$:  CMP      #3,DEV CNT     :IS IT DEVICE 4
6459 045170 001002          BNE      2$             :NO,CONTINUE SEARCH
6460 045172 000137 045702          JMP      IS             :YES
6461 045176 022737 000004 003376 2$:  CMP      #4,DEV CNT     :HAVE WE TESTED ALL 4 RH'S
6462 045204 001470          BEQ      RESTAT        :YES
6463 045206 104401 045214          TYPE    ,65$          ::TYPE ASCIZ STRING
6464 045212 000421          BR       64$          ::GET OVER THE ASCIZ
6465          ::65$: .ASCIZ <15><12>/PROGRAM ERROR ON TESTING 4 RH'S/
6466 045256          64$:
6467 045256 104401 045264          TYPE    ,67$          ::TYPE ASCIZ STRING
6468 045262 000426          BR       66$          ::GET OVER THE ASCIZ
6469          ::67$: .ASCIZ <15><12>/RESTARTING TO TEST RH #1 AT BASE ADDRESS /
6470          66$:
6471 045340 013746 003366          MOV      DEVIC1,-(SP)  ::SAVE DEVIC1 FOR TYPEOUT
6472 045344 104402          TYPOC          ::GO TYPE--OCTAL ASCII(ALL DIGITS)
6473 045346 013737 003366 003400  MOV      DEVIC1,DEVIC5 :FOR REG. ADDRESS CREATION
6474 045354 012737 005246 003410  MOV      #GIGO,RETAIN  :GET ADDRESS ERROR RETURN
6475 045362 000137 046006          JMP      CORREG        :CORRECT REG. ADDRESSES
6476 045366 005037 003376          RESTAT: CLR      DEV CNT :CLEAR DEVICE COUNTER
6477 045372 005726          TST      (SP)+        :CORRECT STACK
6478 045374 013737 003366 003400  MOV      DEVIC1,DEVIC5 :SET UP TO CREATE ADDRESSES
6479 045402 104401 045410          TYPE    ,65$          ::TYPE ASCIZ STRING
6480 045406 000421          BR       64$          ::GET OVER THE ASCIZ
6481          ::65$: .ASCIZ <15><12>/TESTING RH #1 AT BASE ADDRESS /
6482          64$:
6483 045452 013746 003366          MOV      DEVIC1,-(SP)  ::SAVE DEVIC1 FOR TYPEOUT
6484 045456 104402          TYPOC          ::GO TYPE--OCTAL ASCII(ALL DIGITS)
6485 045460 012737 005246 003410  MOV      #GIGO,RETAIN  :SAVE RETURN ADDRESS
6486 045466 000137 046006          JMP      CORREG        :GO CREATE ADDRESSES
6487 045472 005737 003370          CLEVER: TST      DEVIC2 :IS IT 0
6488 045476 001733          BEQ      RESTAT        :YES,END PASS
6489 045500 013737 003370 003400  MOV      DEVIC2,DEVIC5 :GET READY TO CONSTRUCT
6490 045506 012737 005422 003410  MOV      #GIGO1,RETAIN :SAVE RETURN ERROR ADDRESS
6491 045514 104401 045522          TYPE    ,65$          ::TYPE ASCIZ STRING
6492 045520 000421          BR       64$          ::GET OVER THE ASCIZ
6493          ::65$: .ASCIZ <15><12>/TESTING RH #2 AT BASE ADDRESS /
6494          64$:
6495 045564 013746 003370          MOV      DEVIC2,-(SP)  ::SAVE DEVIC2 FOR TYPEOUT
6496 045570 104402          TYPOC          ::GO TYPE--OCTAL ASCII(ALL DIGITS)
6497 045572 000137 046006          JMP      CORREG        :CREATE REG. ADDRESSES
6498 045576 005737 003372          ROTEEN: TST      DEVIC3 :IS IT 0
6499 045602 001671          BEQ      RESTAT        :YES ,END PASS
6500 045604 013737 003372 003400  MOV      DEVIC3,DEVIC5 :GET BASE ADDRESS
6501 045612 012737 005562 003410  MOV      #GIGO2,RETAIN :SAVE RETURN ADDRESS
6502 045620 104401 045626          TYPE    ,65$          ::TYPE ASCIZ STRING
6503 045624 000421          BR       64$          ::GET OVER THE ASCIZ
6504          ::65$: .ASCIZ <15><12>/TESTING RH #3 AT BASE ADDRESS /
6505          64$:
6506 045670 013746 003372          MOV      DEVIC3,-(SP)  ::SAVE DEVIC3 FOR TYPEOUT
6507 045674 104402          TYPOC          ::GO TYPE--OCTAL ASCII(ALL DIGITS)
6508 045676 000137 046006          JMP      CORREG        :CORRECT REG. ADDRESSES
6509 045702 005737 003374          IS:      TST      DEVIC4 :IS IT 0
6510 045706 001627          BEQ      RESTAT        :YES ,END PASS
6511 045710 013737 003374 003400  MOV      DEVIC4,DEVIC5 :GET BASE ADDRESS
6512 045716 012737 005722 003410  MOV      #GIGO3,RETAIN :SAVE RETURN ADDRESS

```

6513 045724 104401 045732
6514 045730 000421
6515
6516 045774
6517 045774 013746 003374
6518 046000 104402
6519 046002 000137 046006
6520 046006 013737 003400 003402
6521 046014 012702 003330
6522 046020 013722 003402
6523 046024 022702 003360
6524 046030 001405
6525 046032 062737 000002 003402
6526 046040 000137 046020
6527 046044 013737 003400 003402
6528 046052 063737 003404 003402
6529 046060 013737 003402 003360
6530 046066 062737 000002 003402
6531 046074 013737 003402 003362
6532 046102 013737 003330 003364
6533 046110 005237 003364
6534 046114 005037 001102
6535 046120 005237 001102
6536 046124 012737 000001 001212
6537 046132 005737 003376
6538 046136 001402
6539 046140 000137 006252
6540
6541
6542
6543
6544
6545
6546
6547
6548
6549 046144
6550 046144 000004
6551 046146 005037 001102
6552 046152 005037 001212
6553 046156 005237 001100
6554 046162 042737 100000 001100
6555 046170 005327
6556 046172 000001
6557 046174 003063
6558 046176 012737
6559 046200 000001
6560 046202 046172
6561 046204 104401 046212
6562 046210 000407
6563
6564 046230
6565 046230 013746 001100
6566
6567 046234 104405
6568 046236 104401 046244

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

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

```
$EOP:
SCOPE
CLR $STSTNM      ;;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 ASCIZ STRING
```

6569 046242 000421
6570
6571 046306
6572 046306 013746 001112
6573
6574 046312 104405
6575 046314 104401 001223
6576 046320 005037 001112
6577 046324 013700 000042
6578 046330 001405
6579 046332 000005
6580 046334 004710
6581 046336 000240
6582 046340 000240
6583 046342 000240
6584 046344
6585 046344 000137
6586 046346 004166
6587 046350 377 377 000
6588 046354
6589
6590
6591
6592
6593
6594 046354 032737 020000 177570
6595 046362 001155
6596 046364 033737 000400 177570
6597 046372 001151
6598 046374 033737 000001 177570
6599 046402 001145
6600 046404 005037 003446
6601 046410 013737 001162 001202
6602 046416 013737 001200 001204
6603 046424 043737 001162 001204
6604 046432 005737 001204
6605 046436 001447
6606 046440 104401 046446
6607 046444 000427
6608
6609 046524
6610 046524 032737 000001 001204
6611 046532 001076
6612 046534 006037 001204
6613 046540 022737 000017 003446
6614 046546 001403
6615 046550 005237 003446
6616 046554 000763
6617 046556 005037 003446
6618 046562 043737 001200 001202
6619 046570 005737 001202
6620 046574 001446
6621 046576 104401 046604
6622 046602 000426
6623
6624 046660

```
BR 66$ ::GET OVER THE ASCIZ
::67$: .ASCIZ / TOTAL ERRORS SINCE LAST REPORT /
66$: MOV $ERTTL,-(SP) ::SAVE $ERTTL FOR TYPEOUT
::TOTAL NUMBER OF ERRORS
::GO TYPE--DECIMAL ASCII WITH SIGN
TYPDS TYPE $SCLF ::TYPE CARRIAGE RETURN, LINE FEED
CLR $ERTTL ::CLEAR ERROR TOTAL
$GET42: MOV @#42,R0 ::GET MONITOR ADDRESS
BEQ $DOAGN ::BRANCH IF NO MONITOR
RESET ::CLEAR THE WORLD
$ENDAD: JSR PC,(R0) ::GO TO MONITOR
NOP ::SAVE ROOM
NOP ::FOR
NOP ::ACT11
$DOAGN: JMP @PC+ ::RETURN
$RTNAD: .WORD 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
BIT BIT8,@#177570
BNE RITURN
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 $TMP2 ;WAS ALL BITS SET THAT SHOULD HAVE BEEN
BEQ RETURN ;YES,AND TEST FINISHED
TYPE ,65$ ::TYPE ASCIZ STRING
BR 64$ ::GET OVER THE ASCIZ
::65$: .ASCIZ <15><12>/BIT NO. OF THE BITS THAT WHER NOT SET/<15><12>
64$:
```

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


6681 047312
6682 047312 012637 004100
6683 047316 162737 000002 004100
6684 047324 013746 004100
6685 047330 104402
6686 047332 104401 047340
6687 047336 000406
6688
6689 047354
6690 047354 012637 004100
6691 047360 013746 004100
6692 047364 104402
6693 047366 005701
6694 047370 100507
6695 047372 104401 047400
6696 047376 000417
6697
6698 047436
6699 047436 013737 177742 004100
6700 047444 013746 004100
6701 047450 104402
6702 047452 104401 047460
6703 047456 000416
6704
6705 047514
6706 047514 013737 177740 004100
6707 047522 013746 004100
6708 047526 104402
6709 047530 104401 047536
6710 047534 000417
6711
6712 047574
6713 047574 013737 177744 004100
6714 047602 013746 004100
6715 047606 104402
6716 047610 013716 001106
6717 047614 000002
6718
6719
6720
6721
6722 047616 012777 002161 133504
6723 047624 005037 003446
6724 047630 032777 000200 133472
6725 047636 001015
6726 047640 005237 003446
6727 047644 001371
6728 047646 005037 003446
6729 047652 032777 000200 133450
6730 047660 001004
6731 047662 005237 003446
6732 047666 001401
6733 047670 000770
6734 047672
6735 047672 032777 000200 133430
6736 047700 001001

```

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

;*****
;THIS IS THE DUAL PORT ROUTINE
;*****
DUPORT: MOV #WRITE0!PSEL!IE,@RHCS1
CLR BITCNT ;CLEAR BIT COUNTER
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
BR 19$

