

RH11-RH70

MASSBUS I/O & CTRLR
CZRHBE0

AH-9178E-MC

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SEP 1979

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MADE IN USA

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IDENTIFICATION

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

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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.

105
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THIS IS DONE TO GIVE ONLY VALID DATA(ERROR)
NOT A COMBINATION OF GOOD AND BAD DATA.

2.0 REQUIREMENTS

2.1 HARDWARE

THIS PROGRAM ASSUMES THE FOLLOWING IS IN PROPER WORKING
CONDITION:

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

2.2 SOFTWARE

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

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

3.0 PROGRAM DESCRIPTION

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

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

3.1 SWITCH OPTIONS

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

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

13,8,AND 0 INHIBIT WATBIT PRINTOUT

3.2 SYSMAC ROUTINES (USED)

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

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

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

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

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

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

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

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

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

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

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

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TEST 12 - RHCW 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 - RHCW 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.

ECO HISTORY

CHGE1 - ADDED CODE TO MAKE BOTH WRITE LOC'S IDENTICAL
CHGE2 - CHANGED BIT8 FROM LOC TO DATA REFERENCE
CHGE3 - CHANGED BIT0 FROM LOC TO DATA REFERENCE

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.TITLE MASSBUS RH70 AND RH11 DIAGNOSTIC
.*COPYRIGHT (C) 1976
.*DIGITAL EQUIPMENT CORP.
.*MAYNARD, MASS. 01754
.*
.*PROGRAM BY WN D'ENTREMONT
.*
.*THIS PROGRAM WAS ASSEMBLED USING THE PDP-11 MAINDEC SYSMAC
.*PACKAGE (MAINDEC-11-DZQAC-C3), JAN 19, 1977.
.*
.SBTTL OPERATIONAL SWITCH SETTINGS
.*
.*      SWITCH      USE
.*      -----
.*      15          HALT ON ERROR
.*      14          LOOP ON TEST
.*      13          INHIBIT ERROR TYPEOUTS
.*      11          INHIBIT ITERATIONS
.*      10          BELL ON ERROR
.*      9           LOOP ON ERROR
.*      8           LOOP ON TEST IN SWR<7:0>
.SBTTL BASIC DEFINITIONS
.*INITIAL ADDRESS OF THE STACK POINTER *** 750 ***
STACK= 750
.EQUIV EMT,ERROR      ;;BASIC DEFINITION OF ERROR CALL
.EQUIV IOT,SCOPE      ;;BASIC DEFINITION OF SCOPE CALL

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

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

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000750

000011
000012
000015
000200
177776

177774
177772
177570
177570

000000
000001
000002
000003
000004

385	000005	R5=	%5	::GENERAL REGISTER
386	000006	R6=	%6	::GENERAL REGISTER
387	000007	R7=	%7	::GENERAL REGISTER
388	000006	SP=	%6	::STACK POINTER
389	000007	PC=	%7	::PROGRAM COUNTER
390				
391		;*PRIORITY LEVEL DEFINITIONS		
392	000000	PR0=	0	::PRIORITY LEVEL 0
393	000040	PR1=	40	::PRIORITY LEVEL 1
394	000100	PR2=	100	::PRIORITY LEVEL 2
395	000140	PR3=	140	::PRIORITY LEVEL 3
396	000200	PR4=	200	::PRIORITY LEVEL 4
397	000240	PR5=	240	::PRIORITY LEVEL 5
398	000300	PR6=	300	::PRIORITY LEVEL 6
399	000340	PR7=	340	::PRIORITY LEVEL 7
400				
401		;*SWITCH REGISTER SWITCH DEFINITIONS		
402	100000	SW15=	100000	
403	040000	SW14=	40000	
404	020000	SW13=	20000	
405	010000	SW12=	10000	
406	004000	SW11=	4000	
407	002000	SW10=	2000	
408	001000	SW09=	1000	
409	000400	SW08=	400	
410	000200	SW07=	200	
411	000100	SW06=	100	
412	000040	SW05=	40	
413	000020	SW04=	20	
414	000010	SW03=	10	
415	000004	SW02=	4	
416	000002	SW01=	2	
417	000001	SW00=	1	
418		.EQUIV	SW09,SW9	
419		.EQUIV	SW08,SW8	
420		.EQUIV	SW07,SW7	
421		.EQUIV	SW06,SW6	
422		.EQUIV	SW05,SW5	
423		.EQUIV	SW04,SW4	
424		.EQUIV	SW03,SW3	
425		.EQUIV	SW02,SW2	
426		.EQUIV	SW01,SW1	
427		.EQUIV	SW00,SW0	
428				
429		;*DATA BIT DEFINITIONS (BIT00 TO BIT15)		
430	100000	BIT15=	100000	
431	040000	BIT14=	40000	
432	020000	BIT13=	20000	
433	010000	BIT12=	10000	
434	004000	BIT11=	4000	
435	002000	BIT10=	2000	
436	001000	BIT09=	1000	
437	000400	BIT08=	400	
438	000200	BIT07=	200	
439	000100	BIT06=	100	
440	000040	BIT05=	40	

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441          000020      BIT04= 20
442          000010      BIT03= 10
443          000004      BIT02= 4
444          000002      BIT01= 2
445          000001      BIT00= 1
446          .EQUIV BIT09,BIT9
447          .EQUIV BIT08,BIT8
448          .EQUIV BIT07,BIT7
449          .EQUIV BIT06,BIT6
450          .EQUIV BIT05,BIT5
451          .EQUIV BIT04,BIT4
452          .EQUIV BIT03,BIT3
453          .EQUIV BIT02,BIT2
454          .EQUIV BIT01,BIT1
455          .EQUIV BIT00,BIT0
456
457          ;*BASIC "CPU" TRAP VECTOR ADDRESSES
458          000004      ERRVEC= 4          ;;TIME OUT AND OTHER ERRORS
459          000010      RESVEC= 10         ;;RESERVED AND ILLEGAL INSTRUCTIONS
460          000014      TBITVEC=14         ;;T BIT
461          000014      TRTVEC= 14         ;;TRACE TRAP
462          000014      BPTVEC= 14         ;;BREAKPOINT TRAP (BPT)
463          000020      IOTVEC= 20         ;;INPUT/OUTPUT TRAP (IOT) **SCOPE**
464          000024      PWRVEC= 24         ;;POWER FAIL
465          000030      EMTVEC= 30         ;;EMULATOR TRAP (EMT) **ERROR**
466          000034      TRAPVEC=34         ;;TRAP TRAP
467          000060      TKVEC= 60          ;;TTY KEYBOARD VECTOR
468          000064      TPVEC= 64          ;;TTY PRINTER VECTOR
469          000240      PIRQVEC=240        ;;PROGRAM INTERRUPT REQUEST VECTOR
470          .SBTTL TRAP CATCHER
471
472          000000      .=0
473          ;*ALL UNUSED LOCATIONS FROM 4 - 776 CONTAIN A ".+2,HALT"
474          ;*SEQUENCE TO CATCH ILLEGAL TRAPS AND INTERRUPTS
475          ;*LOCATION 0 CONTAINS 0 TO CATCH IMPROPERLY LOADED VECTORS
476          000174      .=174
477          000174      000000      DISPREG: .WORD 0          ;;SOFTWARE DISPLAY REGISTER
478          000176      000000      SWREG: .WORD 0           ;;SOFTWARE SWITCH REGISTER
479          .SBTTL STARTING ADDRESS(ES)
480          000200      000137      004176      JMP @#BEGIN1          ;;JUMP TO STARTING ADDRESS OF PROGRAM
481          000204      000204      .=204
482          000204      000137      004144      JMP @#BEGIN
483          000210      000210      .=210
484          000210      000137      004152      JMP @#BEGIN3
485          ;*****
486          .SBTTL MEMORY MANAGEMENT DEFINITIONS
487
488          ;*KT11 VECTOR ADDRESS
489
490          000250      MMVEC= 250
491
492          ;*KT11 STATUS REGISTER ADDRESSES
493
494          177572      SR0= 177572
495          177574      SR1= 177574
496          177576      SR2= 177576

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MASSBUS RH70 AND RH11 DIAGNOSTIC
CZRHBE.P11 07-JUN-79 13:44

MACY11 30A(1052) 12-JUL-79^{K 1} 10:46 PAGE 11
MEMORY MANAGEMENT DEFINITIONS

SEQ 0010

497 172516
498
499
500
501 172300
502 172302
503 172304
504 172306
505 172310
506 172312
507 172314
508 172316
509
510
511
512 172340
513 172342
514 172344
515 172346
516 172350
517 172352
518 172354
519 172356
520
521
522
523
524
525
526 000214
527 000046
528 000046 046342
529 000052
530 000052 000000
531 000214