BULL: BIT #RDY,@RHCS1
BNE CUTE

```

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

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

6825
6826
6827
6828
6829 050334 044122 040440 042104
6830 050342 042522 051523 042040
6831 050350 041505 042117 020105
6832 050356 042524 052123 024040
6833 050364 042524 052123 030440
6834 050372 000051
6835 050374 046103 040505 020122
6836 050402 052040 051505 020124
6837 050410 052050 051505 020124
6838 050416 024462 000
6839 050421 124 051505 042524
6840 050426 020122 047503 047116
6841 050434 041505 042524 020104
6842 050442 042524 052123 024040
6843 050450 042524 052123 031440
6844 050456 000051
6845 050460 047527 042122 041440
6846 050466 052517 052116 041440
6847 050474 042514 051101 052040
6848 050502 051505 020124 052050
6849 050510 051505 020124 024464
6850 050516 000
6851 050517 122 041110 020101
6852 050524 046103 040505 020122
6853 050532 042524 052123 024040
6854 050540 042524 052123 032440
6855 050546 000051
6856 050550 044122 040502 020105
6857 050556 046103 040505 020122
6858 050564 042524 052123 024040
6859 050572 042524 052123 033040
6860 050600 000051
6861 050602 044122 041104 041440
6862 050610 042514 051101 052040
6863 050616 051505 020124 052050
6864 050624 051505 020124 024467
6865 050632 000
6866 050633 120 047522 020115
6867 050640 042522 044507 052123
6868 050646 051105 042040 041505
6869 050654 042117 020105 042524
6870 050662 052123 024040 042524
6871 050670 052123 030440 024460
6872 050676 000
6873 050677 122 041510 031523
6874 050704 041040 052111 052040
6875 050712 051505 020124 052050
6876 050720 051505 020124 030461
6877 050726 000051
6878 050730 044122 041527 041040
6879 050736 052111 052040 051505
6880 050744 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)/

6881	050752	020124	031061	000051	
6882	050760	044122	040502	020105	HED13: .ASCIZ/RHBAE BIT TEST (TEST 13)/
6883	050766	044502	020124	042524	
6884	050774	052123	024040	042524	
6885	051002	052123	030440	024463	
6886	051010	000			
6887	051011	122	041110	020101	HED14: .ASCIZ/RHBA BIT TEST (TEST 14)/
6888	051016	044502	020124	042524	
6889	051024	052123	024040	042524	
6890	051032	052123	030440	024464	
6891	051040	000			
6892	051041	122	042110	020102	HED15: .ASCIZ/RHDB BIT TEST (TEST 15)/
6893	051046	044502	020124	042524	
6894	051054	052123	024040	042524	
6895	051062	052123	030440	024465	
6896	051070	000			
6897	051071	122	053510	020103	HED16: .ASCIZ/RHWC OPERATIONAL TEST (TEST 16)/
6898	051076	050117	051105	052101	
6899	051104	047511	040516	020114	
6900	051112	042524	052123	024040	
6901	051120	042524	052123	030440	
6902	051126	024466	000		
6903	051131	122	041110	020101	HED17: .ASCIZ/RHBA OPERATIONAL TEST (TEST 17)/
6904	051136	050117	051105	052101	
6905	051144	047511	040516	020114	
6906	051152	042524	052123	024040	
6907	051160	042524	052123	030440	
6908	051166	024467	000		
6909	051171	116	046505	052054	HED20: .ASCIZ/NEM,TRE AND SC BIT TEST (TEST 20)/
6910	051176	042522	040440	042116	
6911	051204	051440	020103	044502	
6912	051212	020124	042524	052123	
6913	051220	024040	042524	052123	
6914	051226	031040	024460	000	
6915	051233	127	042503	052054	HED21: .ASCIZ/WCE,TRE AND SC BIT TEST (TEST 21)/
6916	051240	042522	040440	042116	
6917	051246	051440	020103	044502	
6918	051254	020124	042524	052123	
6919	051262	024040	042524	052123	
6920	051270	031040	024461	000	
6921	051275	115	050104	026105	HED22: .ASCIZ/MDPE,TRE AND SC BIT TEST (TEST 22)/
6922	051302	051124	020105	047101	
6923	051310	020104	041523	041040	
6924	051316	052111	052040	051505	
6925	051324	020124	052050	051505	
6926	051332	020124	031062	000051	
6927	051340	050125	026105	051124	HED23: .ASCIZ/UPE,TRE AND SC BIT TEST (TEST 23) RH11 ONLY/
6928	051346	020105	047101	020104	
6929	051354	041523	041040	052111	
6930	051362	052040	051505	020124	
6931	051370	052050	051505	020124	
6932	051376	031462	020051	044122	
6933	051404	030461	047440	046116	
6934	051412	000131			
6935	051414	050125	026105	051124	HED24: .ASCIZ/UPE,TRE AND SC BIT TEST (TEST 24)/
6936	051422	020105	047101	020104	

6937	051430	041523	041040	052111	
6938	051436	052040	051505	020124	
6939	051444	052050	051505	020124	
6940	051452	032062	000051		
6941	051456	042516	026104	051124	HED25: .ASCIZ/NED,TRE AND SC BIT TEST (TEST 25)/
6942	051464	020105	047101	020104	
6943	051472	041523	041040	052111	
6944	051500	052040	051505	020124	
6945	051506	052050	051505	020124	
6946	051514	032462	000051		
6947	051520	054115	026106	051124	HED26: .ASCIZ/MXF,TRE AND SC BIT TEST (TEST 26)/
6948	051526	020105	047101	020104	
6949	051534	041523	041040	052111	
6950	051542	052040	051505	020124	
6951	051550	052050	051505	020124	
6952	051556	033062	000051		
6953	051562	043520	020105	051124	HED27: .ASCIZ/PGE TRE AND SC BIT TEST (TEST 27)/
6954	051570	020105	047101	020104	
6955	051576	041523	041040	052111	
6956	051604	052040	051505	020124	
6957	051612	052050	051505	020124	
6958	051620	033462	000051		
6959	051624	054115	026106	051124	HED30: .ASCIZ/MXF,TRE AND SC BIT TEST (TEST 30)/
6960	051632	020105	047101	020104	
6961	051640	041523	041040	052111	
6962	051646	052040	051505	020124	
6963	051654	052050	051505	020124	
6964	051662	030063	000051		
6965	051666	041515	042520	040440	HED31: .ASCIZ/MCPE AND SC ERROR BIT TEST (TEST 31)/
6966	051674	042116	051440	020103	
6967	051702	051105	047522	020122	
6968	051710	044502	020124	042524	
6969	051716	052123	024040	042524	
6970	051724	052123	031440	024461	
6971	051732	000			
6972	051733	104	046102	052040	HED32: .ASCIZ/DBL TEST,1 WORD FROM A BASE 4 ADDRESS (TEST 32)/
6973	051740	051505	026124	020061	
6974	051746	047527	042122	043040	
6975	051754	047522	020115	020101	
6976	051762	040502	042523	032040	
6977	051770	040440	042104	042522	
6978	051776	051523	024040	042524	
6979	052004	052123	031440	024462	
6980	052012	000			
6981	052013	104	046102	052040	HED33: .ASCIZ/DBL TEST,2 WORD FROM A BASE 4 ADD. (TEST 33)/
6982	052020	051505	026124	020062	
6983	052026	047527	042122	043040	
6984	052034	047522	020115	020101	
6985	052042	040502	042523	032040	
6986	052050	040440	042104	020056	
6987	052056	052050	051505	020124	
6988	052064	031463	000051		
6989	052070	041104	020114	042524	HED34: .ASCIZ/DBL TEST,3 WORD FROM A BASE 4 ADD. (TEST 34)/
6990	052076	052123	031454	053440	
6991	052104	051117	020104	051106	
6992	052112	046517	040440	041040	

6993	052120	051501	020105	020064
6994	052126	042101	027104	024040
6995	052134	042524	052123	031440
6996	052142	024464	000	
6997	052145	104	046102	052040
6998	052152	051505	026124	020064
6999	052160	047527	042122	020123
7000	052166	051106	046517	040440
7001	052174	041040	051501	020105
7002	052202	020064	042101	027104
7003	052210	024040	042524	052123
7004	052216	031440	024465	000
7005	052223	104	046102	052040
7006	052230	051505	026124	020061
7007	052236	047527	042122	043040
7008	052244	047522	020115	020101
7009	052252	040502	042523	032040
7010	052260	040440	042104	024056
7011	052266	042524	052123	031440
7012	052274	024466	000	
7013	052277	104	046102	052040
7014	052304	051505	026124	020062
7015	052312	047527	042122	043040
7016	052320	047522	020115	020101
7017	052326	040502	042523	032040
7018	052334	040440	042104	020056
7019	052342	044527	044124	041040
7020	052350	044501	051440	052105
7021	052356	024040	042524	052123
7022	052364	031440	024467	000
7023	052371	104	046102	052040
7024	052376	051505	026124	020062
7025	052404	047527	042122	053440
7026	052412	052111	020110	040502
7027	052420	020111	042523	020124
7028	052426	047101	020104	051127
7029	052434	052111	020105	042522
7030	052442	020126	052051	051505
7031	052450	020124	030064	000051
7032	052456	041104	020114	042524
7033	052464	052123	047054	052117
7034	052472	040440	041040	051501
7035	052500	020105	020064	042101
7036	052506	020104	052050	051505
7037	052514	020124	030464	000051
7038	052522	041104	020114	042524
7039	052530	052123	041040	051501
7040	052536	020105	020064	042101
7041	052544	027104	053440	044522
7042	052552	042524	043040	042127
7043	052560	024040	042524	052123
7044	052566	032040	024462	000
7045	052573	104	046102	052040
7046	052600	051505	020124	031054
7047	052606	053440	051117	020104
7048	052614	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)/

7049	052622	041040	051501	020105
7050	052630	020064	042101	027104
7051	052636	024040	042524	052123
7052	052644	032040	024463	000
7053	052651	104	046102	052040
7054	052656	051505	026124	020063
7055	052664	047527	042122	026040
7056	052672	047516	020124	020101
7057	052700	040502	042523	032040
7058	052706	040440	042104	026056
7059	052714	051127	052111	020105
7060	052722	042522	020126	052050
7061	052730	051505	020124	032064
7062	052736	000051		
7063	052740	041104	020114	042524
7064	052746	052123	031054	053440
7065	052754	051117	020104	042522
7066	052762	042101	043040	042127
7067	052770	024040	042524	052123
7068	052776	032040	024465	000
7069	053003	104	046102	052040
7070	053010	051505	026124	020062
7071	053016	047527	042122	051040
7072	053024	040505	020104	053506
7073	053032	026104	047516	020124
7074	053040	020101	040502	042523
7075	053046	032040	040440	042104
7076	053054	020056	052050	051505
7077	053062	020124	033064	000051
7078	053070	041104	020114	042524
7079	053076	052123	031054	053440
7080	053104	051117	020104	042522
7081	053112	042101	051040	053105
7082	053120	041054	051501	020105
7083	053126	020064	042101	027104
7084	053134	024040	042524	052123
7085	053142	032040	024467	000
7086	053147	104	046102	052040
7087	053154	051505	026124	020062
7088	053162	047527	042122	051040
7089	053170	040505	020104	042522
7090	053176	026126	047516	020124
7091	053204	020101	040502	042523
7092	053212	032040	040440	042104
7093	053220	020056	052050	051505
7094	053226	020124	030065	000051
7095	053234	041104	020114	042524
7096	053242	052123	031454	053440
7097	053250	051117	020104	042522
7098	053256	042101	043040	042127
7099	053264	041054	051501	020105
7100	053272	020064	042101	027104
7101	053300	024040	042524	052123
7102	053306	032440	024461	000
7103	053313	104	046102	052040
7104	053320	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)/

7105	053326	047527	042122	051040	
7106	053334	040505	020104	042522	
7107	053342	026126	040502	042523	
7108	053350	032040	040440	042104	
7109	053356	020056	052050	051505	
7110	053364	020124	031065	000051	
7111	053372	041527	020105	053505	HED53: .ASCIZ/WCE EW ERROR TEST 'WCELO' (TEST 53)/
7112	053400	042440	051122	051117	
7113	053406	052040	051505	020124	
7114	053414	053442	042503	047514	
7115	053422	020042	052050	051505	
7116	053430	020124	031465	000051	
7117	053436	041527	020105	053517	HED54: .ASCIZ/WCE OW ERROR TEST 'WCEHI' (TEST 54)/
7118	053444	042440	051122	051117	
7119	053452	052040	051505	020124	
7120	053460	053442	042503	044510	
7121	053466	020042	052050	051505	
7122	053474	020124	032065	000051	
7123	053502	047111	042524	052522	HED55: .ASCIZ/INTERUPT ENABLE TEST (TEST 55)/
7124	053510	052120	042440	040516	
7125	053516	046102	020105	042524	
7126	053524	052123	024040	042524	
7127	053532	052123	032440	024465	
7128	053540	000			
7129	053541	122	040505	020104	HED56: .ASCIZ/READ OPERATIONAL TEST (NORMAL #1) (TEST 56)/
7130	053546	050117	051105	052101	
7131	053554	047511	040516	020114	
7132	053562	042524	052123	024040	
7133	053570	047516	046522	046101	
7134	053576	021440	024461	024040	
7135	053604	042524	052123	032440	
7136	053612	024466	000		
7137	053615	122	020110	050117	HED57: .ASCIZ/RH OPERATIONAL WRITE TEST #1 (TEST 57)/
7138	053622	051105	052101	047511	
7139	053630	040516	020114	051127	
7140	053636	052111	020105	042524	
7141	053644	052123	021440	020061	
7142	053652	052050	051505	020124	
7143	053660	033465	000051		
7144	053664	042522	042101	047440	HED60: .ASCIZ/READ OPERATIONAL TEST (NORMAL #2)(TEST 60)/
7145	053672	042520	040522	044524	
7146	053700	047117	046101	052040	
7147	053706	051505	020124	047050	
7148	053714	051117	040515	020114	
7149	053722	031043	024051	042524	
7150	053730	052123	033040	024460	
7151	053736	000			
7152	053737	122	020110	050117	HED61: .ASCIZ/RH OPERATIONAL READ TEST #1 (TEST 61)/
7153	053744	051105	052101	047511	
7154	053752	040516	020114	042522	
7155	053760	042101	052040	051505	
7156	053766	020124	030443	024040	
7157	053774	042524	052123	033040	
7158	054002	024461	000		
7159	054005	122	040505	020104	HED62: .ASCIZ/READ OPERATIONAL TEST (NORMAL #3)(TEST 62)/
7160	054012	050117	051105	052101	

7161	054020	047511	040516	020114	
7162	054026	042524	052123	024040	
7163	054034	047516	046522	046101	
7164	054042	021440	024463	052050	
7165	054050	051505	020124	031066	
7166	054056	000051			
7167	054060	044122	047440	042520	HED63: .ASCIZ/RH OPERATIONAL WRITE TEST #2 (TEST 63)/
7168	054066	040522	044524	047117	
7169	054074	046101	053440	044522	
7170	054102	042524	052040	051505	
7171	054110	020124	031043	024040	
7172	054116	042524	052123	033040	
7173	054124	024463	000		
7174	054127	122	040505	020104	HED64: .ASCIZ/READ OPERATIONAL TEST (NORMAL #4)(TEST 64)/
7175	054134	050117	051105	052101	
7176	054142	047511	040516	020114	
7177	054150	042524	052123	024040	
7178	054156	047516	046522	046101	
7179	054164	021440	024464	052050	
7180	054172	051505	020124	032066	
7181	054200	000051			
7182	054202	044122	047440	042520	HED65: .ASCIZ/RH OPERATIONAL READ TEST #2 (TEST 65)/
7183	054210	040522	044524	047117	
7184	054216	046101	051040	040505	
7185	054224	020104	042524	052123	
7186	054232	021440	020062	052050	
7187	054240	051505	020124	032466	
7188	054246	000051			
7189	054250	051127	052111	020105	HED66: .ASCIZ/WRITE OPERATIONAL TEST (NORMAL #1)(TEST 66)/
7190	054256	050117	051105	052101	
7191	054264	047511	040516	020114	
7192	054272	042524	052123	024040	
7193	054300	047516	046522	046101	
7194	054306	021440	024461	052050	
7195	054314	051505	020124	033066	
7196	054322	000051			
7197	054324	044122	047440	042520	HED67: .ASCIZ/RH OPERATIONAL WRITE TEST #3 (TEST 67)/
7198	054332	040522	044524	047117	
7199	054340	046101	053440	044522	
7200	054346	042524	052040	051505	
7201	054354	020124	031443	024040	
7202	054362	042524	052123	033040	
7203	054370	024467	000		
7204	054373	127	044522	042524	HED70: .ASCIZ/WRITE OPERATIONAL TEST (NORMAL #3)(TEST 70)/
7205	054400	047440	042520	040522	
7206	054406	044524	047117	046101	
7207	054414	052040	051505	020124	
7208	054422	047050	051117	040515	
7209	054430	020114	031443	024051	
7210	054436	042524	052123	033440	
7211	054444	024460	000		
7212	054447	122	020110	050117	HED71: .ASCIZ/RH OPERATIONAL READ TEST #3 (TEST 71)/
7213	054454	051105	052101	047511	
7214	054462	040516	020114	042522	
7215	054470	042101	052040	051505	
7216	054476	020124	031443	024040	

7217	054504	042524	052123	033440	
7218	054512	024461	000		
7219	054515	127	044522	042524	HED72: .ASCIZ/WRITE OPERATIONAL TEST (NORMAL #3)(TEST 72)/
7220	054522	047440	042520	040522	
7221	054530	044524	047117	046101	
7222	054536	052040	051505	020124	
7223	054544	047050	051117	040515	
7224	054552	020114	031443	024051	
7225	054560	042524	052123	033440	
7226	054566	024462	000		
7227	054571	122	020110	050117	HED73: .ASCIZ/RH OPERATIONAL WRITE TEST #4 (TEST 73)/
7228	054576	051105	052101	047511	
7229	054604	040516	020114	051127	
7230	054612	052111	020105	042524	
7231	054620	052123	021440	020064	
7232	054626	052050	051505	020124	
7233	054634	031467	000051		
7234	054640	051127	052111	020105	HED74: .ASCIZ/WRITE OPERATIONAL TEST (NORMAL #4)(TEST 74)/
7235	054646	050117	051105	052101	
7236	054654	047511	040516	020114	
7237	054662	042524	052123	024040	
7238	054670	047516	046522	046101	
7239	054676	021440	024464	052050	
7240	054704	051505	020124	032067	
7241	054712	000051			
7242	054714	044122	047440	042520	HED75: .ASCIZ/RH OPERATIONAL READ TEST #4 (TEST 75)/
7243	054722	040522	044524	047117	
7244	054730	046101	051040	040505	
7245	054736	020104	042524	052123	
7246	054744	021440	020064	052050	
7247	054752	051505	020124	032467	
7248	054760	000051			
7249	054762	040514	043522	020105	HED76: .ASCIZ/LARGE TRANSFER TEST 671 WORDS (TEST 76)/
7250	054770	051124	047101	043123	
7251	054776	051105	052040	051505	
7252	055004	020124	033466	020061	
7253	055012	047527	042122	020123	
7254	055020	052050	051505	020124	
7255	055026	033067	000051		

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7262 055032 047503 051122 041505
7263 055040 020124 044502 020124
7264 055046 044504 020104 047516
7265 055054 020124 042523 020124
7266 055062 047111 051040 053510
7267 055070 000103
7268 055072 047503 051122 041505
7269 055100 020124 044502 020124
7270 055106 044504 020104 047516
7271 055114 020124 042523 020124
7272 055122 047111 051040 041110
7273 055130 000101
7274 055132 047503 051122 041505
7275 055140 020124 044502 020124
7276 055146 044504 020104 047516
7277 055154 020124 042523 020124
7278 055162 047111 041040 051525
7279 055170 040440 042104 042522
7280 055176 051523 051040 043505
7281 055204 000056
7282 055206 047503 051122 041505
7283 055214 020124 044502 020124
7284 055222 044504 020104 047516
7285 055230 020124 042523 020124
7286 055236 047111 051040 042110
7287 055244 000102
7288 055246 047516 026516 054105
7289 055254 051511 040524 052116
7290 055262 046440 046505 051117
7291 055270 020131 044504 020104
7292 055276 047516 020124 042523
7293 055304 020124 047111 051040
7294 055312 041510 031123 000
7295 055317 040 047514 044507
7296 055324 020103 047524 051440
7297 055332 052105 052040 042522
7298 055340 041040 052111 044440
7299 055346 020116 044122 051503
7300 055354 020061 042522 044507
7301 055362 052123 051105 005015
7302 055370 051511 047040 052117
7303 055376 053440 051117 044513
7304 055404 043516 043454 020117
7305 055412 047524 024040 051503
7306 055420 041122 020051 051120
7307 055426 047111 051524 044440
7308 055434 020106 044122 030461
7309 055442 005015
7310 055444 051117 024040 051503
7311 055452 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/

7312	055460	047111	051524	044440	
7313	055466	020106	044122	030067	
7314	055474	044440	020116	047514	
7315	055502	040503	044524	047117	
7316	055510	041040	020067	047117	
7317	055516	041040	052117	020110	
7318	055524	051120	047111	051524	
7319	055532	000			
7320	055533	116	046505	041040	EM7: .ASCIZ/NEM BIT DOES NOT READ AS SET IN RHCS2/
7321	055540	052111	042040	042517	
7322	055546	020123	047516	020124	
7323	055554	042522	042101	040440	
7324	055562	020123	042523	020124	
7325	055570	047111	051040	041510	
7326	055576	031123	000		
7327	055601	116	046505	040440	EM10: .ASCIZ/NEM AND SC NOT SET IN RHCS1/
7328	055606	042116	051440	020103	
7329	055614	047516	020124	042523	
7330	055622	020124	047111	051040	
7331	055630	041510	030523	000	
7332	055635	123	020103	044502	EM11: .ASCIZ/SC BIT SET BY ATTN OR MCPE ERROR/
7333	055642	020124	042523	020124	
7334	055650	054502	040440	052124	
7335	055656	020116	051117	046440	
7336	055664	050103	020105	051105	
7337	055672	047522	000122		
7338	055676	051440	020103	044504	EM12: .ASCIZ/ SC DID NOT SET/
7339	055704	020104	047516	020124	
7340	055712	042523	000124		
7341	055716	051124	020105	044502	EM13: .ASCIZ/TRE BIT IS SET BUT SC READS AS CLEARED/
7342	055724	020124	051511	051440	
7343	055732	052105	041040	052125	
7344	055740	051440	020103	042522	
7345	055746	042101	020123	051501	
7346	055754	041440	042514	051101	
7347	055762	042105	000		
7348	055765	127	042503	041040	EM14: .ASCIZ/WCE BIT DID NOT SET/
7349	055772	052111	042040	042111	
7350	056000	047040	052117	051440	
7351	056006	052105	000		
7352	056011	127	042503	041040	EM15: .ASCIZ/WCE BIT DID NOT SET/
7353	056016	052111	042040	042111	
7354	056024	047040	052117	051440	
7355	056032	052105	000		