SR3= 172516

;*KERNEL 'I' PAGE DESCRIPTOR REGISTERS

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

;*KERNEL 'I' PAGE ADDRESS REGISTERS

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

::*****
:SBTTL ACT11 HOOKS

::*****
:HOOKS REQUIRED BY ACT11
\$SVPC= ;SAVE PC
.=46
\$ENDAD ;:1)SET LOC.46 TO ADDRESS OF \$ENDAD IN .\$EOP
.=52
:WORD 0 ;:2)SET LOC.52 TO ZERO
.= \$SVPC ;: RESTORE PC

532
533
534
535
536
537
538 001100
539 001100
540 001100 000000
541 001102 000
542 001103 000
543 001104 000000
544 001106 000000
545 001110 000000
546 001112 000000
547 001114 000
548 001115 001
549 001116 000000
550 001120 000000
551 001122 000000
552 001124 000000
553 001126 000000
554 001130 000000
555 001132 000000
556 001134 000
557 001135 000
558 001136 000000
559 001140 177570
560 001142 177570
561 001144 177560
562 001146 177562
563 001150 177564
564 001152 177566
565 001154 000
566 001155 002
567 001156 012
568 001157 000
569 001160 000000
570
571 001162 000000
572 001164 000000
573 001166 000000
574 001170 000000
575 001172 000000
576 001174 000000
577 001176 000000
578 001200 000000
579 001202 000000
580 001204 000000
581 001206 000000
582 001210 000000
583 001212 000000
584 001214 000000
585 001216 177607 000377
586 001222 077
587 001223 015

.SBTTL COMMON TAGS

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

.=1100

\$CMTAG:			::START OF COMMON TAGS
\$PASS:	.WORD	0	::CONTAINS PASS COUNT
\$TSTNM:	.BYTE	0	::CONTAINS THE TEST NUMBER
\$ERFLG:	.BYTE	0	::CONTAINS ERROR FLAG
\$ICNT:	.WORD	0	::CONTAINS SUBTEST ITERATION COUNT
\$LPADR:	.WORD	0	::CONTAINS SCOPE LOOP ADDRESS
\$LPERR:	.WORD	0	::CONTAINS SCOPE RETURN FOR ERRORS
\$ERTTL:	.WORD	0	::CONTAINS TOTAL ERRORS DETECTED
\$ITEMB:	.BYTE	0	::CONTAINS ITEM CONTROL BYTE
\$ERMAX:	.BYTE	1	::CONTAINS MAX. ERRORS PER TEST
\$ERRPC:	.WORD	0	::CONTAINS PC OF LAST ERROR INSTRUCTION
\$GDADR:	.WORD	0	::CONTAINS ADDRESS OF 'GOOD' DATA
\$BDADR:	.WORD	0	::CONTAINS ADDRESS OF 'BAD' DATA
\$GDDAT:	.WORD	0	::CONTAINS 'GOOD' DATA
\$BDDAT:	.WORD	0	::CONTAINS 'BAD' DATA
	.WORD	0	::RESERVED--NOT TO BE USED
	.WORD	0	
\$AUTOB:	.BYTE	0	::AUTOMATIC MODE INDICATOR
\$INTAG:	.BYTE	0	::INTERRUPT MODE INDICATOR
	.WORD	0	
\$SWR:	.WORD	DSWR	::ADDRESS OF SWITCH REGISTER
\$DISPLAY:	.WORD	DDISP	::ADDRESS OF DISPLAY REGISTER
\$TKS:	177560		::TTY KBD STATUS
\$TKB:	177562		::TTY KBD BUFFER
\$TPS:	177564		::TTY PRINTER STATUS REG. ADDRESS
\$TPB:	177566		::TTY PRINTER BUFFER REG. ADDRESS
\$NULL:	.BYTE	0	::CONTAINS NULL CHARACTER FOR FILLS
\$FILLS:	.BYTE	2	::CONTAINS # OF FILLER CHARACTERS REQUIRED
\$FILLC:	.BYTE	12	::INSERT FILL CHARS. AFTER A 'LINE FEED'
\$TPFLG:	.BYTE	0	::'TERMINAL AVAILABLE' FLAG (BIT<07>=0=YES)
\$REGAD:	.WORD	0	::CONTAINS THE ADDRESS FROM WHICH (\$REG0) 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
CZRHBE.P11 07-JUN-79 13:44

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COMMON TAGS

SEQ 0012

588 001224 000012
589

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

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001226

001226 055040

001230 067602
001232 071750
001234 072314

001236 055100

001240 067722
001242 071762
001244 072320

001246 055140

001250 070043
001252 071774
001254 072324

001256 055214

001260 070163
001262 072006
001264 072330

001266 055254

001270 070303
001272 072020
001274 072334

001276 055325

001300 070303
001302 072020
001304 072334

001306 055541

.SBTTL ERROR POINTER TABLE

;*THIS TABLE CONTAINS THE INFORMATION FOR EACH ERROR THAT CAN OCCUR.
;*THE INFORMATION IS OBTAINED BY USING THE INDEX NUMBER FOUND IN
;*LOCATION \$ITEMB. THIS NUMBER INDICATES WHICH ITEM IN THE TABLE IS PERTINENT.
;*NOTE1: IF \$ITEMB IS 0 THE ONLY PERTINENT DATA IS (\$ERRPC).
;*NOTE2: EACH ITEM IN THE TABLE CONTAINS 4 POINTERS EXPLAINED AS FOLLOWS:

;* EM ;;POINTS TO THE ERROR MESSAGE
;* DH ;;POINTS TO THE DATA HEADER
;* DT ;;POINTS TO THE DATA
;* DF ;;POINTS TO THE DATA FORMAT

\$ERRTB:

;ITEM 1

EM1 ;CORRECT BIT DID NOT SET
DH1 ;IN RH WORD COUNT REGISTER
DT1
DF1

;ITEM 2

EM2 ;CORRECT BIT DID NOT SET
DH2 ;IN BUS ADDRESS EXTENSION
DT2 ;REGISTER
DF2

;ITEM 3

EM3 ;CORRECT BIT DID NOT SET
DH3 ;IN BUS ADDRESS REGISTER
DT3
DF3

;ITEM 4

EM4 ;CORRECT BIT DID NOT SET
DH4 ;IN RHDB REGISTER
DT4
DF4

;ITEM 5

EM5 ;NED DID NOT SET IN
DH5 ;RHCS2 REGISTER
DT5
DF5

;ITEM 6

EM6 ;NEM LOGIC TO SET TRE
DH5 ;AND SC BITS IN RHCS1
DT5 ;IS NOT WORKING
DF5

;ITEM 7

EM7 ;NEM BIT DOES NOT READ AS SET

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

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

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

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

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

926	001712	000000	0	
927	001714	000000	0	
928				
929			:ITEM 50	
930	001716	057673	EM50	:LOADING TRE AFER ITS SET DOES NOT
931				:CLEAR ERRORS
932	001720	000000	0	
933	001722	000000	0	
934	001724	000000	0	
935				
936			:ITEM 51	
937	001726	057752	EM51	:PGE DID NOT SET IN RHCS2
938	001730	000000	0	
939	001732	000000	0	
940	001734	000000	0	
941				
942			:ITEM 52	
943	001736	060003	EM52	:THE PROM WHILE ACCESSING A
944				:REGISTER WHICH YOUR TESTER \
945				:CANNOT SUPPLY INFORMATION FOR
946				:SAYS INFORMATION IS PRESENT
947				
948	001740	070663	DH52	:PC TEST NO. ADDRESS CONT
949				
950	001742	072074	DT52	:\$ERRPC,\$TSTNM,BAE,\$REGO
951				
952	001744	072354	DF52	:
953				
954			:ITEM 53	
955	001746	060156	EM53	:RHCS1
956	001750	000000	0	
957	001752	000000	0	
958	001754	000000	0	
959				
960			:ITEM 54	
961	001756	060164	EM54	:RHWC
962	001760	000000	0	
963	001762	000000	0	
964	001764	000000	0	
965				
966			:ITEM 55	
967	001766	060171	EM55	:RHBA
968	001770	000000	0	
969	001772	000000	0	
970	001774	000000	0	
971				
972			:ITEM 56	
973	001776	060176	EM56	:RHMR2
974	002000	000000	0	
975	002002	000000	0	
976	002004	000000	0	
977				
978			:ITEM 57	
979	002006	060204	EM57	:RHCS2
980	002010	000000	0	
981	002012	000000	0	

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

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

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

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

1206					
1207	002450	000000	0		;HAS AN OPEN GOING TO THE BUS
1208	002452	000000	0		
1209	002454	000000	0		
1210			124		
1211	002456	062757	EM124		;DBL NOT SET AFTER A 4 WORD WRITE
1212					;FROM AN EVEN ADDRESS
1213	002460	000000	0		
1214	002462	000000	0		
1215	002464	000000	0		
1216			125		
1217	002466	063052	EM125		;DBL SET AFTER DOING A 1 WORD WRITE
1218					;FROM AN EVEN ADDRESS
1219	002470	000000	0		
1220	002472	000000	0		
1221	002474	000000	0		
1222			126		
1223	002476	063146	EM126		;DBL SET ON A 3 WORD WRITE
1224					;FROM AN EVEN ADDRESS
1225	002500	000000	0		
1226	002502	000000	0		
1227	002504	000000	0		
1228			127		
1229	002506	063237	EM127		;DBL DID NOT SET AFTER A 2 WORD
1230					;WRITE FROM AN EVEN ADDRESS
1231	002510	000000	0		
1232	002512	000000	0		
1233	002514	000000	0		
1234			130		
1235	002516	063335	EM130		;MCPE SET BUT SC READS AS CLEARED
1236	002520	071336	DH130		
1237	002522	072174	DT130		
1238	002524	072347	DF36		
1239			131		
1240	002526	063407	EM131		;MCPE DID NOT SET
1241	002530	071336	DH130		
1242	002532	072174	DT130		
1243	002534	070556	DH36		
1244			132		
1245	002536	063441	EM132		;WCE LO (EW) DID NOT SET IN RHCS3
1246	002540	071364	DH132		
1247	002542	072204	DT132		
1248	002544	072375	DF132		
1249			133		
1250	002546	063475	EM133		;WCE HI (OW) SET ALONG WITH
1251					;WCE LO IN RHCS3
1252	002550	071364	DH132		
1253	002552	072204	DT132		
1254	002554	072375	DF132		
1255			134		
1256	002556	063576	EM134		;WCE LO IS SET IN RHCS3 BUT
1257					;WCE IS NOT SET IN RHCS2
1258	002560	071364	DH132		
1259	002562	072204	DT132		
1260	002564	072375	DF132		
1261			135		

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ERROR POINTER TABLE

SEQ 0025

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

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

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

1389					
1390	003060	000000	0		;FROM AN ODD ADDRESS
1391	003062	000000	0		
1392	003064	000000	0		
1393					
1394	003066	066217	;ITEM	165 EM165	
1395					;DBL DID NOT SET ON A 2 WORD
1396	003070	000000			;READ REV FROM AN EVEN ADDRESS
1397	003072	000000		0	
1398	003074	000000		0	
1399				0	
1400	003076	066315	;ITEM	166 EM166	
1401					;DBL SET ON A 3 WORD READ FROM
1402	003100	000000		0	;AN EVEN ADDRESS
1403	003102	000000		0	
1404	003104	000000		0	
1405				0	
1406	003106	066374	;ITEM	167 EM167	
1407					;DBL DID NOT SET ON A 3 WORD
1408	003110	000000		0	;READ REV FROM AN EVEN ADDRESS
1409	003112	000000		0	
1410	003114	000000		0	
1411				0	
1412	003116	000000	;ITEM	170	
1413	003120	071603		0	
1414	003122	072262		DH170	
1415	003124	072403		DT170	
1416				DF170	
1417	003126	066473	;ITEM	171 EM171	
1418					;TRE READS AS SET,PGE AND SC
1419					;READ AS CLEARED.PGE AND SC
1420	003130	000000		0	;SHOULD ALSO BE SET
1421	003132	000000		0	
1422	003134	000000		0	
1423				0	
1424	003136	066545	;ITEM	172 EM172	
1425					;PGE AND TRE READ AS SET SC
1426	003140	000000		0	;READS AS CLEARED
1427	003142	000000		0	
1428	003144	000000		0	
1429				0	
1430	003146	066566	;ITEM	173 EM173	
1431					;READY DID NOT CAUSE AN INTRUPT
1432	003150	000000		0	;WITH IE SET IN RHCS1
1433	003152	000000		0	
1434	003154	000000		0	
1435				0	
1436	003156	066652	;ITEM	174 EM174	
1437	003160	000000		0	;IE WILL NOT SET IN RHCS1
1438	003162	000000		0	
1439	003164	000000		0	
1440				0	
1441	003166	066703	;ITEM	175 EM175	
1442	003170	000000		0	;IE HAS AN OPEN GOING TO THE BUS
1443	003172	000000		0	
1444	003174	000000		0	

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

1501				
1502				
1503				
1504				
1505				
1506				
1507				
1508				
1509				
1510				
1511				
1512				
1513	000001	UC1=	1	:UNIT SELECT (BIT #0)
1514	000002	US2=	2	:UNIT SELECT (BIT #1)
1515	000004	US4=	4	:UNIT SELECT (BIT #2)
1516	000010	BAI=	10	:BUS ADDRESS INCREMENT INHIBIT (BIT #3)
1517	000020	PAT=	20	:INVERT PARITY CHECK FOR MCPE
1518	000040	CLR=	40	:CLEAR (BIT #5)
1519	000100	IR=	100	:INPUT READY (BIT #6)
1520	000200	OR=	200	:OUTPUT READY (BIT #7)
1521	000400	MPE=	400	:MASS BUS PARITY ERROR (BIT #8)
1522	001000	MXF=	1000	:MISSED TRANSFER ERROR (BIT #9)
1523	002000	PGE=	2000	:PROGRAM ERROR (BIT #10)
1524	004000	NEM=	4000	:NON EXISTANT MEMORY (BIT #11)
1525	010000	NED=	10000	:NON EXISTANT DRIVE (BIT #12)
1526	020000	UPE=	20000	:UNIBUS PARITY ERROR (BIT #13)
1527	040000	WCE=	40000	:WRITE CHECK ERROR (BIT #14)
1528	100000	DLT=	100000	:DATA LATE (BIT #15)
1529				
1530				
1531				
1532	000001	IPCK0	1	:INVERT PARITY,ON LOW BYTE OF EVEN WORD (BIT #0)
1533	000002	IPCK1=	2	:INVERT PARITY,ON HI BYTE OF EVEN WORD (BIT #1)
1534	000004	IPCK2=	4	:INVERT PARITY,ON LOW BYTE OF ODD WORD (BIT #2)
1535	000010	IPCK3=	10	:INVERT PARITY,ON HI BYTE OF ODD WORD (BIT #3)
1536	000100	IE3=	100	:INTERUPT ENABLE,SAME AS BIT 6 OF RHCS1 (BIT #6)
1537	002000	DBL=	2000	:DOUBLE WORD OPERATION,SET WHEN LAST MEMORY TRANSFER WAS
1538	004000	WCELO=	4000	:WRITE CHECK ERROR EVEN WORD (BIT #11)
1539	010000	WCEHI=	10000	:WRITE CHECK ERROR ODD WORD (BIT #12)
1540	020000	DPELO=	20000	:DATA PARITY ERROR EVEN WORD (BIT #13)
1541	040000	DPEHI=	40000	:DATA PARITY ERROR ODD WORD (BIT #14)
1542	100000	APE=	100000	:ADDRESS PARITY ERROR (BIT #15)
1543				
1544				
1545				
1546				
1547				
1548				
1549				
1550				
1551				
1552	000001	GO=	1	:GC (BIT #0)
1553	000100	IE=	100	:INTERRUPT ENABLE (BIT #6)
1554	000200	RDY=	200	:READY (BIT #7)
1555	000400	A16=	400	:HIGH ORDER UNIBUS BITS (BIT #8)
1556	001000	A17=	1000	:HIGH ORDER UNIBUS BITS (BIT #9)

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

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1583
1584
1585      000001
1586      000002
1587      000004
1588      000010
1589      000020
1590      000040
1591      000100
1592      000200
1593      000400
1594      001000
1595      002000
1596      004000
1597      010000
1598
1599
1600
1601      000001
1602      000002
1603      000004
1604      000010
1605      000020
1606      000040
1607      000100
1608      000200
1609
1610
1611
1612      000001
1613      000002
1614      000004
1615      000010
1616
1617      000020
1618      000040
1619      000100
1620      000200
1621
1622
1623
1624 003320 160100
1625 003322 160200
1626 003324 160300
1627 003326 160400
1628 003330 000000
1629 003332 000000
1630 003334 000000
1631 003336 000000
1632 003340 000000
1633 003342 000000
1634 003344 000000
1635 003346 000000
1636 003350 000000
1637 003352 000000
1638 003354 000000

;DIAGNOSTIC REGISTER (RHMR1) (#03)
DMD=      1      ;DIAGINOSTIC MODE (BIT #0)
MCLK=     2      ;MAINTAINCE CLOCK (BIT #1)
FERR=     4      ;FORCE ERROR (BIT #2)
ICPA=    10      ;INVERT CONTROL PARITY,CAUSES PARITY TO BE EVEN WHEN SET
IDPA=    20      ;INVERT DATA PARITY,CAUSES DATA PARITY TOBE EVEN WHEN SE
DPCA=    40      ;DISABLE PARITY CHECK,INHIBITS PARITY CHECK ON BOTH C AN
NEBL=   100      ;NO END OF BLOCK,INHIBITS TESTER FROM GENERATING END OF
DTRM=   200      ;WHEN SET DELAYS TRA FROM BEING ASSERTED FOR 500NS (BIT
DOCC=   400      ;DISSABLE OCCUPY (BIT #8)
SLKM=  1000      ;SYNC CLOCK MINIMUM WIDTH ,WHEN SET CHANGES SYNC CLOCK T
ISLK=  2000      ;INVERT SYNC CLOCK,WHEN SET INVERTS SYNC CLOCK,NO EFFECT
ENPS=  4000      ;ENABLE PATTERN SHIFT,WHEN SET CAUSES A 16 OR 18 BIT ROT
BMD18= 10000     ;18 BIT MODE (BIT #12)