7356	056035	124	042522	041040	EM16: .ASCIZ/TRE BIT NOT SET/
7357	056042	052111	047040	052117	
7358	056050	051440	052105	000	
7359	056055	127	042503	040440	EM17: .ASCIZ/WCE AND TRE ARE SET BUT SC BIT NOT SET/
7360	056062	042116	052040	042522	
7361	056070	040440	042522	051440	
7362	056076	052105	041040	052125	
7363	056104	051440	020103	044502	
7364	056112	020124	047516	020124	
7365	056120	042523	000124		
7366	056124	050125	020105	044504	EM20: .ASCIZ/UPE DID NOT SET IN RHCS2/
7367	056132	020104	047516	020124	

7368	056140	042523	020124	047111	
7369	056146	051040	041510	031123	
7370	056154	000			
7371	056155	124	042522	040440	EM21: .ASCII/TRE AND SC BITS ARE SET/
7372	056162	042116	051440	020103	
7373	056170	044502	051524	040440	
7374	056176	042522	051440	052105	
7375	056204	050125	020105	047101	EM22: .ASCIZ/UPE AND SC BIT DID NOT SET/
7376	056212	020104	041523	041040	
7377	056220	052111	042040	042111	
7378	056226	047040	052117	051440	
7379	056234	052105	000		
7380	056237	123	020103	044502	EM23: .ASCIZ/SC BIT NOT SET/
7381	056244	020124	047516	020124	
7382	056252	042523	000124		
7383	056256	042516	020104	044504	EM24: .ASCIZ/NED DID NOT SET IN RHCS2/
7384	056264	020104	047516	020124	
7385	056272	042523	020124	047111	
7386	056300	051040	041510	031123	
7387	056306	000			
7388	056307	124	042522	040440	EM25: .ASCIZ/TRE AND SC SHOULD NOT SET/
7389	056314	042116	051440	020103	
7390	056322	044123	052517	042114	
7391	056330	047040	052117	051440	
7392	056336	052105	000		
7393	056341	124	042522	051440	EM26: .ASCIZ/TRE SHOULD NOT BE SET/
7394	056346	047510	046125	020104	
7395	056354	047516	020124	042502	
7396	056362	051440	052105	000	
7397	056367	124	042522	041040	EM27: .ASCIZ/TRE BIT WAS NOT SET BY NED/
7398	056374	052111	053440	051501	
7399	056402	047040	052117	051440	
7400	056410	052105	041040	020131	
7401	056416	042516	000104		
7402	056422	054115	020106	044502	EM30: .ASCIZ/MXF BIT DID NOT SET IN RHCS2/
7403	056430	020124	044504	020104	
7404	056436	047516	020124	042523	
7405	056444	020124	047111	051040	
7406	056452	041510	031123	000	
7407	056457	115	043130	041040	EM31: .ASCIZ/MXF BIT SHOULD BE SET IN RHCS2/
7408	056464	052111	051440	047510	
7409	056472	046125	020104	042502	
7410	056500	051440	052105	044440	
7411	056506	020116	044122	051503	
7412	056514	000062			
7413	056516	054115	020106	047101	EM32: .ASCIZ/MXF AND SC ARE NOT SET/
7414	056524	020104	041523	040440	
7415	056532	042522	047040	052117	
7416	056540	051440	052105	000	
7417	056545	124	042522	051040	EM33: .ASCIZ/TRE READS AS CLEARED,MXF AND SC ARE SET/
7418	056552	040505	051504	040440	
7419	056560	020123	046103	040505	
7420	056566	042522	026104	054115	
7421	056574	020106	047101	020104	
7422	056602	041523	040440	042522	
7423	056610	051440	052105	000	

7424	056615	124	051505	042524	EM34:	.ASCIZ/TESTER DOES NOT READ AS BEING CONNECTED/
7425	056622	020122	047504	051505		
7426	056630	047040	052117	051040		
7427	056636	040505	020104	051501		
7428	056644	041040	044505	043516		
7429	056652	041440	047117	042516		
7430	056660	052103	042105	000		
7431	056665	102	052111	044440	EM35:	.ASCIZ/BIT IN RHCS3 WILL NOT SET/
7432	056672	020116	044122	051503		
7433	056700	020063	044527	046114		
7434	056706	047040	052117	051440		
7435	056714	052105	000			
7436	056717	122	020110	044504	EM36:	.ASCIZ/RH DID NOT RESPOND TO ADDRESS/
7437	056724	020104	047516	020124		
7438	056732	042522	050123	047117		
7439	056740	020104	047524	040440		
7440	056746	042104	042522	051523		
7441	056754	000				
7442	056755	104	052114	042040	EM37:	.ASCIZ/DLT DID NOT SET IN RHCS2/
7443	056762	042111	047040	052117		
7444	056770	051440	052105	044440		
7445	056776	020116	044122	051503		
7446	057004	000062				
7447	057006	046104	020124	051511	EM40:	.ASCII/DLT IS NOT SET IN RHCS2,BUT TRE AND SC ARE SET/<15><12>
7448	057014	047040	052117	051440		
7449	057022	052105	044440	020116		
7450	057030	044122	051503	026062		
7451	057036	052502	020124	051124		
7452	057044	020105	047101	020104		
7453	057052	041523	040440	042522		
7454	057060	051440	052105	005015		
7455	057066	051124	020105	047101		.ASCIZ/TRE AND SC COULD HAVE BEEN SET BY ANOTHER ERROR/
7456	057074	020104	041523	041440		
7457	057102	052517	042114	044040		
7458	057110	053101	020105	042502		
7459	057116	047105	051440	052105		
7460	057124	041040	020131	047101		
7461	057132	052117	042510	020122		
7462	057140	051105	047522	000122		
7463	057146	052517	050124	052125	EM41:	.ASCIZ/OUTPUT READY DID NOT SET WHEN INFO WAS LOADED INTO THE DATA BUFFER/
7464	057154	051040	040505	054504		
7465	057162	042040	042111	047040		
7466	057170	052117	051440	052105		
7467	057176	053440	042510	020116		
7468	057204	047111	047506	053440		
7469	057212	051501	046040	040517		
7470	057220	042504	020104	047111		
7471	057226	047524	052040	042510		
7472	057234	042040	052101	020101		
7473	057242	052502	043106	051105		
7474	057250	000				
7475	057251	101	046114	041040	EM42:	.ASCIZ/ALL BITS DID NOT LOAD INTO RHWC (177777)/
7476	057256	052111	020123	044504		
7477	057264	020104	047516	020124		
7478	057272	047514	042101	044440		
7479	057300	052116	020117	044122		

7480	057306	041527	024040	033461
7481	057314	033467	033467	000051
7482	057322	044122	041527	042040
7483	057330	042111	047040	052117
7484	057336	046040	040517	020104
7485	057344	047101	020131	044502
7486	057352	051524	024040	033461
7487	057360	033467	033467	000051
7488	057366	047523	042515	041040
7489	057374	052111	020123	046103
7490	057402	040505	042522	020104
7491	057410	047111	051040	053510
7492	057416	020103	043101	042524
7493	057424	020122	046103	020122
7494	057432	040527	020123	047514
7495	057440	042101	042105	044440
7496	057446	052116	020117	044122
7497	057454	051503	000062	
7498	057460	047516	026516	054105
7499	057466	051511	040524	052116
7500	057474	046440	046505	051117
7501	057502	020131	044502	020124
7502	057510	042523	020124	047111
7503	057516	051040	041510	031123
7504	057524	024040	042516	024515
7505	057532	000		
7506	057533	122	041110	020101
7507	057540	044504	020104	047516
7508	057546	020124	046103	020122
7509	057554	043101	042524	020122
7510	057562	046103	020122	040527
7511	057570	020123	047514	042101
7512	057576	042105	044440	052116
7513	057604	020117	044122	051503
7514	057612	000062		
7515	057614	046101	020114	044502
7516	057622	051524	042040	042111
7517	057630	047040	052117	046040
7518	057636	040517	020104	047111
7519	057644	047524	051040	041110
7520	057652	020101	030450	033467
7521	057660	033467	024466	000
7522	057665	114	040517	044504
7523	057672	043516	052040	042522
7524	057700	040440	052106	051105
7525	057706	044440	051524	051440
7526	057714	052105	042040	042517
7527	057722	020123	047516	020124
7528	057730	046103	040505	020122
7529	057736	051105	047522	000122
7530	057744	043520	020105	044504
7531	057752	020104	047516	020124
7532	057760	042523	020124	047111
7533	057766	051040	041510	031123
7534	057774	000		
7535	057775	124	042510	050040

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

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

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

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

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

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

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

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

7536	060002	047522	020115	044127
7537	060010	046111	020105	041501
7538	060016	042503	051523	047111
7539	060024	020107	020101	042522
7540	060032	044507	052123	051105
7541	060040	005015		
7542	060042	044127	041511	020110
7543	060050	047531	051125	052040
7544	060056	051505	042524	020122
7545	060064	040503	047116	052117
7546	060072	051440	050125	046120
7547	060100	020131	047111	047506
7548	060106	046522	052101	047511
7549	060114	006516	012	
7550	060117	106	051117	051440
7551	060124	054501	020123	047111
7552	060132	047506	044440	020123
7553	060140	051120	051505	047105
7554	060146	000124		
7555	060150	044122	051503	000061
7556	060156	044122	041527	000
7557	060163	122	041110	000101
7558	060170	044122	051115	000062
7559	060176	044122	051503	000062
7560	060204	044122	052123	000
7561	060211	122	042510	000122
7562	060216	044122	051501	000
7563	060223	122	052110	041104
7564	060230	000		
7565	060231	122	042110	000123
7566	060236	044122	051115	000061
7567	060244	044122	052104	000
7568	060251	122	041110	042501
7569	060256	000		
7570	060257	122	041510	031523
7571	060264	000		
7572	060265	104	053105	041511
7573	060272	020105	052516	041115
7574	060300	051105	044440	020116
7575	060306	044122	051115	020062
7576	060314	047504	051505	047040
7577	060322	052117	042440	052521
7578	060330	046101	040440	033440
7579	060336	043101	042524	020122
7580	060344	020101	046103	040505
7581	060352	000122		
7582	060354	044122	051503	020061
7583	060362	040510	020123	047101
7584	060370	042440	051122	051117
7585	060376	041040	052111	051440
7586	060404	052105	005015	000
7587	060411	105	051122	051117
7588	060416	041040	052111	051440
7589	060424	052105	044440	020116
7590	060432	044122	051503	000062
7591	060440	051105	047522	020122

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

.ASCIZ/FOR SAYS INFO IS PRESENT/

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

7592	060446	044502	020124	042523
7593	060454	020124	047111	051040
7594	060462	042510	000122	
7595	060466	051105	047522	020122
7596	060474	044502	020124	042523
7597	060502	020124	047111	051040
7598	060510	051510	006524	000012
7599	060516	044122	040502	044440
7600	060524	041516	042522	042515
7601	060532	052116	042105	041040
7602	060540	052125	044440	020124
7603	060546	044504	020104	047516
7604	060554	020124	040503	051122
7605	060562	020131	053117	051105
7606	060570	052040	020117	044122
7607	060576	040502	026105	044122
7608	060604	040502	020105	044123
7609	060612	052517	042114	036440
7610	060620	030064	000	
7611	060623	122	054504	042040
7612	060630	042111	047040	052117
7613	060636	051440	052105	040454
7614	060644	042116	053440	051117
7615	060652	020104	047503	047125
7616	060660	020124	044504	020104
7617	060666	047516	020124	047111
7618	060674	051103	046505	047105
7619	060702	006524	012	
7620	060705	104	044517	043516
7621	060712	040440	053440	044522
7622	060720	042524	047440	042520
7623	060726	040522	044524	047117
7624	060734	000		
7625	060735	122	041110	042501
7626	060742	042040	042111	047040
7627	060750	052117	041440	042514
7628	060756	051101	040440	052106
7629	060764	051105	041440	051114
7630	060772	053440	051501	046040
7631	061000	040517	042504	006504
7632	061006	012		
7633	061007	111	052116	020117
7634	061014	044122	051503	000062
7635	061022	051127	052111	020105
7636	061030	042522	042526	051522
7637	061036	020105	050117	051105
7638	061044	052101	047511	020116
7639	061052	044504	020104	047516
7640	061060	020124	047527	045522
7641	061066	000		
7642				
7643	061067	122	054504	042040
7644	061074	042111	047040	052117
7645	061102	051440	052105	044440
7646	061110	020116	044122	051503
7647	061116	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/

7648	061120	052504	044522	043516	EM103: .ASCII/DURING A WRITE OPERATION RDY DID NOT SET/<15><12>
7649	061126	040440	053440	044522	
7650	061134	042524	047440	042520	
7651	061142	040522	044524	047117	
7652	061150	051040	054504	042040	
7653	061156	042111	047040	052117	
7654	061164	051440	052105	005015	
7655	061172	047527	042122	041440	.ASCII/WORD COUNT DID NOT INCREMENT,BUT INFORMATION/<15><12>
7656	061200	052517	052116	042040	
7657	061206	042111	047040	052117	
7658	061214	044440	041516	042522	
7659	061222	042515	052116	041054	
7660	061230	052125	044440	043116	
7661	061236	051117	040515	044524	
7662	061244	047117	005015		
7663	061250	040527	020123	051127	.ASCIZ/WAS WRITTEN TO TESTER/
7664	061256	052111	042524	020116	
7665	061264	047524	052040	051505	
7666	061272	042524	000122		
7667	061276	052504	044522	043516	EM104: .ASCII/DURING A WRITE OPERATION RDY DID NOT SET/<15><12>
7668	061304	040440	053440	044522	
7669	061312	042524	047440	042520	
7670	061320	040522	044524	047117	
7671	061326	051040	054504	042040	
7672	061334	042111	047040	052117	
7673	061342	051440	052105	005015	
7674	061350	047527	042122	041440	.ASCII/WORD COUNT DID NOT INCREMENT,AND INFORMATION/<15><12>
7675	061356	052517	052116	042040	
7676	061364	042111	047040	052117	
7677	061372	044440	041516	042522	
7678	061400	042515	052116	040454	
7679	061406	042116	044440	043116	
7680	061414	051117	040515	044524	
7681	061422	047117	005015		
7682	061426	040527	020123	047516	.ASCIZ/WAS NOT TRANSFERED TO THE TESTER/
7683	061434	020124	051124	047101	
7684	061442	043123	051105	042105	
7685	061450	052040	020117	044124	
7686	061456	020105	042524	052123	
7687	061464	051105	000		
7688	061467	102	042501	044440	EM105: .ASCIZ/BAE IS MESSED UP,IT SHOULD EQUAL 40, /
7689	061474	020123	042515	051523	
7690	061502	042105	052440	026120	
7691	061510	052111	051440	047510	
7692	061516	046125	020104	050505	
7693	061524	040525	020114	030064	
7694	061532	000054			
7695	061534	040502	020105	044504	EM106: .ASCIZ/BAE DID NOT INCREMENT/
7696	061542	020104	047516	020124	
7697	061550	047111	051103	046505	
7698	061556	047105	000124		
7699	061562	042522	042101	051040	EM107: .ASCIZ/READ REV OPERATION DID NOT READ FROM TESTER TO STORAGE LOCATION (RBUF)/
7700	061570	053105	047440	042520	
7701	061576	040522	044524	047117	
7702	061604	042040	042111	047040	
7703	061612	052117	051040	040505	

7704	061620	020104	051106	046517
7705	061626	052040	051505	042524
7706	061634	020122	047524	051440
7707	061642	047524	040522	042507
7708	061650	046040	041517	052101
7709	061656	047511	020116	051050
7710	061664	052502	024506	000
7711	061671	122	041110	042501
7712	061676	042440	052521	046101
7713	061704	020123	026060	052111
7714	061712	051440	047510	046125
7715	061720	020104	050505	040525
7716	061726	020114	030064	005015
7717	061734	043101	042524	020122
7718	061742	020101	047117	020105
7719	061750	047527	042122	053440
7720	061756	044522	042524	000
7721	061763	101	033461	042040
7722	061770	042111	047040	052117
7723	061776	051440	052105	040440
7724	062004	052106	051105	041040
7725	062012	020101	040527	020123
7726	062020	047111	051103	046505
7727	062026	047105	042524	006504
7728	062034	000012		
7729	062036	040502	042040	042111
7730	062044	047040	052117	044440
7731	062052	041516	042522	042515
7732	062060	052116	000	
7733	062063	102	020101	047111
7734	062070	051103	046505	047105
7735	062076	042524	020104	052502
7736	062104	020124	052111	042040
7737	062112	042111	047040	052117
7738	062120	041440	051101	054522
7739	062126	052040	006517	012
7740	062133	101	033061	040440
7741	062140	042116	040440	033461
7742	062146	044440	020116	044122
7743	062154	051503	000061	
7744	062160	052517	050124	052125
7745	062166	051040	040505	054504
7746	062174	053440	051501	047040
7747	062202	052117	047040	043505
7748	062210	052101	042105	040440
7749	062216	052106	051105	041440
7750	062224	051114	053440	051501
7751	062232	005015		
7752	062234	047514	042101	042105
7753	062242	044440	052116	020117
7754	062250	044122	051503	000062
7755	062256	046101	020114	044502
7756	062264	051524	042040	042111
7757	062272	047040	052117	051040
7758	062300	040505	020104	047524
7759	062306	051440	047524	040522

EM110: .ASCII/RHBAE 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/B_m 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

7760	062314	042507	046040	041517	
7761	062322	020056	051050	052502	
7762	062330	024506	042040	051125	
7763	062336	047111	020107	020101	
7764	062344	042522	042101	051040	
7765	062352	053105	020056	050117	
7766	062360	051105	052101	047511	
7767	062366	000116			
7768	062370	042115	042520	042040	EM116: .ASCIZ/MDPE DID NOT SET IN RHCS2/
7769	062376	042111	047040	052117	
7770	062404	051440	052105	044440	
7771	062412	020116	044122	051503	
7772	062420	000062			
7773	062422	047111	047506	042040	EM117: .ASCII/INFO DID NOT WRITE TO TESTER DOING A/<15><12>
7774	062430	042111	047040	052117	
7775	062436	053440	044522	042524	
7776	062444	052040	020117	042524	
7777	062452	052123	051105	042040	
7778	062460	044517	043516	040440	
7779	062466	005015			
7780	062470	051127	052111	020105	.ASCIZ/WRITE REVERSE OPERATION/
7781	062476	042522	042526	051522	
7782	062504	020105	050117	051105	
7783	062512	052101	047511	000116	
7784	062520	051124	020105	047101	EM120: .ASCIZ/TRE AND SC WHERE NOT SET BY MDPE/
7785	062526	020104	041523	053440	
7786	062534	042510	042522	047040	
7787	062542	052117	051440	052105	
7788	062550	041040	020131	042115	
7789	062556	042520	000		
7790	062561	124	042522	044440	EM121: .ASCIZ/TRE IS SET IN RHCS1,MDPE AND SC/
7791	062566	020123	042523	020124	
7792	062574	047111	051040	041510	
7793	062602	030523	046454	050104	
7794	062610	020105	047101	020104	
7795	062616	041523	000		
7796	062621	123	047510	046125	.ASCIZ/SHOULD ALSO BE SET/
7797	062626	020104	046101	047523	
7798	062634	041040	020105	042523	
7799	062642	000124			
7800	062644	042115	042520	040440	EM122: .ASCIZ/MDPE AND SC SHOULD BE SET/
7801	062652	042116	051440	020103	
7802	062660	044123	052517	042114	
7803	062666	041040	020105	042523	
7804	062674	000124			
7805	062676	051124	020105	047101	EM123: .ASCIZ/TRE AND SC ARE SET, PGE SHOULD ALSO BE SET/
7806	062704	020104	041523	040440	
7807	062712	042522	051440	052105	
7808	062720	020054	043520	020105	
7809	062726	044123	052517	042114	
7810	062734	040440	051514	020117	
7811	062742	042502	051440	052105	
7812	062750	000			
7813	062751	104	046102	042040	EM124: .ASCII/DBL DID NOT SET AFTER A 4 WORD WRITE FROM/<15><12>
7814	062756	042111	047040	052117	
7815	062764	051440	052105	040440	

7816	062772	052106	051105	040440	
7817	063000	032040	053440	051117	
7818	063006	020104	051127	052111	
7819	063014	020105	051106	046517	
7820	063022	005015			
7821	063024	047101	042440	042526	.ASCIZ/AN EVEN ADDRESS/
7822	063032	020116	042101	051104	
7823	063040	051505	000123		
7824	063044	041104	020114	042523	EM125: .ASCII/DBL SET IN RHCS3 DOING A 1 WORD WRITE FROM/<15><12>
7825	063052	020124	047111	051040	
7826	063060	041510	031523	042040	
7827	063066	044517	043516	040440	
7828	063074	030440	053440	051117	
7829	063102	020104	051127	052111	
7830	063110	020105	051106	046517	
7831	063116	005015			
7832	063120	047101	042440	042526	.ASCIZ/AN EVEN ADDRESS/
7833	063126	020116	042101	051104	
7834	063134	051505	000123		
7835	063140	041104	020114	042523	EM126: .ASCII/DBL SET IN RHCS3 ON A 3 WORD WRITE FROM/<15><12>
7836	063146	020124	047111	051040	
7837	063154	041510	031523	047440	
7838	063162	020116	020101	020063	
7839	063170	047527	042122	053440	
7840	063176	044522	042524	043040	
7841	063204	047522	006515	012	
7842	063211	101	020116	053105	.ASCIZ/AN EVEN ADDRESS/
7843	063216	047105	040440	042104	
7844	063224	042522	051523	000	
7845	063231	104	046102	042040	EM127: .ASCII/DBL DID NOT SET IN RHCS3 AFTER A 2 WORD/<15><12>
7846	063236	042111	047040	052117	
7847	063244	051440	052105	044440	
7848	063252	020116	044122	051503	
7849	063260	020063	043101	042524	
7850	063266	020122	020101	020062	
7851	063274	047527	042122	005015	
7852	063302	051106	046517	040440	.ASCIZ/FROM AN EVEN ADDRESS/
7853	063310	020116	053105	047105	
7854	063316	040440	042104	042522	
7855	063324	051523	000		
7856	063327	115	050103	020105	EM130: .ASCIZ/MCPE SET IN RHCS1 BUT SC READS AS CLEARED/
7857	063334	042523	020124	047111	
7858	063342	051040	041510	030523	
7859	063350	041040	052125	051440	
7860	063356	020103	042522	042101	
7861	063364	020123	051501	041440	
7862	063372	042514	051101	042105	
7863	063400	000			
7864	063401	115	050103	020105	EM131: .ASCIZ/MCPE DID NOT SET IN RHCS1/