;ATTENTION SUMMARY PSEUDO-REGISTER (RHAS) (#04)
AT0=      1      ;DEVICE 0 (BIT #0)
AT1=      2      ;DEVICE 1 (BIT #1)
AT2=      4      ;DEVICE 2 (BIT #2)
AT3=     10      ;DEVICE 3 (BIT #3)
AT4=     20      ;DEVICE 4 (BIT #4)
AT5=     40      ;DEVICE 5 (BIT #5)
AT6=    100      ;DEVICE 6 (BIT #6)
AT7=    200      ;DEVICE 7 (BIT #7)

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

;RH70 I/O REGISTERS LOCATED IN RH
ADD1:    160100   ;BASE ADDRESS RH #1
ADD2:    160200   ;BASE ADDRESS RH #2
ADD3:    160300   ;BASE ADDRESS RH #3
ADD4:    160400   ;BASE ADDRESS RH #4
RHCS1:    0       ;CONTROL AND STATUS 1
RHCW:     0       ;WORD COUNT
RHBA:     0       ;BUS ADDRESS
RHMR2:    0       ;TRANSFER CONTROL REGISTER
RHCS2:    0       ;CONTROL AND STATUS 2
RHST:     0       ;TESTER STATUS
RHER:     0       ;ERROR REGISTER
RHAS:     0       ;ATTENTION SUMMARY REG
RHTDB:    0       ;TESTER DATA REGISTER
RHDB:     0       ;DATA BUFFER
RHMR1:    0       ;DIAGNOSTIC (MAINTENCE) REGISTER

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1639 003356 000000
1640 003360 000000
1641 003362 000000
1642 003364 000000
1643
1644 003366 000000
1645 003370 000000
1646 003372 000000
1647 003374 000000
1648
1649 003376 000000
1650 003400 000000
1651
1652
1653
1654 003402 000000
1655 177740
1656 177742
1657 177744
1658 003404 000000
1659 003406 000000
1660 003410 000000
1661
1662
1663
1664
1665
1666 003412 000000
1667 003414 000000
1668 003416 000000
1669 003420 000000
1670 003422 000000
1671 003424 000000
1672 003426 000000
1673 003430 000000
1674 003432 000000
1675 003434 000000
1676 003436 000000
1677 003440 000000
1678 003442 000000
1679 003444 000000
1680
1681
1682
1683
1684
1685 052525
1686 125252
1687 000000
1688 000001
1689 000002
1690
1691
1692
1693
1694 000001

RHDT: 0 ;DRIVE TYPE REGISTER
RHBAE: 0 ;BUS ADDRESS EXTENTION
RHCS3: 0 ;CONTROL AND STATUS 3
RHCS1B: 0 ;HIGH BYTE OF RHCS1 REG.

DEVIC1: 0 ;ADDRESS OF RH #1
DEVIC2: 0 ;ADDRESS OF RH #2
DEVIC3: 0 ;ADDRESS OF RH #3
DEVIC4: 0 ;ADDRESS OF RH #4

DEVICNT: 0 ;DEVICE COUNTER
DEVIC5: 0 ;USED TO CONSTRUCT REG. ADDRESSES

;OFF11 WILL BE USED AS A CALCULATION LOCATION

OFF11: 0 ;REG. CALCULATION LOCATION
LERADD= 177740 ;LOW ERROR ADDRESS REG.
HERADD= 177742 ;HIGH ERROR ADDRESS REG.
MEMERR= 177744 ;MEMORY SYSTEM ERROR REG.
REGEND: 0 ;REGISTER ENDING ADDRESS
VECADD: 0 ;VECTOR ADDRESS
RETAIN: 0

;*****
;REGISTER STORAGE ADDRESSES
;*****

AS: 0 ;ATTENTION SUMMARY
BA: 0 ;BUS ADDRESS
BAE: 0 ;BUS ADDRESS EXTENTION
CS1: 0 ;CONTROL AND STATUS 1
CS2: 0 ;CONTROL AND STATUS 2
CS3: 0 ;CONTROL AND STATUS 3
DB: 0 ;DATA BUFFER
DR: 0 ;DIAGNOSTIC REGISTER
DS1: 0 ;TESTER STATUS
DT: 0 ;DRIVE TYPE
ER1: 0 ;ERROR REGISTER
TC: 0 ;TRANSFER CONTROL
TDR: 0 ;TESTER DATA REGISTER
WC: 0 ;WORD COUNT

;*****
;BITS AND BIT PATTERNS
;*****

AB= 52525 ;ALTERNATE BIT PATTERN
OAB= 125252 ;OPPOSITE ALTERNATE BIT PATTERN
ZERO= 0 ;CONSTANT ZERO
ONE= 1 ;CONSTANT 1
TWO= 2 ;CONSTANT 2

;*****
;FUNCTION CODES
;*****
NOOP= 01 ;NO OPERATION, RESETS GO BIT

```

1695
1696      000051
1697      000052
1698      000053
1699      000054
1700      000055
1701      000056
1702      000057
1703
1704
1705
1706      000071
1707      000072
1708      000073
1709      000074
1710      000075
1711      000076
1712      000077
1713
1714
1715
1716      000061
1717      000062
1718      000063
1719      000064
1720      000065
1721      000066
1722      000067
1723
1724
1725
1726      000011
1727
1728
1729
1730      000031
1731
1732
1733
1734
1735
1736
1737 003446 000000
1738 003450 000000
1739 003452 000000
1740
1741
1742
1743
1744
1745 003454 000000
1746 003456 000000
1747 003460 000000
1748
1749
1750

```

```

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

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

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

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

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

*****
                ;WATBIT STORAGE LOCATIONS
*****

BITCNT: 0      ;BIT COUNTER
LOOPCNT: 0     ;LOOP CPUNT
PASS: 0        ;PASS COUNT FOR THE LARGE TRANSFER TEST
*****
                ;THIS IS WHERE THE TEST NUMBER IS STORED JUST
                ;BEFORE IT IS PRINTED OUT.....
*****

TSTNM: 0       ;TEST NO. STORAGE
OFFSET: 0     ;OFFSET FOR ERROR HEADER
HEDDAD: 0     ;USE TO FIND HEADER ERROR MESSAGE
*****
                ;THESE ARE THE READ WRITE BUFFERS
*****

```

1751 004000 004000
1752 004000 000000
1753 004002 000000
1754 004100 004100
1755 004100 000000
1756 004102 000000
1757 004104 000000
1758 004106 000000
1759 004110 000000
1760 004112 000000
1761 004114 000000
1762 004116 000000
1763
1764
1765
1766
1767
1768 004120 177777
1769 004122 000000
1770
1771 004124 000000
1772 004126 000000
1773 004130 000000
1774 004132 000000
1775 004134 000000
1776 004136 000000
1777 004140 000000
1778 004142 000000

.=4000
EVENAD: 0 ;EVEN ADDRESS
ODDAD: 0 ;ODD ADDRESS
.=4100
RBUF: 0
RBUF1: 0
RBUF2: 0
RBUF3: 0
RBUF4: 0
RBUF5: 0
RBUF6: 0
RBUF7: 0
:
:*****
: THESE ARE FOR THE CLEARS TEST
:*****
:
MINUS: -1
BEFORE: 0
\$CS1: 0
\$CS2: 0
\$CS3: 0
\$ST: 0
\$ER: 0
\$RHBA: 0
\$RHDB: 0
\$RHWC: 0

```

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

```

```

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

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

TST R0 ;WAS IT A RESTART