7865	063406	044504	020104	047516	
7866	063414	020124	042523	020124	
7867	063422	047111	051040	041510	
7868	063430	030523	000		
7869	063433	127	042503	046040	EM132: .ASCIZ/WCE LO IN RHCS3 DID NOT SET/
7870	063440	020117	047111	051040	
7871	063446	041510	031523	042040	

7872	063454	042111	047040	052117
7873	063462	051440	052105	000
7874	063467	127	042503	046040
7875	063474	020117	044123	052517
7876	063502	042114	047440	046116
7877	063510	020131	042502	051440
7878	063516	052105	044440	020116
7879	063524	044122	051503	020063
7880	063532	052502	006524	012
7881	063537	127	042503	044040
7882	063544	020111	046101	047523
7883	063552	051040	040505	051504
7884	063560	040440	020123	042523
7885	063566	000124		
7886	063570	041527	020105	047514
7887	063576	051440	052105	044440
7888	063604	020116	044122	051503
7889	063612	020063	052502	020124
7890	063620	041527	020105	044504
7891	063626	020104	047516	020124
7892	063634	042523	020124	047111
7893	063642	051040	041510	031123
7894	063650	000		
7895	063651	127	042503	044040
7896	063656	020111	044504	020104
7897	063664	047516	020124	042523
7898	063672	020124	047111	051040
7899	063700	041510	031523	000
7900	063705	127	042503	044040
7901	063712	020111	042523	020124
7902	063720	047111	051040	041510
7903	063726	031523	041040	052125
7904	063734	053440	042503	042040
7905	063742	042111	047040	052117
7906	063750	051440	052105	044440
7907	063756	020116	044122	051503
7908	063764	000062		
7909	063766	041527	020105	044510
7910	063774	051440	047510	046125
7911	064002	020104	047117	054514
7912	064010	041040	020105	042523
7913	064016	020124	047111	051040
7914	064024	041510	031523	041040
7915	064032	052125	005015	
7916	064036	041527	020105	047514
7917	064044	040440	051514	020117
7918	064052	042522	042101	020123
7919	064060	051501	051440	052105
7920	064066	000		
7921	064067	127	044522	042524
7922	064074	047440	042520	040522
7923	064102	044524	047117	042040
7924	064110	042111	047040	052117
7925	064116	044440	041516	042522
7926	064124	042515	052116	053440
7927	064132	051117	020104	047503

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/

7928	064140	047125	000124		
7929	064144	052502	020123	042101	EM141: .ASCIZ/BUS ADDRESS DID NOT INCREMENT AFTER A WRITE/
7930	064152	051104	051505	020123	
7931	064160	044504	020104	047516	
7932	064166	020124	047111	051103	
7933	064174	046505	047105	020124	
7934	064202	043101	042524	020122	
7935	064210	020101	051127	052111	
7936	064216	000105			
7937	064220	047111	047506	046522	EM142: .ASCIZ/INFORMATION DID NOT GET WRITTEN TO TESTER/
7938	064226	052101	047511	020116	
7939	064234	044504	020104	047516	
7940	064242	020124	042507	020124	
7941	064250	051127	052111	042524	
7942	064256	020116	047524	052040	
7943	064264	051505	042524	000122	
7944	064272	042522	042101	047440	EM143: .ASCIZ/READ OPERATION DID NOT INCREMENT WORD COUNT/
7945	064300	042520	040522	044524	
7946	064306	047117	042040	042111	
7947	064314	047040	052117	044440	
7948	064322	041516	042522	042515	
7949	064330	052116	053440	051117	
7950	064336	020104	047503	047125	
7951	064344	000124			
7952	064346	052502	020123	042101	EM144: .ASCII/BUS ADDRESS DID NOT INCREMENT AFTER A READ/<15><12>
7953	064354	051104	051505	020123	
7954	064362	044504	020104	047516	
7955	064370	020124	047111	051103	
7956	064376	046505	047105	020124	
7957	064404	043101	042524	020122	
7958	064412	020101	042522	042101	
7959	064420	005015			
7960	064422	050117	051105	052101	.ASCIZ/OPERATION/
7961	064430	047511	000116		
7962	064434	047111	047506	046522	EM145: .ASCIZ/INFORMATION DID NOT READ FROM TESTER/
7963	064442	052101	047511	020116	
7964	064450	044504	020104	047516	
7965	064456	020124	042522	042101	
7966	064464	043040	047522	020115	
7967	064472	042524	052123	051105	
7968	064500	000			
7969	064501	124	044510	020123	EM146: .ASCIZ/THIS IS THE CONTENTS OF THE RH REGISTERS/
7970	064506	051511	052040	042510	
7971	064514	041440	047117	042524	
7972	064522	052116	020123	043117	
7973	064530	052040	042510	051040	
7974	064536	020110	042522	044507	
7975	064544	052123	051105	000123	
7976	064552	046101	020114	044502	EM147: .ASCII/ALL BITS DID NOT GET TRANSFERED DURING A/<15><12>
7977	064560	051524	042040	042111	
7978	064566	047040	052117	043440	
7979	064574	052105	052040	040522	
7980	064602	051516	042506	042522	
7981	064610	020104	052504	044522	
7982	064616	043516	040440	005015	
7983	064624	042522	042101	047440	.ASCIZ/READ OPERATION/

7984	064632	042520	040522	044524
7985	064640	047117	000	
7986	064643	122	040505	020104
7987	064650	050117	051105	052101
7988	064656	047511	020116	044504
7989	064664	020104	047516	020124
7990	064672	042523	046505	052040
7991	064700	020117	047527	045522
7992	064706	047054	020117	005015
7993	064714	047111	047506	046522
7994	064722	052101	047511	020116
7995	064730	040527	020123	051124
7996	064736	047101	043123	051105
7997	064744	042105	052040	020117
7998	064752	052123	051117	043501
7999	064760	020105	047514	027103
8000	064766	051050	052502	024506
8001	064774	000		
8002	064775	101	046114	041040
8003	065002	052111	020123	044127
8004	065010	051105	020105	047516
8005	065016	020124	051124	047101
8006	065024	043123	051105	042105
8007	065032	052040	020117	042524
8008	065040	052123	051105	005015
8009	065046	052504	044522	043516
8010	065054	040440	053440	044522
8011	065062	042524	047440	042520
8012	065070	040522	044524	047117
8013	065076	000		
8014	065077	127	044522	042524
8015	065104	047440	042520	040522
8016	065112	044524	047117	042040
8017	065120	042111	047040	052117
8018	065126	053440	044522	042524
8019	065134	052040	020117	042524
8020	065142	052123	051105	000
8021	065147	104	046102	051440
8022	065154	052105	047440	020116
8023	065162	020101	020062	047527
8024	065170	042122	052040	040522
8025	065176	051516	042506	020122
8026	065204	044527	044124	041040
8027	065212	044501	005015	
8028	065216	042523	020124	047111
8029	065224	051040	041510	031123
8030	065232	000		
8031	065233	104	046102	051440
8032	065240	052105	044440	020116
8033	065246	044122	051503	020063
8034	065254	047117	040440	030440
8035	065262	053440	051117	020104
8036	065270	042522	042101	043040
8037	065276	047522	006515	000012
8038	065304	047101	042440	042526
8039	065312	020116	042101	051104

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

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

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

.ASCIZ/DURING A WRITE OPERATION/

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

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

.ASCIZ/SET IN RHCS2/

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

.ASCIZ/AN EVEN ADDRESS/

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

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

8152	066446	020116	053105	047105	
8153	066454	040440	042104	042522	
8154	066462	051523	000		
8155	066465	124	042522	051040	EM171: .ASCIZ/TRE READS AS SET PGE AND SC SHOULD BE SET/
8156	066472	040505	051504	040440	
8157	066500	020123	042523	020124	
8158	066506	043520	020105	047101	
8159	066514	020104	041523	051440	
8160	066522	047510	046125	020104	
8161	066530	042502	051440	052105	
8162	066536	000			
8163	066537	123	020103	044123	EM172: .ASCIZ/SC SHOULD BE SET/
8164	066544	052517	042114	041040	
8165	066552	020105	042523	000124	
8166	066560	042122	020131	047111	EM173: .ASCIZ/RDY IN RHCS1 DID NOT CAUSE AN INTERRUPT WITH IE SET/
8167	066566	051040	041510	030523	
8168	066574	042040	042111	047040	
8169	066602	052117	041440	052501	
8170	066610	042523	040440	020116	
8171	066616	047111	042524	051122	
8172	066624	050125	020124	044527	
8173	066632	044124	044440	020105	
8174	066640	042523	000124		
8175	066644	042511	053440	046111	EM174: .ASCIZ/IE WILL NOT SET IN RHCS1/
8176	066652	020114	047516	020124	
8177	066660	042523	020124	047111	
8178	066666	051040	041510	030523	
8179	066674	000			
8180	066675	111	020105	040510	EM175: .ASCIZ/IE HAS AN OPEN GOING TO THE BUS/
8181	066702	020123	047101	047440	
8182	066710	042520	020116	047507	
8183	066716	047111	020107	047524	
8184	066724	052040	042510	041040	
8185	066732	051525	000		
8186	066735	122	041510	031523	EM176: .ASCIZ/RHCS3 HAS AN ERROR BIT SET/
8187	066742	044040	051501	040440	
8188	066750	020116	051105	047522	
8189	066756	020122	044502	020124	
8190	066764	042523	000124		
8191	066770	046104	020124	047101	EM177: .ASCIZ/DLT AND TRE ARE SET,SC SHOULD BE SET/
8192	066776	020104	051124	020105	
8193	067004	051101	020105	042523	
8194	067012	026124	041523	051440	
8195	067020	047510	046125	020104	
8196	067026	042502	051440	052105	
8197	067034	000			
8198	067035	110	041111	052131	EM200: .ASCIZ/HIBYTE ,LOBYTE GATE FOR RHWC NOT WORKING PROPERLY/
8199	067042	020105	046054	041117	
8200	067050	052131	020105	040507	
8201	067056	042524	043040	051117	
8202	067064	051040	053510	020103	
8203	067072	047516	020124	047527	
8204	067100	045522	047111	020107	
8205	067106	051120	050117	051105	
8206	067114	054514	000		
8207	067117	110	041111	052131	EM201: .ASCIZ/HIBYTE ,LOBYTE GATE FOR RHDB NOT WORKING PROPERLY/

8208	067124	020105	046054	041117	
8209	067132	052131	020105	040507	
8210	067140	042524	043040	051117	
8211	067146	051040	042110	020102	
8212	067154	047516	020124	047527	
8213	067162	045522	047111	020107	
8214	067170	051120	050117	051105	
8215	067176	054514	000		
8216	067201	110	041111	052131	EM202: .ASCIZ/HIBYTE ,LOBYTE GATE FOR RHBA NOT WORKING PROPERLY/
8217	067206	020105	046054	041117	
8218	067214	052131	020105	040507	
8219	067222	042524	043040	051117	
8220	067230	051040	041110	020101	
8221	067236	047516	020124	047527	
8222	067244	045522	047111	020107	
8223	067252	051120	050117	051105	
8224	067260	054514	000		
8225	067263	124	042510	041040	EM203: .ASCIZ/THE BUS ADDRESS IS INCORRECT IT SHOULD BE 15000/
8226	067270	051525	040440	042104	
8227	067276	042522	051523	044440	
8228	067304	020123	047111	047503	
8229	067312	051122	041505	020124	
8230	067320	052111	051440	047510	
8231	067326	046125	020104	042502	
8232	067334	030440	030065	030060	
8233	067342	000			
8234	067343	124	051505	042524	EM204: .ASCIZ/TESTER DATA BUFFER DOES NOT CONTAIN THE CORRECT INFO/
8235	067350	020122	040504	040524	
8236	067356	041040	043125	042506	
8237	067364	020122	047504	051505	
8238	067372	047040	052117	041440	
8239	067400	047117	040524	047111	
8240	067406	052040	042510	041440	
8241	067414	051117	042522	052103	
8242	067422	044440	043116	000117	
8243	067430	044122	042040	042111	EM205: .ASCIZ/RH DID NOT INTERRUPT LOOK AT CS1 TO SEE IF IE IS SET/
8244	067436	047040	052117	044440	
8245	067444	052116	051105	050125	
8246	067452	020124	047514	045517	
8247	067460	040440	020124	051503	
8248	067466	020061	047524	051440	
8249	067474	042505	044440	020106	
8250	067502	042511	044440	020123	
8251	067510	042523	000124		
8252	067514	044122	041527	051440	EM206: .ASCIZ/RHWC SHOULD BE ZERO/
8253	067522	047510	046125	020104	
8254	067530	042502	055040	051105	
8255	067536	000117			
8256					
8257	067540	051124	047101	043123	EM207: .ASCIZ/TRANSFER WAS DONE ON PORT B/
8258	067546	051105	053440	051501	
8259	067554	042040	047117	020105	
8260	067562	047117	050040	051117	
8261	067570	020124	000102		
8262	067574	041520	020040	020040	DH1: .ASCII/PC TEST RHWC CONTENTS RHWC/<15><12>
8263	067602	020040	042524	052123	

8264	067610	020040	020040	044122					
8265	067616	041527	020040	020040					
8266	067624	047503	052116	047105					
8267	067632	051524	051040	053510					
8268	067640	006503	012						
8269	067643	040	020040	020040	.ASCIZ/	NO.		SHOULD HAVE BEEN/	
8270	067650	020040	047040	027117					
8271	067656	020040	020040	020040					
8272	067664	020040	020040	020040					
8273	067672	051440	047510	046125					
8274	067700	020104	040510	042526					
8275	067706	041040	042505	000116					
8276	067714	041520	020040	020040	DH2: .ASCII/PC	TEST	RHBAE	CONTENTS RHBAE/<15><12>	
8277	067722	020040	042524	052123					
8278	067730	020040	020040	044122					
8279	067736	040502	020105	020040					
8280	067744	047503	052116	047105					
8281	067752	051524	051040	041110					
8282	067760	042501	005015						
8283	067764	020040	020040	020040	.ASCIZ/	NO.		SHOULD HAVE BEEN/	
8284	067772	020040	047516	020056					
8285	070000	020040	020040	020040					
8286	070006	020040	020040	020040					
8287	070014	044123	052517	042114					
8288	070022	044040	053101	020105					
8289	070030	042502	047105	000					
8290	070035	120	020103	020040	DH3: .ASCII/PC	TEST	RHBA	CONTENTS RHBA/<15><12>	
8291	070042	020040	052040	051505					
8292	070050	020124	020040	051040					
8293	070056	041110	020101	020040					
8294	070064	041440	047117	042524					
8295	070072	052116	020123	044122					
8296	070100	040502	005015						
8297	070104	020040	020040	020040	.ASCIZ/	NO.		SHOULD HAVE BEEN/	
8298	070112	020040	047516	020056					
8299	070120	020040	020040	020040					
8300	070126	020040	020040	020040					
8301	070134	044123	052517	042114					
8302	070142	044040	053101	020105					
8303	070150	042502	047105	000					
8304	070155	120	020103	020040	DH4: .ASCII/PC	TEST	RHDB	CONTENTS RHDB/<15><12>	
8305	070162	020040	052040	051505					
8306	070170	020124	020040	051040					
8307	070176	042110	020102	020040					
8308	070204	041440	047117	042524					
8309	070212	052116	020123	044122					
8310	070220	041104	005015						
8311	070224	020040	020040	020040	.ASCIZ/	NO.		SHOULD HAVE BEEN/	
8312	070232	020040	047516	020056					
8313	070240	020040	020040	020040					
8314	070246	020040	020040	020040					
8315	070254	044123	052517	042114					
8316	070262	044040	053101	020105					
8317	070270	042502	047105	000					
8318	070275	120	020103	020040	DH5: .ASCII/PC	TEST	RHCS2	TRE AND SC/<15><12>	
8319	070302	020040	052040	051505					

8320	070310	020124	020040	051040				
8321	070316	041510	031123	020040				
8322	070324	052040	042522	040440				
8323	070332	042116	051440	006503				
8324	070340	012						
8325	070341	040	020040	020040		.ASCIZ/	NO.	BITS/
8326	070346	020040	047040	027117				
8327	070354	020040	020040	020040				
8328	070362	020040	020040	020040				
8329	070370	020040	020040	041040				
8330	070376	052111	000123					
8331	070402	041520	020040	020040	DH11:	.ASCII/PC	TEST	CONTENTS OF/<15><12>
8332	070410	020040	042524	052123				
8333	070416	020040	020040	047503				
8334	070424	052116	047105	051524				
8335	070432	047440	006506	012				
8336	070437	040	020040	020040		.ASCIZ/	NO.	RHCS2/
8337	070444	020040	047040	027117				
8338	070452	020040	020040	020040				
8339	070460	020040	044122	051503				
8340	070466	000062						
8341	070470	041520	020040	020040	DH34:	.ASCII/PC	TEST	DEVICE/<15><12>
8342	070476	020040	042524	052123				
8343	070504	020040	020040	042504				
8344	070512	044526	042503	005015				
8345	070520	020040	020040	020040		.ASCIZ/	NO.	CODE/
8346	070526	020040	047516	020056				
8347	070534	020040	020040	047503				
8348	070542	042504	000					
8349	070545	120	000103		DH35:	.ASCIZ/PC/		
8350	070550	041520	020040	020040	DH36:	.ASCII/PC	TEST	FAILING/<15><12>
8351	070556	020040	042524	052123				
8352	070564	020040	020040	040506				
8353	070572	046111	047111	006507				
8354	070600	012						
8355	070601	040	020040	020040		.ASCIZ/	NO.	ADDRESS/
8356	070606	020040	047040	027117				
8357	070614	020040	020040	040440				
8358	070622	042104	042522	051523				
8359	070630	000						
8360	070631	120	020103	020040	DH41:	.ASCIZ/PC	TEST	NUMBER/
8361	070636	020040	052040	051505				
8362	070644	020124	052516	041115				
8363	070652	051105	000					
8364	070655	120	020103	020040	DH52:	.ASCII/PC	TEST	ADDRESS DATA RHAS/<15><12>
8365	070662	020040	052040	051505				
8366	070670	020124	020040	040440				
8367	070676	042104	042522	051523				
8368	070704	020040	040504	040524				
8369	070712	020040	051040	040510				
8370	070720	006523	012					
8371	070723	040	020040	020040		.ASCIZ/	NO.	CONTENTS/
8372	070730	020040	047040	027117				
8373	070736	020040	020040	041440				
8374	070744	047117	042524	052116				
8375	070752	000123						

8376	070754	041520	020040	020040	DH71:	.ASCII/PC	TEST	DEVICE/<15><12>
8377	070762	020040	042524	052123				
8378	070770	020040	020040	042504				
8379	070776	044526	042503	005015				
8380	071004	020040	020040	020040		.ASCIZ/	NO.	NUMBER/
8381	071012	020040	047516	020056				
8382	071020	020040	020040	052516				
8383	071026	041115	051105	000				
8384	071033	120	020103	020040	DH72:	.ASCII/PC	TEST	CONTENTS OF/<15><12>
8385	071040	020040	052040	051505				
8386	071046	020124	020040	041440				
8387	071054	047117	042524	052116				
8388	071062	020123	043117	005015				
8389	071070	020040	020040	020040		.ASCIZ/	NO.	REGISTER/
8390	071076	020040	047516	020056				
8391	071104	020040	020040	051040				
8392	071112	043505	051511	042524				
8393	071120	000122						
8394	071122	041520	020040	020040	DH76:	.ASCIZ/PC	TEST NO.	RHBAE RHBA/
8395	071130	052040	051505	020124				
8396	071136	047516	020056	051040				
8397	071144	041110	042501	020040				
8398	071152	051040	041110	000101				
8399	071160	041520	020040	020040	DH105:	.ASCIZ/PC	TEST NO.	RHBAE RHBA RHWC/
8400	071166	052040	051505	020124				
8401	071174	047516	020056	044122				
8402	071202	040502	020105	020040				
8403	071210	044122	040502	020040				
8404	071216	020040	044122	041527				
8405	071224	000						
8406	071225	120	020103	020040	DH111:	.ASCIZ/PC	TEST NO.	RHCS1 RHBA RHWC/
8407	071232	020040	042524	052123				
8408	071240	047040	027117	051040				
8409	071246	041510	030523	020040				
8410	071254	051040	041110	020101				
8411	071262	020040	051040	053510				
8412	071270	000103						
8413	071272	041520	020040	020040	DH121:	.ASCIZ/PC	TEST NO.	RHCS1 RHCS2/
8414	071300	052040	051505	020124				
8415	071306	047516	020056	044122				
8416	071314	051503	020061	020040				
8417	071322	044122	051503	000062				
8418	071330	041520	020040	020040	DH130:	.ASCIZ/PC	TEST NO.	RHCS1/
8419	071336	052040	051505	020124				
8420	071344	047516	020056	044122				
8421	071352	051503	000061					
8422	071356	041520	020040	020040	DH132:	.ASCIZ/PC	TEST NO.	RHBAE RHBA RHCS2 RHCS3/
8423	071364	052040	051505	020124				
8424	071372	047516	020056	044122				
8425	071400	040502	020105	020040				
8426	071406	044122	040502	020040				
8427	071414	020040	044122	051503				
8428	071422	020062	020040	044122				
8429	071430	051503	000063					
8430	071434	041520	020040	020040	DH142:	.ASCIZ/PC	TEST NO.	EVENAD RHTDB/
8431	071442	052040	051505	020124				

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

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

8544		
8545	072404	000000
8546	072406	050334
8547	072410	050374
8548	072412	050421
8549	072414	050460
8550	072416	050517
8551	072420	050550
8552	072422	050602
8553	072424	050633
8554	072426	050677
8555	072430	050730
8556	072432	050760
8557	072434	051011
8558	072436	051041
8559	072440	051071
8560	072442	051131
8561	072444	051171
8562	072446	051233
8563	072450	051275
8564	072452	051340
8565	072454	051414
8566	072456	051456
8567	072460	051520
8568	072462	051562
8569	072464	051624
8570	072466	051666
8571	072470	051733
8572	072472	052013
8573	072474	052070
8574	072476	052145
8575	072500	052223
8576	072502	052277
8577	072504	052371
8578	072506	052456
8579	072510	052522
8580	072512	052573
8581	072514	052651
8582	072516	052740
8583	072520	053003
8584	072522	053070
8585	072524	053147
8586	072526	053234
8587	072530	053313
8588	072532	053372
8589	072534	053436
8590	072536	053502
8591	072540	053541
8592	072542	053615
8593	072544	053664
8594	072546	053737
8595	072550	054005
8596	072552	054060
8597	072554	054127
8598	072556	054202
8599	072560	054250

HEADER: 0
HED1
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HED66

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

```
8608 .SBTTL SCOPE HANDLER ROUTINE
8609
8610 ::*****
8611 ::*THIS ROUTINE CONTROLS THE LOOPING OF SUBTESTS. IT WILL INCREMENT
8612 ::*AND LOAD THE TEST NUMBER($STNM) INTO THE DISPLAY REG.(DISPLAY<7:0>)
8613 ::*AND LOAD THE ERROR FLAG ($ERFLG) INTO DISPLAY<15:08>
8614 ::*THE SWITCH OPTIONS PROVIDED BY THIS ROUTINE ARE:
8615 ::*SW14=1 LOOP ON TEST
8616 ::*SW11=1 INHIBIT ITERATIONS
8617 ::*SW09=1 LOOP ON ERROR
8618 ::*SW08=1 LOOP ON TEST IN SWR<7:0>
8619 ::*CALL
8620 ::* SCOPE ;:SCOPE=IOT
8621
8622 072602 $SCOPE:
8623 072602 032777 040000 106330 1$: BIT #BIT14,@SWR ;:LOOP ON PRESENT TEST?
8624 072610 001111 BNE $OVER ;:YES IF SW14=1
8625 ;#####START OF CODE FOR THE XOR TESTER#####
8626 072612 000416 $XTSTR: BR 6$ ;:IF RUNNING ON THE 'XOR' TESTER CHANGE
8627 ;:THIS INSTRUCTION TO A 'NOP' (NOP=240)
8628 072614 013746 000004 MOV @#ERRVEC,-(SP) ;:SAVE THE CONTENTS OF THE ERROR VECTOR
8629 072620 012737 072640 000004 MOV #5$,@#ERRVEC ;:SET FOR TIMEOUT
8630 072626 005737 177060 TST @#177060 ;:TIME OUT ON XOR?
8631 072632 012637 000004 MOV (SP)+,@#ERRVEC ;:RESTORE THE ERROR VECTOR
8632 072636 000463 BR $SVLAD ;:GO TO THE NEXT TEST
8633 072640 022626 5$: CMP (SP)+,(SP)+ ;:CLEAR THE STACK AFTER A TIME OUT
8634 072642 012637 000004 MOV (SP)+,@#ERRVEC ;:RESTORE THE ERROR VECTOR
8635 072646 000423 BR 7$ ;:LOOP ON THE PRESENT TEST
8636 072650 6$:;#####END OF CODE FOR THE XOR TESTER#####
8637 072650 032777 000400 106262 BIT #BIT08,@SWR ;:LOOP ON SPEC. TEST?
8638 072656 001404 BEQ 2$ ;:BR IF NO
8639 072660 127737 106254 001102 CMPB @SWR,$STNM ;:ON THE RIGHT TEST? SWR<7:0>
8640 072666 001462 BEQ $OVER ;:BR IF YES
8641 072670 105737 001103 2$: TSTB $ERFLG ;:HAS AN ERROR OCCURRED?
8642 072674 001421 BEQ 3$ ;:BR IF NO
8643 072676 123737 001115 001103 CMPB $ERMAX,$ERFLG ;:MAX. ERRORS FOR THIS TEST OCCURRED?
8644 072704 101015 BHI 3$ ;:BR IF NO
8645 072706 032777 001000 106224 BIT #BIT09,@SWR ;:LOOP ON ERROR?
8646 072714 001404 BEQ 4$ ;:BR IF NO
8647 072716 013737 001110 001106 7$: MOV $LPERR,$LPADR ;:SET LOOP ADDRESS TO LAST SCOPE
8648 072724 000443 BR $OVER
8649 072726 105037 001103 4$: CLRB $ERFLG ;:ZERO THE ERROR FLAG
8650 072732 005037 001212 CLR $TIMES ;:CLEAR THE NUMBER OF ITERATIONS TO MAKE
8651 072736 000415 BR 1$ ;:ESCAPE TO THE NEXT TEST
8652 072740 032777 004000 106172 3$: BIT #BIT11,@SWR ;:INHIBIT ITERATIONS?
8653 072746 001011 BNE 1$ ;:BR IF YES
8654 072750 005737 001100 TST $PASS ;:IF FIRST PASS OF PROGRAM
8655 072754 001406 BEQ 1$ ;: INHIBIT ITERATIONS
8656 072756 005237 001104 INC $ICNT ;:INCREMENT ITERATION COUNT
8657 072762 023737 001212 001104 CMP $TIMES,$ICNT ;:CHECK THE NUMBER OF ITERATIONS MADE
8658 072770 002021 BGE $OVER ;:BR IF MORE ITERATION REQUIRED
8659 072772 012737 000001 001104 1$: MOV #1,$ICNT ;:REINITIALIZE THE ITERATION COUNTER
8660 073000 013737 073050 001212 MOV $MXCNT,$TIMES ;:SET NUMBER OF ITERATIONS TO DO
8661 073006 105237 001102 $SVLAD: INCB $STNM ;:COUNT TEST NUMBERS
8662 073012 011637 001106 MOV (SP),$LPADR ;:SAVE SCOPE LOOP ADDRESS
8663 073016 011637 001110 MOV (SP),$LPERR ;:SAVE ERROR LOOP ADDRESS
```

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8664 073022 005037 001214          CLR      $ESCAPE          ;;CLEAR THE ESCAPE FROM ERROR ADDRESS
8665 073026 112737 000001 001115    MOV      #1,$SERMAX      ;;ONLY ALLOW ONE(1) ERROR ON NEXT TEST
8666 073034 013777 001102 106100    $OVER:  MOV      $TSTNM,@DISPLAY ;;DISPLAY TEST NUMBER
8667 073042 013716 001106          MOV      $LPADR,(SP)     ;;FUDGE RETURN ADDRESS
8668 073046 000002          RTI                      ;;FIXES PS
8669 073050 000100          $MXCNT: 100             ;;MAX. NUMBER OF ITERATIONS
8670          .SBTTL POWER DOWN AND UP ROUTINES
8671
8672          ;;*****
8673          :POWER DOWN ROUTINE
8674 073052 012737 073212 000024    $PWRDN: MOV      #$ILLUP,@#PWRVEC ;;SET FOR FAST UP
8675 073060 012737 000340 000026    MOV      #340,@#PWRVEC+2 ;;PRIO:7
8676 073066 010046          MOV      R0,-(SP)       ;;PUSH R0 ON STACK
8677 073070 010146          MOV      R1,-(SP)       ;;PUSH R1 ON STACK
8678 073072 010246          MOV      R2,-(SP)       ;;PUSH R2 ON STACK
8679 073074 010346          MOV      R3,-(SP)       ;;PUSH R3 ON STACK
8680 073076 010446          MOV      R4,-(SP)       ;;PUSH R4 ON STACK
8681 073100 010546          MOV      R5,-(SP)       ;;PUSH R5 ON STACK
8682 073102 017746 106032          MOV      @SWR,-(SP)     ;;PUSH @SWR ON STACK
8683 073106 010637 073216          MOV      SP,$SAVR6      ;;SAVE SP
8684 073112 012737 073124 000024    MOV      #$PWRUP,@#PWRVEC ;;SET UP VECTOR
8685 073120 000000          HALT
8686 073122 000776          BR      -2              ;;HANG UP
8687
8688          ;;*****
8689          :POWER UP ROUTINE
8690 073124 012737 073212 000024    $PWRUP: MOV      #$ILLUP,@#PWRVEC ;;SET FOR FAST DOWN
8691 073132 013706 073216          MOV      $SAVR6,SP      ;;GET SP
8692 073136 005037 073216          CLR      $SAVR6        ;;WAIT LOOP FOR THE TTY
8693 073142 005237 073216          1$:    INC      $SAVR6    ;;WAIT FOR THE INC
8694 073146 001375          BNE     1$              ;;OF WORD
8695 073150 012677 105764          MOV      (SP)+,@SWR     ;;POP STACK INTO @SWR
8696 073154 012605          MOV      (SP)+,R5      ;;POP STACK INTO R5
8697 073156 012604          MOV      (SP)+,R4      ;;POP STACK INTO R4
8698 073160 012603          MOV      (SP)+,R3      ;;POP STACK INTO R3
8699 073162 012602          MOV      (SP)+,R2      ;;POP STACK INTO R2
8700 073164 012601          MOV      (SP)+,R1      ;;POP STACK INTO R1
8701 073166 012600          MOV      (SP)+,R0      ;;POP STACK INTO R0
8702 073170 012737 073052 000024    MOV      #$PWRDN,@#PWRVEC ;;SET UP THE POWER DOWN VECTOR
8703 073176 012737 000340 000026    MOV      #340,@#PWRVEC+2 ;;PRIO:7
8704 073204 104401          TYPE          ;;REPORT THE POWER FAILURE
8705 073206 073220          $PWRMG: .WORD $POWER   ;;POWER FAIL MESSAGE POINTER
8706 073210 000002          RTI
8707 073212 000000          $ILLUP: HALT          ;;THE POWER UP SEQUENCE WAS STARTED
8708 073214 000776          BR      -2              ;; BEFORE THE POWER DOWN WAS COMPLETE
8709 073216 000000          $SAVR6: 0              ;;PUT THE SP HERE
8710 073220 005015 047520 042527    $POWER: .ASCIZ <15><12>'POWER'
8711 073226 000122
8712          .EVEN
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8730 073230 105737 001157
8731 073234 100002
8732 073236 000000
8733 073240 000407
8734 073242 010046
8735 073244 017600 000002
8736 073250 112046
8737 073252 001005
8738 073254 005726
8739 073256 012600
8740 073260 062716 000002
8741 073264 000002
8742 073266 122716 000011
8743 073272 001430
8744 073274 122716 000200
8745 073300 001006
8746 073302 005726
8747 073304 104401
8748 073306 001223
8749 073310 105037 073444
8750 073314 000755
8751 073316 004737 073400
8752 073322 123726 001156
8753 073326 001350
8754 073330 013746 001154
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8756 073334 105366 000001
8757 073340 002770
8758 073342 004737 073400
8759 073346 105337 073444
8760 073352 000770
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8764 073354 112716 000040
8765 073360 004737 073400
8766 073364 132737 000007 073444
8767 073372 001372
8768 073374 005726

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.SBTTL TYPE ROUTINE

:*****
:*ROUTINE TO TYPE ASCIZ MESSAGE. MESSAGE MUST TERMINATE WITH A 0 BYTE.
:*THE ROUTINE WILL INSERT A NUMBER OF NULL CHARACTERS AFTER A LINE FEED.
:*NOTE1: $NULL CONTAINS THE CHARACTER TO BE USED AS THE FILLER CHARACTER.
:*NOTE2: $FILLS CONTAINS THE NUMBER OF FILLER CHARACTERS REQUIRED.
:*NOTE3: $FILLC CONTAINS THE CHARACTER TO FILL AFTER.
:*
:*CALL:
:*1) USING A TRAP INSTRUCTION
:* TYPE ,MESADR ;;MESADR IS FIRST ADDRESS OF AN ASCIZ STRING
:*OR
:* TYPE
:* MESADR
:*
$TYPE: TSTB $TPFLG ;;IS THERE A TERMINAL?
BPL 1$ ;;BR IF YES
HALT ;;HALT HERE IF NO TERMINAL
BR 3$ ;;LEAVE
1$: MOV RO,-(SP) ;;SAVE RO
MOV @2(SP),RO ;;GET ADDRESS OF ASCIZ STRING
2$: MOVB (RO)+,-(SP) ;;PUSH CHARACTER TO BE TYPED ONTO STACK
BNE 4$ ;;BR IF IT ISN'T THE TERMINATOR
TST (SP)+ ;;IF TERMINATOR POP IT OFF THE STACK
60$: MOV (SP)+,RO ;;RESTORE RO
3$: ADD #2,(SP) ;;ADJUST RETURN PC
RTI ;;RETURN
4$: CMPB #HT,(SP) ;;BRANCH IF <HT>
BEQ 8$
CMPB #CRLF,(SP) ;;BRANCH IF NOT <CRLF>
BNE 5$
TST (SP)+ ;;POP <CR><LF> EQUIV
TYPE A CR AND LF
$CRLF
CLRB $CHARCNT ;;CLEAR CHARACTER COUNT
BR 2$ ;;GET NEXT CHARACTER
5$: JSR PC,$TYPEPC ;;GO TYPE THIS CHARACTER
6$: CMPB $FILLC,(SP)+ ;;IS IT TIME FOR FILLER CHARS.?
BNE 2$ ;;IF NO GO GET NEXT CHAR.
MOV $NULL,-(SP) ;;GET # OF FILLER CHARS. NEEDED
;;AND THE NULL CHAR.
7$: DECB 1(SP) ;;DOES A NULL NEED TO BE TYPED?
BLT 6$ ;;BR IF NO--GO POP THE NULL OFF OF STACK
JSR PC,$TYPEPC ;;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,$TYPEPC ;;TYPE A SPACE
BITB #7,$CHARCNT ;;BRANCH IF NOT AT
BNE 9$ ;;TAB STOP
TST (SP)+ ;;POP SPACE OFF STACK