```

1835	004436	100443			BMI	AROUND		:YES, SKIP TYPING
1836	004440	104401	004446		TYPE	,68\$		::TYPE ASCII STRING
1837	004444	000427			BR	,67\$		::GET OVER THE ASCII
1838					::68\$:	.ASCII	<15><12>/RH 11 AND 70 I O AND CONTROLLER DIAGNOSTIC/	
1839	004524				67\$:			
1840	004524	104401	004532		TYPE	,70\$		::TYPE ASCII STRING
1841	004530	000406			BR	,69\$		::GET OVER THE ASCII
1842					::70\$:	.ASCII	<15><12>/CZRHBE-D /	
1843	004546				69\$:			
1844	004546				AROUND:			
1845								
1846								
1847					::*****			
1848					:*TEST 1		THIS IS THE RH ADDRESS DECODE TEST	
1849							:*THIS PROGRAM WILL ALLOW THE OPERATOR TO SAY	
1850							:*WHICH RH IS ON THE BUS AND WHAT ITS BASE	
1851							:*ADDRESS IS. THE RH IS THEN TESTED FOR A	
1852							:*RESPONSE AND CHECKED FOR A TESTER BEING	
1853							:*CONNECTED.	
1854	004546	000004			::*****			
1855	004550	012737	000001	001212	TST1:	SCOPE		
1856	004556	012737	047200	000114		MOV	#1,\$TIMES	::DO 1 ITERATION
1857	004564	012706	000750			MOV	#PARITY,@#114	
1858	004570	012737	000340	000116		MOV	#STACK,SP	
1859	004576	012737	046746	000004		MOV	#340,@#116	
1860	004604	012737	000340	000006		MOV	#TIEOUT,@#ERRVEC	:SET UP TIMEOUT
1861	004612	005700				MOV	#340,@#ERRVEC+2	:SETUP PRIORITY
1862	004614	001403				TST	R0	:SKIP TYPING ?
1863	004616	005000				BEQ	SKIPIN	:NO
1864	004620	000137	006552			CLR	R0	:CLEAR SKIP FLAG
1865	004624	005001				JMP	@#TST2	:GET OUT OF TEST
1866	004626	005737	001174		SKIPIN:	CLR	R1	:GET R1 READY
1867	004632	001402				TST	\$REG5	:IS IT AN ALTERNATE START
1868	004634	000137	004644			BEQ	SLEUTH	:NO
1869	004640	000137	005066			JMP	KONG	:YES DO ALTERNATE SETUP
1870	004644	005037	001174		SLEUTH:	JMP	AD1ERR	:DO REGULAR SETUP
1871	004650	104401	004656		KONG:	CLR	\$REG5	:RESET ALT. START FLAG
1872	004654	000416				TYPE	,65\$	::TYPE ASCII STRING
1873						BR	,64\$	::GET OVER THE ASCII
1874	004712				::65\$:	.ASCII	<15><12>/TYPE BASE ADDRESS FOR RH /	
1875	004712	104410			64\$:			
1876	004714	012637	003366			RDOCT		
1877	004720	104401	004726			MOV	(SP)+,DEVIC1	:GET BASE ADDRESS
1878	004724	000415				TYPE	,67\$	::TYPE ASCII STRING
1879						BR	,66\$	::GET OVER THE ASCII
1880	004760				::67\$:	.ASCII	<15><12>/TYPE RH VECTOR ADDRESS /	
1881	004760	104410			66\$:			
1882	004762	012637	003406			RDOCT		
1883	004766	104401	004774			MOV	(SP)+,VECADD	:GET VECTOR ADDRESS
1884	004772	000426				TYPE	,69\$	::TYPE ASCII STRING
1885						BR	,68\$	::GET OVER THE ASCII
1886	005050				::69\$:	.ASCII	<15><12>/HOW MANY REGISTERS ARE YOU JUMPERED FOR /	
1887	005050	104410			68\$:			
1888	005052	012637	003404			RDOCT		
1889	005056	006137	003404			MOV	(SP)+,REGEN	:GET NUMBER OF REG
1890	005062	000137	005402			ROL	REGEN	:MULT BY 2
						JMP	G11	:GO CREATE ADDRESSES

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1891 005066 013737 003320 003366 AD1ERR: MOV ADD1,DEVIC1 ;SETUP DEVICE 1
1892 005074 012737 005166 000004 MOV #AD2ERR,ERRVEC ;FOR TIMEOUT
1893 005102 005777 176214 TST @ADD2 ;IS THERE A DEVICE
1894 005106 013737 003322 003370 MOV ADD2,DEVIC2 ;YES
1895 005114 012737 005206 000004 MOV #AD3ERR,ERRVEC ;FOR TIMEOUT
1896 005122 005777 176176 TST @ADD3 ;IS THERE A DEVICE
1897 005126 013737 003324 003372 MOV ADD3,DEVIC3 ;YES
1898 005134 012737 005226 000004 MOV #AD4ERR,ERRVEC ;FOR TIMEOUT
1899 005142 005777 176160 TST @ADD4 ;IS THERE A DEVICE
1900 005146 013737 003326 003374 MOV ADD4,DEVIC4 ;YES
1901 005154 012737 046746 000004 MOV #TIEOUT,ERRVEC ;REPLACE TIMEOUT
1902 005162 000137 006054 JMP RESTAR ;TEST DEVICES
1903 005166 005037 003370 AD2ERR: CLR DEVIC2 ;NO DEVICE 2
1904 005172 012737 046746 000004 MOV #TIEOUT,ERRVEC ;REPLACE TIMEOUT
1905 005200 022626 CMP (SP)+,(SP)+ ;CORRECT STACK
1906 005202 000137 006054 JMP RESTAR ;TEST DEVICES
1907 005206 005037 003372 AD3ERR: CLR DEVIC3 ;NO DEVICE 3
1908 005212 012737 046746 000004 MOV #TIEOUT,ERRVEC ;REPLACE TIMEOUT
1909 005220 022626 CMP (SP)+,(SP)+ ;CORRECT STACK
1910 005222 000137 006054 JMP RESTAR ;TEST DEVICES
1911 005226 005037 003374 AD4ERR: CLR DEVIC4 ;NO DEVICE 4
1912 005232 012737 046746 000004 MOV #TIEOUT,ERRVEC ;REPLACE TIMEOUT
1913 005240 022626 CMP (SP)+,(SP)+ ;CORRECT STACK
1914 005242 000137 006054 JMP RESTAR ;TEST DEVICES
1915 005246 005737 000042 GIG0: TST @#42 ;IS THERE A MONITOR
1916 005252 001402 BEQ GIG1 ;NO
1917 005254 000137 046152 JMP $EOP ;YES EXIT
1918 005260 022737 160100 003366 GIG1: CMP #160100,DEVIC1 ;ARE WE HERE AFTER 210
1919 005266 001402 BEQ SA200 ;NO, 200
1920 005270 000137 004644 JMP KONG ;GET NEW ADDRESS FOR 210
1921 005274 SA200:
1922 005274 104401 005302 TYPE ,65$ ;:TYPE ASCIZ STRING
1923 005300 000420 BR 64$ ;:GET OVER THE ASCIZ
1924 ;:65$: .ASCIZ <15><12>/TYPE BASE ADDRESS FOR RH #1 /
1925 64$:
1926 005342 104410 RDOCT
1927 005344 012637 003366 MOV (SP)+,DEVIC1 ;GET BASE ADDRESS FOR RH1
1928 005350 105737 001103 TSTB $ERFLG ;ARE WE HERE BECAUSE OF AN ADDRESS ERROR
1929 005354 001405 BEQ G01 ;NO,GET READY FOR NEXT ADDRESS
1930 005356 005737 003366 TST DEVIC1 ;IS IT A ZERO
1931 005362 001007 BNE G11 ;NO
1932 005364 000137 005260 JMP GIG1 ;NEED FIRST ADDRESS
1933 005370 005737 003366 G01: TST DEVIC1 ;DID HE CORRECT WITH A 0
1934 005374 001012 BNE GIG01 ;GET BASE FOR RH # 2
1935 005376 000137 005260 JMP GIG1 ;NEED ADDRESS
1936 005402 013737 003366 003400 G11: MOV DEVIC1,DEVIC5 ;GET READY TO CREATE REG. ADDRESS
1937 005410 012737 005246 003410 MOV #GIG0,RETAIN ;SAVE RETURN ADDRESS
1938 005416 000137 006146 JMP GIG04 ;CONSTRUCT REGISTER ADDRESSES
1939 005422 005737 000042 GIG01: TST @#42 ;IS THER A MONITOR
1940 005426 001402 BEQ GIG2 ;NO
1941 005430 000137 046152 JMP $EOP ;EXIT
1942 005434 GIG2:
1943 005434 104401 005442 TYPE ,65$ ;:TYPE ASCIZ STRING
1944 005440 000420 BR 64$ ;:GET OVER THE ASCIZ
1945 ;:65$: .ASCIZ <15><12>/TYPE BASE ADDRESS FOR RH #2 /
1946 64$: 005502

```

1947	005502	104410		RDOCT		:GET VALUE
1948	005504	012637	003370	MOV	(SP)+,DEVIC2	:SAVE ADDRESS
1949	005510	105737	001103	TSTB	\$ERFLG	:ARE WE HERE BECAUSE OF ERROR
1950	005514	001405		BEQ	G02	:NO
1951	005516	005737	003370	TST	DEVIC2	:IS IT 0
1952	005522	001007		BNE	G12	:NO
1953	005524	000137	045374	JMP	RESTAT	:SET UP FOR RH #1
1954	005530	005737	003370	TST	DEVIC2	:IS IT 0
1955	005534	001012		BNE	G1G02	:NO,GET NEXT ADDRESS
1956	005536	000137	006054	JMP	RESTAR	:CREATE ADDRESS FOR RH#1
1957	005542	013737	003370	MOV	DEVIC2,DEVIC5	:GET READY TO CREATE
1958	005550	012737	005422	MOV	#G1G01,RETAIN	:SAVE RETURN ADDRESS
1959	005556	000137	006146	JMP	G1G04	:CREATE REG. ADDRESSES
1960	005562	005737	000042	TST	@#42	:IS THERE A MONITOR
1961	005566	001402		BEQ	G1G3	:NO
1962	005570	000137	046152	JMP	\$EOP	:EXIT
1963	005574			G1G3:		
1964	005574	104401	005602	TYPE	,65\$	::TYPE ASCIZ STRING
1965	005600	000420		BR	64\$	::GET OVER THE ASCIZ
1966				::65\$:	.ASCIZ	<15><12>/TYPE BASE ADDRESS FOR RH #3 /
1967	005642			64\$:		
1968	005642	104410		RDOCT		
1969	005644	012637	003372	MOV	(SP)+,DEVIC3	:SAVE ADDRESS
1970	005650	105737	001103	TSTB	\$ERFLG	:ARE WE HERE DO TO ERROR
1971	005654	001405		BEQ	G03	:NO
1972	005656	005737	003372	TST	DEVIC3	:IS IT 0
1973	005662	001007		BNE	G13	:NO
1974	005664	000137	045374	JMP	RESTAT	:RESTART PASS
1975	005670	005737	003372	TST	DEVIC3	:IS IT 0
1976	005674	001012		BNE	G1G03	:GET NEXT ADDRESS
1977	005676	000137	006054	JMP	RESTAR	:CREATE RH#1 ADDRESSES
1978	005702	013737	003372	MOV	DEVIC3,DEVIC5	:SETUP TO CREATE ADDRESS
1979	005710	012737	005562	MOV	#G1G02,RETAIN	:SAVE RETURN ADDRESS
1980	005716	000137	006146	JMP	G1G04	:CREATE ADDRESSES
1981	005722	005737	000042	TST	@#42	:IS THERE A MONITOR
1982	005726	001402		BEQ	G1G4	:NO
1983	005730	000137	046152	JMP	\$EOP	:EXIT
1984	005734			G1G4:		
1985	005734	104401	005742	TYPE	,65\$	::TYPE ASCIZ STRING
1986	005740	000420		BR	64\$	::GET OVER THE ASCIZ
1987				::65\$:	.ASCIZ	<15><12>/TYPE BASE ADDRESS FOR RH #4 /
1988	006002			64\$:		
1989	006002	104410		RDOCT		
1990	006004	012637	003374	MOV	(SP)+,DEVIC4	:SAVE ADDRESS
1991	006010	105737	001103	TSTB	\$ERFLG	:ARE WE HERE BECAUSE OF ERROR
1992	006014	001405		BEQ	G04	:NO
1993	006016	005737	003374	TST	DEVIC4	:IS IT 0
1994	006022	001004		BNE	G14	:NO
1995	006024	000137	045374	JMP	RESTAT	:RESTART PASS
1996	006030	000137	006054	JMP	RESTAR	:GO SET UP REG. ADDRESSES
1997	006034	013737	003374	MOV	DEVIC4,DEVIC5	:GET READY TO CREATE REG. ADDRESSES
1998	006042	012737	005722	MOV	#G1G03,RETAIN	:STORE RETURN ADDRESS
1999	006050	000137	006146	JMP	G1G04	:GO CREATE ADDRESSES
2000	006054	013737	003366	MOV	DEVIC1,DEVIC5	:GET READY TO CREATE REG. ADDRESSES
2001	006062	012737	005246	MOV	#G1G0,RETAIN	:SAVE RETURN ADDRESS
2002	006070	104401	006076	TYPE	,65\$	::TYPE ASCIZ STRING

```

2003 006074 000421      BR      64$      ;;GET OVER THE ASCIIZ
2004      ;;65$: .ASCIIZ <15><12>/TESTING RH #1 AT BASE ADDRESS /
2005      64$:
2006 006140 013746 003366      MOV      DEVIC1,-(SP)      ;;SAVE DEVIC1 FOR TYPEOUT
2007 006144 104402      TYP0C      ;;GO TYPE--OCTAL ASCII(ALL DIGITS)
2008 006146 013737 003400 003402 GIG04: MOV      DEVIC5,@#OFF11      ;SETUP FOR ADDRESSES
2009 006154 012702 003330      MOV      #RHCS1,R2      ;SET UP WHERE TO PUT THEM
2010 006160 013722 003402 4$:      MOV      @#OFF11,(R2)+      ;SETUP ADDRESS
2011 006164 062737 000002 003402      ADD      #TWO,@#OFF11      ;SETUP NEXT ADDRESS
2012 006172 022702 003360      CMP      #RHBAE,R2      ;ARE ALL ADDRESSES SET UP
2013 006176 001401      BEQ      3$      ;IS INFORMATION CORRECT?
2014 006200 000767      BR      4$      ;NO SETUP NEW ADDRESS
2015 006202 013737 003400 003402 3$:      MOV      DEVIC5,@#OFF11
2016 006210 063737 003404 003402      ADD      REGEND,@#OFF11
2017 006216 013737 003402 003360      MOV      @#OFF11,RHBAE      ;WITH CORRECT ADDRESS
2018 006224 062737 000002 003402      ADD      #2,@#OFF11      ;SETUP RHCS3 ADDRESS
2019 006232 013737 003402 003362      MOV      @#OFF11,RHCS3      ;WITH CORRECT ADDRESS
2020 006240 013737 003330 003364      MOV      RHCS1,RHCS1B      ;SETUP RHCS1B WITH
2021 006246 005237 003364      INC      RHCS1B      ;HIGH BYTE ADDRESS OF RHCS1
2022 006252 013746 000004      TSTADD: MOV      @#ERRVEC,-(SP)      ;SAVE TIOUOUT VALUE
2023 006256 012737 006336 000004      MOV      #ADDERR,@#ERRVEC      ;SETUP NEW TIOUOUT VALUE
2024 006264 012777 000007 175046      MOV      #7,@RHCS2      ;SETUP UNIT NO.
2025 006272 005777 175032      TST      @RHCS1      ;WILL RH RESPOND
2026 006276 022777 000040 175052      CMP      #40,@RHDT      ;IS A TESTER THERE
2027 006304 001403      BEQ      1$      ;YES,CONTINUE
2028 006306 104034      ERROR      34      ;TESTER IS NOT CONNECTED
2029 006310 000137 006340      JMP      ADDERR+2      ;BAD ADDRESS
2030 006314 122777 000007 175014 1$:      CMPB      #7,@RHMR2      ;IS THERE ALSO A 7 FOR UNIT NO.
2031 006322 001403      BEQ      2$      ;YES,CONTINUE
2032 006324 104071      ERROR      71      ;BAD ADDRESS
2033 006326 000137 006340      JMP      ADDERR+2
2034 006332 005726 2$:      TST      (SP)+      ;CORRECT STACK
2035 006334 000406      BR      RHTEST      ;YES AN RH IS THERE
2036 006336 022626      ADDERR: CMP      (SP)+,(SP)+      ;CORRECT STACK
2037 006340 012637 000004      MOV      (SP)+,@#ERRVEC      ;REPLACE OLD TIOUOUT VALUE
2038 006344 104036      ERROR      36      ;RH DID NOT RESPOND
2039 006346 000177 175036      JMP      @RETAIN      ;GET CORRECT BASE ADDRESS
2040 006352 012637 000004      RHTEST: MOV      (SP)+,@#ERRVEC      ;REPLACE TIOUOUT VALUE
2041 006356 005701      TST      R1      ;IS IT A 70
2042 006360 001433      BEQ      RH70TT      ;YES,LETS MAKE SURE
2043 006362 013746 000004      MOV      @#ERRVEC,-(SP)      ;SAVE TIME OUT VALUE
2044 006366 012737 006540 000004      MOV      #RH11,@#ERRVEC      ;CHECK FOR AN RH11
2045 006374 012777 000117 174760      MOV      #IPCK0:IPCK1:IPCK2:IPCK3:IE3,@RHCS3      ;SET ALL BITS IN RHCS3
2046      ;REPLACE TIMEOUT
2047 006402 012637 000004      RH11BA: MOV      (SP)+,@#ERRVEC
2048 006406
2049 006406 104401 006414      TYPE      65$      ;;TYPE ASCIIZ STRING
2050 006412 000413      BR      64$      ;;GET OVER THE ASCIIZ
2051      ;;65$: .ASCIIZ <15><12>/TESTING FOR AN RH70/
2052      64$:
2053 006442 005001      CLR      R1      ;SET UP RH70 FLAG
2054 006444 000137 006546      JMP      RH11+6      ;EXIT
2055 006450 013746 000004      RH70TT: MOV      @#ERRVEC,-(SP)      ;SAVE LOCATION 4
2056 006454 012737 006474 000004      MOV      #FAKE70,@#ERRVEC      ;REPLACE ADDRESS
2057 006462 012777 000117 174672      MOV      #IPCK0:IPCK1:IPCK2:IPCK3:IE3,@RHCS3      ;SET ALL BITS
2058