```

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

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8808 073450 017646 000000
8809 073454 116637 000001 073673
8810 073462 112637 073675
8811 073466 062716 000002
8812 073472 000406
8813 073474 112737 000001 073673
8814 073502 112737 000006 073675
8815 073510 112737 000005 073672
8816 073516 010346
8817 073520 010446
8818 073522 010546
8819 073524 113704 073675
8820 073530 005404
8821 073532 062704 000006
8822 073536 110437 073674
8823 073542 113704 073673
8824 073546 016605 000012
8825 073552 005003
8826 073554 006105
8827 073556 000404
8828 073560 006105
8829 073562 006105
8830 073564 006105
8831 073566 010503
8832 073570 006103
8833 073572 105337 073674
8834 073576 100016
8835 073600 042703 177770
8836 073604 001002
8837 073606 005704
8838 073610 001403

.SBTTL BINARY TO OCTAL (ASCII) AND TYPE

```

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

```

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

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8860 .SBTTL CONVERT BINARY TO DECIMAL AND TYPE ROUTINE
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8872 073676
8873 073676 010046
8874 073700 010146
8875 073702 010246
8876 073704 010346
8877 073706 010546
8878 073710 012746 020200
8879 073714 016605 000020
8880 073720 100004
8881 073722 005405
8882 073724 112766 000055 000001
8883 073732 005000 1$:
8884 073734 012703 074112
8885 073740 112723 000040
8886 073744 005002 2$:
8887 073746 016001 074102
8888 073752 160105 3$:
8889 073754 002402
8890 073756 005202
8891 073760 000774
8892 073762 060105 4$:
8893 073764 005702
8894 073766 001002
8895 073770 105716
8896 073772 100407
8897 073774 106316 5$:
8898 073776 103003
8899 074000 116663 000001 177777
8900 074006 052702 000060 6$:
8901 074012 052702 000040 7$:
8902 074016 110223
8903 074020 005720
8904 074022 020027 000010
8905 074026 002746
8906 074030 003002
8907 074032 010502
8908 074034 000764
8909 074036 105726 8$:
8910 074040 100003 9$:
8911 074042 116663 177777 177776
8912 074050 105013
8913 074052 012605
8914 074054 012603
8915 074056 012602

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

```

```

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

```

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

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8934 074122
8935 074122 104401 001223
8936 074126 010046
8937 074130 005000
8938 074132 153700 001114
8939 074136 001004
8940
8941 074140 013746 001116
8942
8943 074144 104402
8944 074146 000426
8945 074150 005300
8946 074152 006300
8947 074154 006300
8948 074156 006300
8949 074160 062700 001226
8950 074164 012037 074174
8951 074170 001404
8952 074172 104401
8953 074174 000000
8954 074176 104401 001223
8955 074202 012037 074212
8956 074206 001404
8957 074210 104401
8958 074212 000000
8959 074214 104401 001223
8960 074220 011000
8961 074222 001004
8962 074224 012600
8963 074226 104401 001223
8964 074232 000207
8965 074234
8966 074234 013046
8967 074236 104402
8968 074240 005710
8969 074242 001770
8970 074244 104401 074252
8971 074250 000771
8972 074252 020040 000
8973 074256

```

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

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8988 074256
8989 074256 105237 001103
8990 074262 001775
8991 074264 013777 001102 104650
8992 074272 032777 002000 104640
8993 074300 001402
8994 074302 104401 001216
8995 074306 005237 001112
8996 074312 011637 001116
8997 074316 162737 000002 001116
8998 074324 117737 104566 001114
8999 074332 032777 020000 104600
9000 074340 001004
9001 074342 004737 050076
9002 074346 104401 001223
9003 074352
9004 074352 005777 104562
9005 074356 100001
9006 074360 000000
9007 074362 032777 001000 104550
9008 074370 001402
9009 074372 013716 001110
9010 074376 005737 001214
9011 074402 001402
9012 074404 013716 001214
9013 074410
9014 074410 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 @ $ERRPC,$ITEMB ;;STRIP AND SAVE THE ERROR ITEM CODE
    BIT  #BIT13,@SWR  ;;SKIP TYPEOUT IF SET
    BNE  20$         ;;SKIP TYPEOUTS
    JSR  PC,TSTNMB   ;;GO TO USER ERROR ROUTINE
    TYPE ,SCRLF

20$:
2$:  TST  @SWR        ;;HALT ON ERROR
    BPL  3$          ;;SKIP IF CONTINUE
    HALT                          ;;HALT ON ERROR!
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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9031 074412 011646
9032 074414 016666 000004 000002
9033 074422 105777 104516
9034 074426 100375
9035 074430 117766 104512 000004
9036 074436 042766 177600 000004
9037 074444 026627 000004 000023
9038 074452 001013
9039 074454 105777 104464
9040 074460 100375
9041 074462 117746 104460
9042 074466 042716 177600
9043 074472 022627 000021
9044 074476 001366
9045 074500 000750
9046 074502 026627 000004 000140
9047 074510 002407
9048 074512 026627 000004 000175
9049 074520 003003
9050 074522 042766 000040 000004
9051 074530 000002
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9059 074532 010346
9060 074534 012703 074640
9061 074540 022703 074650
9062 074544 101405
9063 074546 104406
9064 074550 112613
9065 074552 122713 000177
9066 074556 001003
9067 074560 104401 001222
9068 074564 000763
9069 074566 111337 074636
9070 074572 104401 074636

```
.SBTTL TTY INPUT ROUTINE

:*****
:ENABL LSB

.DSABL LSB

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

$RDCHR: MOV      (SP),-(SP)      ;;PUSH DOWN THE PC
        MOV      4(SP),2(SP)    ;;SAVE THE PS
1$:     TSTB     @TKS           ;;WAIT FOR
        BPL      1$             ;;A CHARACTER
        MOVB     @TKB,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
2$:     TSTB     @TKS           ;;WAIT FOR A CHARACTER
        BPL      2$           ;;LOOP UNTIL ITS THERE
        MOVB     @TKB,-(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
3$:     CMP      4(SP),#140    ;;IS IT UPPER CASE?
        BLT      4$           ;;BRANCH IF YES
        CMP      4(SP),#175   ;;IS IT A SPECIAL CHAR?
        BGT      4$           ;;BRANCH IF YES
        BIC      #40,4(SP)    ;;MAKE IT UPPER CASE
4$:     RTI                    ;;GO BACK TO USER

:*****
:*THIS ROUTINE WILL INPUT A STRING FROM THE TTY
:*CALL:
:*      RDLIN          ;;INPUT A STRING FROM THE TTY
:*      RETURN HERE   ;;ADDRESS OF FIRST CHARACTER WILL BE ON THE STACK
:*                   ;;TERMINATOR WILL BE A BYTE OF ALL 0'S

$RDLIN: MOV      R3,-(SP)      ;;SAVE R3
1$:     MOV      #$TTYIN,R3    ;;GET ADDRESS
2$:     CMP      #$TTYIN+8.,R3 ;;BUFFER FULL?
        BLOS     4$           ;;BR IF YES
        RDCHR    ;;GO READ ONE CHARACTER FROM THE TTY
        MOVB     (SP)+,(R3)    ;;GET CHARACTER
10$:    CMPB     #177,(R3)     ;;IS IT A RUBOUT
        BNE     3$           ;;SKIP IF NOT
4$:     TYPE     ,SQUES       ;;TYPE A '?'
        BR       1$           ;;CLEAR THE BUFFER AND LOOP
3$:     MOVB     (R3),9$      ;;ECHO THE CHARACTER
        TYPE     ,9$
```