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2059 006470 000137 006542
2060 006474 022626
2061 006476 012637 000004
2062 006502 005001
2063 006504 005101
2064 006506 104401 006514
2065 006512 000411
2066
2067 006536
2068 006536 000403
2069 006540 022626
2070 006542 012637 000004
2071 006546 004737 050210
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2079 006552 000004
2080 006554 012737 000001 001212
2081 006562 005037 001210
2082 006566 005137 001210
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2088 006572 012777 000040 174540
2089 006600 012777 000007 174532
2090 006606 122777 000007 174522
2091 006614 001107
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2097 006616 005701
2098 006620 100417
2099 006622 005737 004122
2100 006626 001406
2101 006630 033777 004130 174524
2102 006636 001410
2103 006640 000137 007174
2104 006644 032777 174000 174510
2105
2106 006652 001412
2107 006654 000137 007174
2108 006660 005737 004122
2109 006664 001405
2110 006666 033777 004124 174434
2111 006674 001070
2112 006676 000404
2113 006700 032777 160000 174422
2114 006706 001063

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      JMP      RH11+2          ;EXIT TEST
FAKE70: CMP      (SP)+,(SP)+    ;CORRECT STACK
      MOV      (SP)+,@ERRVEC    ;CORRECT TIMEOUT
RH70BA: CLR      R1             ;GET FLAG READY
      COM      R1               ;SET FOR RH11
      TYPE     ,65$             ;;TYPE ASCIZ STRING
      BR       64$             ;;GET OVER THE ASCIZ
;;65$: .ASCIZ  <15><12>/TESTING AN RH11/
64$:
      BR       ERR1
RH11:  CMP      (SP)+,(SP)+    ;CORRECT STACK POINTER
      MOV      (SP)+,@ERRVEC    ;REPLACE TIMEOUT VALUE
ERR1:  JSR      R7,ERRTST
;*****
;*TEST 2          CLEAR TEST
; *THIS TEST CHECKS THAT ALL
; *ERROR BITS ARE CLEARED AFTER
; *THE CLEAR BIT WAS LOADED INTO
; *RHCS2 REGISTER.....
;*****
TST2:  SCOPE
      MOV      #1,$TIMES        ;;DO 1 ITERATION
      CLR      $TMP5            ;GET READY TO
      COM      $TMP5            ;SET UP FOR JSR ROUTINE
;*****
; *THIS TEST IS ALSO ENTERED AT THE LABLE CLEER
; *AT THE END OF ALL THE ERROR BIT TESTS TO SEE
; *THAT A CLEAR WILL CLEAR THE ERROR BIT SET
;*****
CLEER: MOV      #CLR,@RHCS2      ;TELL IT TO CLEAR
      MOV      #7,@RHCS2        ;SETUP UNIT NO.
      CMPB     #7,@RHMR2        ;HAS DEVICE BEEN SET TO 7
      BNE      1$               ;NO,FIND WHAT BIT WAS NOT SET
;*****
; *THE TEST IS ENTERED HERE IF THE ERROR BIT BEING
; *FORCED SET DID NOT SET TO SEE IF ANY OTHER ERROR
; *BIT DID SET.....
;*****
12$:   TST      R1               ;IS IT AN 11 OR A 70
      BMI      15$             ;IT'S A 70
      TST      BEFORE          ;ARE WE HERE FOR SHORTS
      BEQ      14$             ;NO
      BIT      $CS3,@RHCS3      ;ANY EXTRA ERROR BITS
      BEQ      15$             ;NO
      JMP      13$             ;WE FOUND AN ERROR
14$:   BIT      #WCELO!WCEHI!DPELO!DPEHI!APE,@RHCS3
      BEQ      5$               ;TEST ERROR BITS
      JMP      13$             ;NO ERROR BITS SET
15$:   TST      BEFORE          ;GO REPORT ERROR BITS
      BEQ      5$               ;ARE WE HERE FOR SHORTS
      BIT      $CS1,@RHCS1      ;YES SEE IF THERE ARE ANY
      BNE      2$               ;NONE FOUND
      BR       16$             ;GO CHECK THE NEXT ONE
16$:   BIT      #TRE!SC.MCPE,@RHCS1
      BNE      2$               ;ANY ERROR BITS SET IN CS1
      ;YES,FIND THEM

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

2171 007206 104176
2172 007210 004737 046362
2173 007214 000137 006660
2174 007220 000137 006616
2175 007224 000137 007220
2176 007230 000207
2177 007232 004737 050210
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2183 007236 000004
2184 007240 012777 000040 174072
2185 007246 012777 000007 174064
2186 007254 017737 174076 001172
2187 007262 022737 000040 001172
2188 007270 001401
2189 007272 104034
2190 007274 004737 050210
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2198 007300 000004
2199 007302 012737 000001 001212
2200 007310 012777 177777 174014
2201 007316 022777 177777 174006
2202 007324 001056
2203 007326 012777 000040 174004
2204 007334 017737 173770 003420
2205 007342 017737 173764 003444
2206 007350 017737 173760 003414
2207 007356 005701
2208 007360 001406
2209 007362 005037 003416
2210 007366 005037 003424
2211 007372 000137 007412
2212 007376 017737 173756 003416
2213 007404 017737 173752 003424
2214 007412 017737 173722 003422
2215 007420 017737 173716 003432
2216 007426 017737 173712 003436
2217 007434 017737 173710 003442
2218 007442 017737 173670 003440
2219 007450 005777 173656
2220 007454 001434
2221 007456 000137 007576
2222 007462 005777 173644
2223 007466 001416
2224 007470 012737 177777 001162
2225 007476 017737 173630 003444
2226 007504 104042

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ERROR 176          :RHCS3 HAS AN ERROR BIT SET
JSR R7,WATBIT      :TELL WHAT BITS
JMP 15$            :CONT CHECK
JMP 12$            :START JSR WHYFO
WHYFO: JMP -4       :FIND ERROR BITS SET
LEAVE: RTS R7       :GO BACK TO PROGRAM THAT SENT YOU HERE
ERR2: JSR R7,ERRTST

*****
*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
*****
TST3: SCOPE
      MOV #CLR,@RHCS2 :CLEAR TESTER
      MOV #7,@RHCS2   :UNIT SEVEN
      MOV @RHDT,$REG4  :GET DRIVE TYPE
      CMP #40,$REG4    :IS IT THE TESTER
      BEQ ERR4          :WAS THERE AN ERROR
      ERROR 34         :TESTER NOT CONNECTED
ERR4: JSR R7,ERRTST

*****
*TEST 4          WC CLEAR TEST
*THIS TEST WILL SEE THAT WHEN A CLEAR IS GIVEN
*THE WORD COUNT REGISTER REMAINS THE SAME
*****
TST4: SCOPE
      MOV #1,$TIMES    ;;DO 1 ITERATION
      MOV #-1,@RHWC    :MAKE WC NEGATIVE
      CMP #-1,@RHWC    :WAS IT LOADED CORRECTLY
      BNE WCERR1       :NO,ALL BITS DID NOT SET
      HERE: MOV #CLR,@RHCS2 :TELL DEVICE TO CLEAR
      MOV @RHCS1,CS1   :SAVE RHCS1
      MOV @RHWC,WC     :SAVE WORD COUNT
      MOV @RHBA,BA     :SAVE BUS ADDRESS
      TST R1           :IS IT AN RH11
      BEQ 87$          :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 REC.
      MOV @RHMR2,TC    :SAVE MR2 TESTER REG.
      TST @RHWC        :DID IT CLEAR
      BEQ WCERR2       :YES,CLEAR SHOULD NOT CLEAR WC
      JMP @DOIT        :GO TO NEXT CHECK
WCERR1: TST @RHWC      :DID ANY BITS LOAD
      BEQ 1$           :NO
      MOV #-1,$REG0    :SAVE WHAT WC SHOULD HAVE BEEN
      MOV @RHWC,WC     :SAVE CONTENTS OF WC
      ERROR 42         :ALL BITS DID NOT SET

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2227	007506	013737	003444	001200		MOV	WC,\$TMP1		; SETUP FOR WATBIT
2228	007514	004737	046362			JSR	R7,WATBIT		; FIND THE BIT(S)
2229	007520	000137	007326			JMP	@WHERE		; SEE IF BITS SET CLEAR
2230	007524	013737	177777	001162	1\$:	MOV	-1,\$REGO		; SETUP FOR ERROR
2231	007532	017737	173574	003444		MOV	@RHWC,WC		; GET BAD DATA
2232	007540	104043				ERROR	43		; WC DID NOT LOAD ANY BITS
2233	007542	000137	007576			JMP	@DOIT		; GO TO NEXT REG. TEST
2234	007546	012737	177777	001162	WCERR2:	MOV	#-1,\$REGO		; SETUP GOOD DATA
2235	007554	017737	173552	003444		MOV	@RHWC,WC		; GET BAD DATA
2236	007562	013737	003444	001200		MOV	WC,\$TMP1		; SETUP FOR WATBIT
2237	007570	104044				ERROR	44		; SOME BITS CLEARED IN WC
2238	007572	004737	046362			JSR	R7,WATBIT		; FIND THE BITS THAT CLEARED
2239	007576	004737	006572		DOIT:	JSR	R7,CLEER		; CLEAR ERRORS
2240	007602	004737	050210			JSR	-7,ERRTST		