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


```
9089 .SBTTL READ AN OCTAL NUMBER FROM THE TTY
9090
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9099 074704 011646 000004 000002 $RDOCT: MOV (SP),-(SP) ;;PROVIDE SPACE FOR THE
9100 074706 016666 000004 000002 MOV 4(SP),2(SP) ;;INPUT NUMBER
9101 074714 010046 MOV R0,-(SP) ;;PUSH R0 ON STACK
9102 074716 010146 MOV R1,-(SP) ;;PUSH R1 ON STACK
9103 074720 010246 MOV R2,-(SP) ;;PUSH R2 ON STACK
9104 074722 104407 1$: RDLIN ;;READ AN ASCII LINE
9105 074724 012600 MOV (SP)+,R0 ;;GET ADDRESS OF 1ST CHARACTER
9106 074726 005001 CLR R1 ;;CLEAR DATA WORD
9107 074730 005002 CLR R2
9108 074732 112046 2$: MOVB (R0)+,-(SP) ;;PICKUP THIS CHARACTER
9109 074734 001412 BEQ 3$ ;;IF ZERO GET OUT
9110 074736 006301 ASL R1 ;;*2
9111 074740 006102 ROL R2
9112 074742 006301 ASL R1 ;;*4
9113 074744 006102 ROL R2
9114 074746 006301 ASL R1 ;;*8
9115 074750 006102 ROL R2
9116 074752 042716 177770 BIC #^C7,(SP) ;;STRIP THE ASCII JUNK
9117 074756 062601 ADD (SP)+,R1 ;;ADD IN THIS DIGIT
9118 074760 000764 BR 2$ ;;LOOP
9119 074762 005726 3$: TST (SP)+ ;;CLEAN TERMINATOR FROM STACK
9120 074764 010166 000012 MOV R1,12(SP) ;;SAVE THE RESULT
9121 074770 010237 075004 MOV R2,$HIOCT
9122 074774 012602 MOV (SP)+,R2 ;;POP STACK INTO R2
9123 074776 012601 MOV (SP)+,R1 ;;POP STACK INTO R1
9124 075000 012600 MOV (SP)+,R0 ;;POP STACK INTO R0
9125 075002 000002 RTI ;;RETURN
9126 075004 000000 $HIOCT: .WORD 0 ;;HIGH ORDER BITS GO HERE
```

```

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9135 075006 010046
9136 075010 016600 000002
9137 075014 005740
9138 075016 111000
9139 075020 006300
9140 075022 016000 075042
9141 075026 000200
9142
9143
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9146 075030 011646
9147 075032 016666 000004 000002
9148 075040 000002
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9157 075042 075030
9158 075044 073230
9159 075046 073474
9160 075050 073450
9161 075052 073510
9162 075054 073676
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9164
9165 075056 074412
9166 075060 074532
9167 075062 074704
9168 000001

```

.SBTTL TRAP DECODER

```

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

```

```

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

```

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

```

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

```

.SBTTL TRAP TABLE

```

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

```

```

:      ROUTINE
:      -----
$TRPAD: .WORD  $TRAP2
        $TYPE  ;;CALL=TYPE      TRAP+1(104401)  TTY TYPEOUT ROUTINE
        $TYPOC ;;CALL=TYPOC    TRAP+2(104402)  TYPE OCTAL NUMBER (WITH LEADING ZEROS)
        $TYPOS ;;CALL=TYPOS    TRAP+3(104403)  TYPE OCTAL NUMBER (NO LEADING ZEROS)
        $TYPON ;;CALL=TYPON    TRAP+4(104404)  TYPE OCTAL NUMBER (AS PER LAST CALL)
        $TYPDS ;;CALL=TYPDS    TRAP+5(104405)  TYPE DECIMAL NUMBER (WITH SIGN)

        $RDCHR ;;CALL=RDCHR    TRAP+6(104406)  TTY TYPEIN CHARACTER ROUTINE
        $RDLIN ;;CALL=RDLIN    TRAP+7(104407)  TTY TYPEIN STRING ROUTINE
        $RDOCT ;;CALL=RDOCT    TRAP+10(104410) READ AN OCTAL NUMBER FROM TTY

```

.END

DEVIC1	003366	1629#	1861*	1876*	1903	1912*	1915	1918	1921	1985	1991	2375	6471	6473
		6478	6483											
DEVIC2	003370	1630#	1879*	1888*	1933*	1936	1939	1942	6487	6489	6495			
DEVIC3	003372	1631#	1882*	1892*	1954*	1957	1960	1963	6498	6500	6506			
DEVIC4	003374	1632#	1885*	1896*	1975*	1978	1982	6509	6511	6517				
DEVIC5	003400	1635#	1921*	1942*	1963*	1982*	1985*	1993	2000	6473*	6478*	6489*	6500*	6511*
		6520	6527											
DF1	072306	596	1078	1101	8516#									
DF105	072362	1116	1121	1137	1142	1148	1296	8536#						
DF11	072332	646	831	1176	8526#									
DF132	072367	1233	1239	1245	1250	1255	1260	8538#						
DF170	072375	1400	8540#											
DF172	072400	1031	8541#											
DF2	072312	603	1084	1089	8518#									
DF3	072316	609	8520#											
DF34	072335	823	8527#											
DF35	072340	849	858	8528#										
DF36	072341	840	1223	8529#										
DF4	072322	615	8522#											
DF41	072344	868	1444	1449	1454	1459	1464	1469	1474	8530#				
DF5	072326	621	628	633	639	653	663	671	680	691	703	710	720	729
		739	746	756	769	776	784	794	802	813	8524#			
DF52	072346	937	8531#											
DF71	072353	1041	1050	1058	1066	8533#								
DF76	072356	1072	1170	1182	1187	1275	1290	1302	1307	1312	1318	1434	1439	8534#
DH1	067574	594	1076	1099	8262#									
DH105	071160	1114	1119	8399#										
DH11	070402	644	1174	8331#										
DH111	071225	1135	1140	1146	8406#									
DH121	071272	1180	1185	1432	1437	8413#								
DH130	071330	1221	1226	8418#										
DH132	071356	1231	1237	1243	1248	1253	1258	8422#						
DH142	071434	1273	1288	8430#										
DH146	071472	1294	8435#											
DH147	071537	1168	1300	1305	1310	1316	8442#							
DH170	071575	1398	8448#											
DH171	071623	829	8452#											
DH172	071651	1027	8456#											
DH2	067714	601	1082	1087	8276#									
DH3	070035	607	8290#											
DH34	070470	819	8341#											
DH35	070545	845	856	8349#										
DH36	070550	836	1228	8350#										
DH4	070155	613	8304#											
DH41	070631	864	1442	1447	1452	1457	1462	1467	1472	8360#				
DH5	070275	619	626	631	637	651	661	669	678	689	701	708	718	727
		737	744	754	767	774	782	792	800	811	8318#			
DH52	070655	933	8364#											
DH71	070754	8376#												
DH72	071033	1037	1047	1056	1064	8384#								
DH76	071122	1070	8394#											
DISPLA	001142	545#	1808*	1816*	8666*	8991*								
DISPRE	000174	462#	1816											
DLT =	100000	1513#	2105	3110	3252	3357	3447	3554	3659	3762	3863	3964	4052	6765
DMD =	000001	1570#	5296	5303	5308	5309	5310	5311	5437	5444	5449	5450	5451	5452
		5578	5585	5590	5591	5592	5593	5719	5726	5731	5732	5733	5734	5860

EM100	060735	1080	7625#
EM101	061022	1086	7635#
EM102	061067	1091	7643#
EM103	061120	1096	7648#
EM104	061276	1103	7667#
EM105	061467	1111	7688#
EM106	061534	1118	7695#
EM107	061562	1123	7699#
EM11	055635	641	7332#
EM110	061671	1128	7711#
EM111	061763	1134	7721#
EM112	062036	1139	7729#
EM113	062063	1144	7733#
EM114	062160	1150	7744#
EM115	062256	1156	7755#
EM116	062370	1161	7768#
EM117	062422	1166	7773#
EM12	055676	648	7338#
EM120	062520	1172	7784#
EM121	062561	1178	7790#
EM122	062644	1184	7800#
EM123	062676	1189	7805#
EM124	062751	1196	7813#
EM125	063044	1202	7824#
EM126	063140	1208	7835#
EM127	063231	1214	7845#
EM13	055716	656	7341#
EM130	063327	1220	7856#
EM131	063401	1225	7864#
EM132	063433	1230	7869#
EM133	063467	1235	7874#
EM134	063570	1241	7886#
EM135	063651	1247	7895#
EM136	063705	1252	7900#
EM137	063766	1257	7909#
EM14	055765	666	7348#
EM140	064067	1262	7921#
EM141	064144	1267	7929#
EM142	064220	1272	7937#
EM143	064272	1277	7944#
EM144	064346	1282	7952#
EM145	064434	1287	7962#
EM146	064501	1292	7969#
EM147	064552	1298	7976#
EM15	056011	674	7352#
EM150	064643	1304	7986#
EM151	064775	1309	8002#
EM152	065077	1314	8014#
EM153	065147	1320	8021#
EM154	065233	1326	8031#
EM155	065324	1332	8041#
EM156	065412	1338	8051#
EM157	065503	1344	8062#
EM16	056035	683	7356#
EM160	065577	1350	8073#
EM161	065666	1356	8083#

EM162	065755	1362	8093#
EM163	066044	1367	8104#
EM164	066122	1373	8113#
EM165	066211	1379	8123#
EM166	066307	1385	8135#
EM167	066366	1391	8144#
EM17	056055	693	7359#
EM171	066465	1402	8155#
EM172	066537	1409	8163#
EM173	066560	1415	8166#
EM174	066644	1421	8175#
EM175	066675	1426	8180#
EM176	066735	1431	8186#
EM177	066770	1436	8191#
EM2	055072	598	7268#
EM20	056124	706	7366#
EM200	067035	1441	8198#
EM201	067117	1446	8207#
EM202	067201	1451	8216#
EM203	067263	1456	8225#
EM204	067343	1461	8234#
EM205	067430	1466	8243#
EM206	067514	1471	8252#
EM207	067540	1476	8257#
EM21	056155	713	7371#
EM22	056204	723	7375#
EM23	056237	732	7380#
EM24	056256	742	7383#
EM25	056307	749	7388#
EM26	056341	759	7393#
EM27	056367	772	7397#
EM3	055132	605	7274#
EM30	056422	779	7402#
EM31	056457	787	7407#
EM32	056516	797	7413#
EM33	056545	805	7417#
EM34	056615	816	7424#
EM35	056665	826	7431#
EM36	056717	834	7436#
EM37	056755	843	7442#
EM4	055206	611	7282#
EM40	057006	852	7447#
EM41	057146	861	7463#
EM42	057251	872	7475#
EM43	057322	880	7482#
EM44	057366	886	7488#
EM45	057460	894	7498#
EM46	057533	901	7506#
EM47	057614	908	7515#
EM5	055246	617	7288#
EM50	057665	915	7522#
EM51	057744	922	7530#
EM52	057775	928	7535#
EM53	060150	940	7555#
EM54	060156	946	7556#
EM55	060163	952	7557#

IETST	034446	5170	5213#																
IE3 =	000100	1521#	2030	2042	2457	3555	3660	6770											
ILF =	000001	1559#	2120	3113	3765	3866													
IN	044454	6360#	6435																
IOTVEC=	000020	448#	1790*	1791*															
IPCK0 =	000001	1517#	2030	2042	6770														
IPCK1 =	000002	1518#	2030	2042	6770														
IPCK2 =	000004	1519#	2030	2042	3502	6770													
IPCK3 =	000010	1520#	2030	2042	6770														
IR =	000100	1504#	6750	6765															
IS	045702	6460	6509#																
ISLK =	002000	1580#	5860	5867	5872	5873	5874	5875	6001	6008	6013	6014	6015	6016					
ITDO	007610	2234#																	
JUMP	022652	3812	3814#																
KIPAR0=	172340	497#																	
KIPAR1=	172342	498#																	
KIPAR2=	172344	499#																	
KIPAR3=	172346	500#																	
KIPAR4=	172350	501#																	
KIPAR5=	172352	502#																	
KIPAR6=	172354	503#																	
KIPAR7=	172356	504#																	
KIPDR0=	172300	486#																	
KIPDR1=	172302	487#																	
KIPDR2=	172304	488#																	
KIPDR3=	172306	489#																	
KIPDR4=	172310	490#																	
KIPDR5=	172312	491#																	
KIPDR6=	172314	492#																	
KIPDR7=	172316	493#																	
KONG	004644	1853	1855#	1905															
LEAGUE	034124	5149	5151	5154	5156#														
LEAP	023404	3913	3915#																
LEAVE	007230	2124	2147	2161#															
LEFOUT	034112	5153#																	
LERADD=	177740	1640#	6706																
LF =	000012	354#	8777	8783															
LOOCNT	003450	1723#	2447*	2455*	2734*	2780	2782*	2784*	2787	2789*	6359*	6430	6432*	6436*					
LOOKED	047756	2142	6753#																
LOOKFO	047732	2137	6748#																
MCLK =	000002	1571#	5296	5308	5310	5437	5449	5451	5578	5590	5592	5719	5731	5733					
		5860	5872	5874	6001	6013	6015	6142	6154	6156	6283	6295	6297						
MCPE =	020000	1544#	2098	3076	3109	3218	3251	3323	3413	3520	3625	3728	3761	3829					
		3930	4047																
MCPET	024224	4018	4023	4025	4027#														
MEMERR=	177744	1642#	6713																
MINUS	004120	1753#	2567	2573	2709	2715													
MITE	032670	4978	4983	4985	4987#														
MIXIT	023466	3919	3924	3926	3928#														
MMVEC =	000250	475#																	
MOAR	046524	6610#	6616																
MOL =	010000	1553#	6760																
MOOR	046534	6612#	6641																
MORE	046670	6627#	6637																
MORE2	046660	6625#	6631																
MPE =	000400	1506#	2105	3110	3252	3344	3393	3447	3554	3659	3762	3863	3964	4052					

RBUF2	004104	1742#														
RBUF3	004106	1743#														
RBUF4	004110	1744#														
RBUF5	004112	1745#														
RBUF6	004114	1746#														
RBUF7	004116	1747#														
RDCHR =	104406	9063	9165#													
RDLIN =	104407	9104	9166#													
RDOCT =	104410	1860	1866	1872	1911	1932	1953	1974	9167#							
RDY =	000200	1539#	2738	2743	2764	2888	2893	2914	2972	2977	3063	3068	3076	3093		
		3168	3173	3185	3190	3196	3205	3210	3218	3235	3311	3316	3323	3340		
		3413	3430	3508	3513	3520	3537	3613	3618	3625	3642	3716	3721	3728		
		3745	3817	3822	3829	3846	3930	3947	4017	4022	4043	4082	4087	4108		
		4131	4136	4157	4181	4186	4207	4231	4236	4257	4286	4291	4312	4339		
		4344	4365	4392	4397	4418	4445	4450	4471	4498	4503	4524	4551	4556		
		4577	4604	4609	4630	4657	4662	4683	4710	4715	4736	4763	4768	4789		
		4816	4821	4842	4869	4874	4895	4922	4927	4948	4977	4982	5003	5012		
		5017	5038	5074	5079	5100	5114	5119	5140	5179	5184	5205	5238	5243		
		5265	5314	5319	5341	5379	5384	5406	5455	5460	5482	5520	5525	5547		
		5596	5601	5623	5661	5666	5688	5737	5742	5764	5802	5807	5829	5878		
		5883	5905	5943	5948	5970	6019	6024	6046	6084	6089	6111	6160	6165		
		6187	6225	6230	6252	6301	6306	6328	6378	6383	6389	6411	6724	6729		
		6735	6745													
RDYSET	013566	2765	2768#													
READY	034164	5168	5170#													
READ0 =	000071	1691#	3061	3307	4284	4655	4708	4867	5236	5443						
READ1 =	000072	1692#														
READ2 =	000073	1693#	5377	5725												
READ3 =	000074	1694#														
READ4 =	000075	1695#	5518	6007												
READ5 =	000076	1696#														
READ6 =	000077	1697#	3076	3218	3323	3413	3520	3625	3728	3829	3930	4761	4814	4920		
		5659	6289	6745												
REGEND	003404	1643#	1776*	1873*	1874*	2001	6528									
RESTAR	006054	1887	1891	1895	1899	1941	1962	1981	1985#							
RESTAT	045366	1938	1959	1980	6462	6476#	6488	6499	6510							
RESVEC =	000010	444#														
RETAIN	003410	1645#	1922*	1943*	1964*	1983*	1986*	2024	6474*	6485*	6490*	6501*	6512*			
RETURN	046712	6620	6629	6632#												
RFAIL =	000100	1564#	2120	3113	3765	3866										
RHAS	003346	1620#	2389													
RHBA	003334	1615#	2191	2234*	2235	2240	2253	2256	2261	2280	2327	2465	2500	2527		
		2551	2600	2633*	2634	2635	2640	2661*	2662	2663	2668	2684*	2685	2686		
		2692	2707	2708*	2710	2714*	2716	2751	2807	2846	2885*	2901	2963*	2985		
		3012	3030	3052*	3055*	3080	3164*	3201*	3222	3306*	3327	3417	3505*	3524		
		3610*	3629	3712*	3732	3810*	3833	3934	4030	4077*	4095	4128*	4144	4178*		
		4194	4228*	4244	4281*	4299	4334*	4352	4387*	4405	4440*	4458	4493*	4511		
		4546*	4564	4599*	4617	4652*	4670	4705*	4723	4758*	4776	4811*	4829	4864*		
		4882	4917*	4935	4973*	4990	5008*	5025	5070*	5087	5110*	5127	5166*	5192		
		5230*	5251	5301*	5327	5347	5371*	5392	5442*	5468	5488	5512*	5533	5583*		
		5609	5629	5653*	5674	5724*	5750	5770	5794*	5815	5865*	5891	5911	5935*		
		5956	6006*	6032	6052	6076*	6097	6147*	6173	6193	6217*	6238	6288*	6314		
		6334	6363*	6396	6414											
RHBAE	003360	1625#	1997	2002*	2197	2246	2274*	2275	2286	2293	2296	2301	2333	2379		
		2383	2471	2506	2533	2557	2592*	2593	2594	2606	2646	2674	2698	2757		
		2813	2852	2884*	2907	2962*	2991	3003	3005	3007	3058*	3086	3163*	3228		

	3305*	3333	3423	3504*	3530	3608*	3635	3738	3813*	3839	3940	4036	4078*
	4101	4150	4200	4250	4282*	4305	4335*	4358	4388*	4411	4441*	4464	4494*
	4517	4547*	4570	4600*	4623	4653*	4676	4706*	4729	4759*	4782	4812*	4835
	4865*	4888	4918*	4941	4972*	4996	5031	5093	5133	5169*	5198	5235*	5257
	5300*	5333	5376*	5398	5441*	5474	5517*	5539	5582*	5615	5658*	5680	5723*
	5756	5799*	5821	5864*	5897	5940*	5962	6005*	6038	6081*	6103	6146*	6179
RHCS1 003330	6222*	6244	6287*	6320	6362*	6402	6523	6529*					
	1613#	1994	2005	2010	2095	2098	2133	2189	2238	2278	2325	2392	2463
	2498	2525	2549	2598	2638	2666	2690	2738	2743	2749	2764	2805	2844
	2886*	2888	2893	2899	2914	2967*	2969*	2972	2977	2983	3000	3025	3061*
	3063	3068	3075	3078	3093	3166*	3168	3173	3185	3190	3196	3203*	3205
	3210	3217	3220	3235	3307*	3311	3316	3322	3325	3340	3412	3415	3430
	3506*	3508	3513	3519	3522	3537	3611*	3613	3618	3624	3627	3642	3714*
	3716	3721	3727	3730	3745	3814*	3815*	3817	3822	3828	3831	3846	3929
	3932	3947	4017	4022	4028	4043	4047	4049	4080*	4082	4087	4093	4108
	4129*	4131	4136	4142	4157	4179*	4181	4186	4192	4207	4229*	4231	4236
	4242	4257	4284*	4286	4291	4297	4312	4337*	4339	4344	4350	4365	4390*
	4392	4397	4403	4418	4443*	4445	4450	4456	4471	4496*	4498	4503	4509
	4524	4549*	4551	4556	4562	4577	4602*	4604	4609	4615	4630	4655*	4657
	4662	4668	4683	4708*	4710	4715	4721	4736	4761*	4763	4768	4774	4789
	4814*	4816	4821	4827	4842	4867*	4869	4874	4880	4895	4920*	4922	4927
	4933	4948	4975*	4977	4982	4988	5003	5010*	5012	5017	5023	5038	5072*
	5074	5079	5085	5100	5112*	5114	5119	5125	5140	5173*	5174	5179	5184
	5190	5205	5236*	5238	5243	5249	5265	5302*	5314	5319	5325	5341	5377*
	5379	5384	5390	5406	5443*	5455	5460	5466	5482	5518*	5520	5525	5531
	5547	5584*	5596	5601	5607	5623	5659*	5661	5666	5672	5688	5725*	5737
	5742	5748	5764	5800*	5802	5807	5813	5829	5866*	5878	5883	5889	5905
	5941*	5943	5948	5954	5970	6007*	6019	6024	6030	6046	6082*	6084	6089
	6095	6111	6148*	6160	6165	6171	6187	6223*	6225	6230	6236	6252	6289*
	6301	6306	6312	6328	6375*	6378	6383	6389	6394	6411	6425	6521	6532
RHCS1B 003364	6722*	6724	6729	6735	6744	8483							
	1627#	2005*	2006*	3145*	3287*	3392*	3482*	3589*	3694*	3797*	3898*	3999*	6532*
RHCS2 003340	6533*												
	1617#	2009*	2073*	2074*	2102	2105	2128	2138	2169*	2170*	2188*	2199	2237*
	2248	2277*	2288	2314	2319	2335	2340	2345	2350	2356*	2358	2362	2443*
	2444*	2473	2508	2535	2559	2608	2648	2676	2700	2759	2768	2794	2799
	2815	2820	2832	2837	2854	2859	2881*	2909	2993	3060*	3074	3088	3097
	3146	3160*	3179*	3183*	3216	3230	3239	3288	3301*	3308*	3309	3335	3344
	3393	3407*	3411*	3425	3434	3483	3498*	3532	3541	3590	3605*	3637	3646
	3695	3710*	3740	3749	3798	3809*	3841	3850	3899	3915*	3916*	3918	3923
	3942	3951	4000	4012*	4038	4079*	4103	4152	4202	4252	4283*	4307	4336*
	4360	4389*	4413	4442*	4466	4495*	4519	4548*	4572	4601*	4625	4654*	4678
	4707*	4731	4760*	4784	4813*	4837	4866*	4890	4919*	4943	4971*	4998	5033
	5051	5068*	5095	5104*	5108*	5135	5153	5165*	5200	5228*	5259	5294*	5335
	5369*	5400	5435*	5476	5510*	5541	5576*	5617	5651*	5682	5717*	5758	5792*
	5823	5858*	5899	5933*	5964	5999*	6040	6074*	6105	6140*	6181	6215*	6246
RHCS3 003362	6281*	6322	6356*	6404	6749	6764							
	1626#	2004*	2030*	2042*	2086	2089	2155	2198	2247	2287	2334	2449*	2450
	2452	2458*	2459	2460	2472	2507	2534	2558	2607	2647	2675	2699	2758
	2814	2853	2908	2992	3052	3087	3229	3334	3424	3502*	3531	3636	3739
	3840	3941	4037	4102	4112	4151	4161	4201	4211	4251	4261	4306	4316
	4359	4369	4412	4422	4465	4475	4518	4528	4571	4581	4624	4634	4677
	4687	4730	4740	4783	4793	4836	4846	4889	4899	4942	4952	4997	5032
	5042	5048	5094	5134	5144	5150	5199	5258	5334	5399	5475	5540	5616
RHDB 003352	5681	5757	5822	5898	5963	6039	6104	6180	6245	6321	6403	6531*	6769
	1622#	2312*	2343	2736*	2770	2772	2792*	2823	2825	2830*	2862		

RITURN 046716	6595	6597	6599	6633#										
RMBEX = 000040	1563#	2120	3113	3765	3866									
RMR = 000004	1560#	2120	3113	3765	3866									
ROTEEN 045576	6457	6498#												
SA200 005274	1904	1906#												
SC = 100000	1547#	2098	3099	3103	3107	3120	3241	3245	3249	3262	3346	3350	3354	
	3367	3436	3440	3444	3457	3543	3547	3551	3564	3648	3652	3656	3669	
	3751	3755	3759	3772	3852	3856	3860	3873	3953	3957	3961	3974	4049	
	1600#	6433												
SCLK = 000010	1715#													
SEARCH= 000031	1847	1850#												
SKIPIN 004624	1852	1854#												
SLEUTH 004640	1579#	5578	5585	5590	5591	5592	5593	5719	5726	5731	5732	5733	5734	
SLKM = 001000	5860	5867	5872	5873	5874	5875	6001	6008	6013	6014	6015	6016		
	2359	2362#												
SNAFOO 010566	5208	5210	5212	5215	5217#									
SPLIT 034460	479#													
SRO = 177572	480#													
SR1 = 177574	481#													
SR2 = 177576	482#													
SR3 = 172516	348#	1788	1842											
STACK = 000750	1768	1772	1781#											
START 004214	359#													
STKLMT= 177774	5039	5042#												
SUPER 033250	544#	1786	1807*	1809	1815*	8623	8637	8639	8645	8652	8682	8695*	8992	
SWR 001140	8999	9004	9007											
	463#	1815												
SWREG 000176	412#													
SW0 = 000001	402#	412												
SW00 = 000001	401#	411												
SW01 = 000002	400#	410												
SW02 = 000004	399#	409												
SW03 = 000010	398#	408												
SW04 = 000020	397#	407												
SW05 = 000040	396#	406												
SW06 = 000100	395#	405												
SW07 = 000200	394#	404												
SW08 = 000400	393#	403												
SW09 = 001000	411#													
SW1 = 000002	392#													
SW10 = 002000	391#													
SW11 = 004000	390#													
SW12 = 010000	389#	2400	6594	6780	6802									
SW13 = 020000	388#	3141	3283	3388	3478	3585	3690	3793	3894	3995				
SW14 = 040000	387#													
SW15 = 100000	410#													
SW2 = 000004	409#													
SW3 = 000010	408#													
SW4 = 000020	407#													
SW5 = 000040	406#													
SW6 = 000100	405#													
SW7 = 000200	404#	3141	3283	3388	3478	3585	3690	3793	3894	3995				
SW8 = 000400	403#	3141	3283	3388	3478	3585	3690	3793	3894	3995				
SW9 = 001000	445#													
TBITVE= 000014	1662#	2203*	2252*	2292*	2339*	2477*	2512*	2539*	2563*	2612*	2652*	2680*	2704*	
TC 003440	2763*	2819*	2858*	2913*	2997*	3092*	3234*	3339*	3429*	3536*	3641*	3744*	3845*	

\$NULL 001154	550#	8754	8783											
\$NWTST= 000001	1831#	1833	2057#	2059	2163#	2165	2178#	2180	2226#	2228	2266#	2268	2306#	
	2308	2369#	2371	2437#	2439	2483#	2485	2582#	2584	2622#	2624	2723#	2725	
	2873#	2875	2950#	2952	3044#	3046	3153#	3155	3294#	3296	3399#	3401	3490#	
	3492	3598#	3600	3702#	3704	3803#	3805	3904#	3906	4006#	4008	4067#	4069	
	4118#	4120	4167#	4169	4217#	4219	4269#	4271	4322#	4324	4375#	4377	4428#	
	4430	4481#	4483	4534#	4536	4587#	4589	4640#	4642	4693#	4695	4746#	4748	
	4799#	4801	4852#	4854	4905#	4907	4958#	4960	5057#	5059	5159#	5161	5219#	
	5221	5285#	5287	5360#	5362	5426#	5428	5501#	5503	5567#	5569	5642#	5644	
	5708#	5710	5783#	5785	5849#	5851	5924#	5926	5990#	5992	6065#	6067	6131#	
	6133	6206#	6208	6272#	6274	6347#	6349	6445#	6447					
\$SOCNT 073672	8815*	8844*	8857#											
\$SOMODE 073674	8810*	8814*	8819	8822*	8833*	8859#								
\$OVER 073034	8624	8640	8648	8658	8666#									
\$PASS 001100	525#	6553*	6554*	6565	6587	8654	8670							
\$POWER 073220	8705	8710#												
\$PWDRN 073052	1796	8674#	8702											
\$PWRMG 073206	8705#													
\$PWRUP 073124	8684	8690#												
\$QUES 001222	571#	8783	9015	9067	9083									
\$RDCHR 074412	9031#	9165												
\$RDDEC= ***** U	9168													
\$RDLIN 074532	9059#	9166												
\$RDOCT 074704	9099#	9167												
\$RDSZ = 000010	9052#													
\$REGAD 001160	554#													
\$REGO 001162	556#	2209*	2215*	2219*	2255*	2260*	2295*	2300*	2388*	2393	2448*	2449	2452	
	2454*	2457*	2458	2460	2492*	2493	2494	2514	2516*	2518*	2519	2521	2541*	
	2542	2544	2591*	2592	2594	2614	2616*	2632*	2633	2635	2655	2657*	2659*	
	2660*	2661	2663	2683*	2684	2686	2735*	2736	2773	2778	2785*	2791*	2792	
	2823	2829*	2830	2863	2922*	2927*	2935*	3075*	3076*	3099	3101	3103	3107	
	3118	3120	3217*	3218*	3241	3243	3245	3249	3260	3262	3322*	3323*	3346	
	3348	3350	3354	3365	3367	3412*	3413*	3436	3438	3440	3444	3455	3457	
	3505	3519*	3520*	3543	3545	3547	3551	3562	3564	3624*	3625*	3648	3650	
	3652	3656	3667	3669	3727*	3728*	3751	3753	3755	3759	3770	3772	3828*	
	3829*	3852	3854	3856	3860	3871	3873	3929*	3930*	3953	3955	3957	3961	
	3972	3974	4014	4015	5264*	5340*	5405*	5481*	5546*	5622*	5687*	5763*	5828*	
	5904*	5969*	6045*	6110*	6186*	6251*	6327*	6601	6603	6743*	6748*	6753*	6758*	
	6763*	6768*	8468	8470	8472	8474	8476	8486	8503	8507				
\$REG1 001164	557#													
\$REG2 001166	558#													
\$REG3 001170	559#													
\$REG4 001172	560#	2171*	2172	3164	3165*	3201	3202*	3610						
\$REG5 001174	561#	1770*	1771*	1851	1855*									
\$RHBA 004136	1761#	2707*	2709*	2713*	2715*									
\$RHDB 004140	1762#													
\$RHWC 004142	1763#	2565*	2567*	2571*	2573*									
\$RTNAD 046346	6586#													
\$R2A = ***** U	9168													
\$\$AVRE= ***** U	9168													
\$\$AVR6 073216	8683*	8691	8692*	8693*	8709#									
\$\$SCOPE 072602	1790	8622#												
\$\$SETUP= 000017	1782#	1789	1790	1792	1794	1796	1798	1799	1801	6551	8623	8989	9007	
	9014	9020	9089											
\$\$S1 = 000000	1819#													
\$\$ST 004132	1759#	2110	3112*	3254*	3359*	3449*	3556*	3661*	3764*	3865*	3966*			

\$40CAT= ***** U
= 075064

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

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

. ABS. 075064 000

ERRORS DETECTED: 0

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