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2248 007606 000004
2249 007610 012777 177776 173516
2250 007616 022777 177776 173510
2251 007624 001066
2252 007626 012777 000040 173504
2253 007634 017737 173470 003420
2254 007642 017737 173464 003444
2255 007650 017737 173460 003414
2256 007656 005701
2257 007660 001406
2258 007662 005037 003416
2259 007666 005037 003424
2260 007672 000137 007712
2261 007676 017737 173456 003416
2262 007704 017737 173452 003424
2263 007712 017737 173422 003422
2264 007720 017737 173416 003432
2265 007726 017737 173412 003436
2266 007734 017737 173410 003442
2267 007742 017737 173370 003440
2268 007750 005777 173360
2269 007754 001421
2270 007756 005037 001162
2271 007762 017737 173346 001200
2272 007770 104045
2273 007772 004737 046362
2274 007776 000137 010020
2275 010002 012737 177776 001162
2276 010010 017737 173320 001200
2277 010016 104046
2278 010020
2279 010020 004737 006572
2280 010024 004737 050210
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2286 010030 000004
2287 010032 005701
2288 010034 100510
2289 010036 012777 000077 173314
2290 010044 022777 000077 173306
2291 010052 001066
2292 010054 012777 000040 173256
2293 010062 017737 173242 003420
2294 010070 017737 173236 003444
2295 010076 017737 173232 003414
2296 010104 005701

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*****
: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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2297	010106	001406			BEQ	87\$		:NO IT'S A 70
2298	010110	005037	003416		CLR	BAE		:CLEAR BAE
2299	010114	005037	003424		CLR	CS3		:CLEAR CS3
2300	010120	000137	010140		JMP	86\$		:CONTINUE
2301	010124	017737	173230	003416	87\$: MOV	@RHBAE,BAE		:SAVE BUS ADDRESS EXTENSION
2302	010132	017737	173224	003424	MOV	@RHCS3,CS3		:SAVE RHCS3
2303	010140	017737	173174	003422	86\$: MOV	@RHCS2,CS2		:SAVE CS2
2304	010146	017737	173170	003432	MOV	@RHST,DS1		:SAVE TESTER STATUS
2305	010154	017737	173164	003436	MOV	@RHER,ER1		:SAVE ERROR REGISTER
2306	010162	017737	173162	003442	MOV	@RHTDB,TDR		:SAVE TESTER DATA REG.
2307	010170	017737	173142	003440	MOV	@RMR2,TC		:SAVE MR2 TESTER REG.
2308	010176	005777	173156		TST	@RHBAE		:IS IT ZERO
2309	010202	001421			BEQ	WATFIV		:TEST IS GOOD
2310	010204	005037	001162		CLR	\$REGO		:CREATE GOOD DATA
2311	010210	017737	173144	001200	MOV	@RHBAE,\$TMP1		:SETUP FOR WATBIT
2312	010216	104100			ERROR	100		:RHBAE DID NOT CLEAR
2313	010220	004737	046362		JSR	R7,WATBIT		:FIND BITS STILL SET
2314	010224	000137	010246		JMP	@WATFIV		:GO TO NEXT REG. TEST
2315	010230	012737	000077	001162	1\$: MOV	#77,\$REGO		:SETUP GOOD DATA
2316	010236	017737	173116	001200	MOV	@RHBAE,\$TMP1		:SETUP FOR WATBIT
2317	010244	104101			ERROR	101		:BITS DID NOT SET IN RHBAE
2318	010246				WATFIV:			
2319	010246	004737	006572		JSR	R7,CLEER		:CLEAR ERRORS
2320	010252	004737	050210		JSR	R7,ERRTST		
2321					:*****			
2322					:*TEST 7 RHDB CLEAR TEST			
2323					:*THIS TEST CHECKS THAT WHEN A CLEAR IS GENERATED			
2324					:*OUTPUT READY IS NEGATED			
2325					:*****			
2326	010256	000004			1\$T7: SCOPE			
2327	010260	012777	177777	173064	MOV	#-1,@RHDB		:SET ALL BITS IN RHDB
2328	010266	005037	003446		CLR	BITCNT		:CLEAR BIT COUNTER
2329	010272	032777	000200	173040	18\$: BIT	#OR,@RHCS2		:IS OR SET
2330	010300	001015			BNE	DBMG		:BIT IS SET
2331	010302	005237	003446		INC	BITCNT		:COUNT UP
2332	010306	001371			BNE	18\$		:NOT FINISHED COUNTING
2333	010310	005037	003446		CLR	BITCNT		:GET READY TO DO IT AGAIN
2334	010314	032777	000200	173016	19\$: BIT	#OR,@RHCS2		:IS IT SET YET?
2335	010322	001004			BNE	DBMG		:YES
2336	010324	005237	003446		INC	BITCNT		:COUNT UP
2337	010330	001401			BEQ	DBMG		:BIT IS NOT GOING TO SET
2338	010332	000770			BR	19\$		
2339	010334				DBMG:			
2340	010334	017737	172770	003420	MOV	@RHCS1,CS1		:SAVE RHCS1
2341	010342	017737	172764	003444	MOV	@RHWC,WC		:SAVE WORD COUNT
2342	010350	017737	172760	003414	MOV	@RHBA,BA		:SAVE BUS ADDRESS
2343	010356	005701			TST	R1		:IS IT AN RH11
2344	010360	001406			BEQ	87\$		:NO IT'S A 70
2345	010362	005037	003416		CLR	BAE		:CLEAR BAE
2346	010366	005037	003424		CLR	CS3		:CLEAR CS3
2347	010372	000137	010412		JMP	86\$		:CONTINUE
2348	010376	017737	172756	003416	87\$: MOV	@RHBAE,BAE		:SAVE BUS ADDRESS EXTENSION
2349	010404	017737	172752	003424	MOV	@RHCS3,CS3		:SAVE RHCS3
2350	010412	017737	172722	003422	86\$: MOV	@RHCS2,CS2		:SAVE CS2
2351	010420	017737	172716	003432	MOV	@RHST,DS1		:SAVE TESTER STATUS
2352	010426	017737	172712	003436	MOV	@RHER,ER1		:SAVE ERROR REGISTER

2353	010434	017737	172710	003442		MOV	@RHDB,TDR	:SAVE TESTER DATA REG.
2354	010442	017737	172670	003440		MOV	@RHMR2,TC	:SAVE MR2 TESTER REG.
2355	010450	032777	000200	172662		BIT	#OR,@RHCS2	:IS OUTPUT READY SET
2356	010456	001001				BNE	HURTS	:YES,CONTINUE TEST
2357	010460	104041				ERROR	41	:OUTPUT READY DID NOT SET
2358	010462	022777	177777	172662	HURTS:	CMP	#-1,@RHDB	:DID INFO GET LOADED TO DB
2359	010470	005037	003446			CLR	BITCNT	:CLEAR BIT COUNTER
2360	010474	032777	000200	172636	18\$:	BIT	#OR,@RHCS2	:IS OR SET
2361	010502	001015				BNE	DBMSG	:BIT IS SET
2362	010504	005237	003446			INC	BITCNT	:COUNT UP
2363	010510	001371				BNE	18\$	:NOT FINISHED COUNTING
2364	010512	005037	003446			CLR	BITCNT	:GET READY TO DO IT AGAIN
2365	010516	032777	000200	172614	19\$:	BIT	#OR,@RHCS2	:IS IT SET YET?
2366	010524	001004				BNE	DBMSG	:YES
2367	010526	005237	003446			INC	BITCNT	:COUNT UP
2368	010532	001401				BEQ	DBMSG	:BIT IS NOT GOING TO SET
2369	010534	000770				BR	19\$	
2370	010536				DBMSG:			
2371	010536	012777	000040	172574		MOV	#CLR,@RHCS2	:TELL IT TO CLEAR
2372	010544	005037	003446			CLR	BITCNT	:CLEAR THE COUNTER
2373	010550	032777	000200	172562	18\$:	BIT	#OR,@RHCS2	:DID OUTPUT READY CLEAR
2374	010556	001403				BEQ	SNAFOO	:YES GET OUT OF LOOP
2375	010560	005237	003446			INC	BITCNT	:INCREMENT COUNT LOOP
2376	010564	001371				BNE	18\$	:CONTINUE LOOP IF NO CARRY
2377	010566	032777	000200	172544	SNAFOO:	BIT	#OR,@RHCS2	:IS OUTPUT READY CLEARED
2378	010574	001403				BEQ	1\$	:YES,EXIT TEST
2379	010576	104114				ERROR	114	:OUTPUT READY NOT CLEARED
2380								:BY SETTING CLR IN RHCS2
2381	010600	004737	007224			JSR	R7,WHYFO	:ANY ERROR BITS SET
2382	010604	004737	006572		1\$:	JSR	R7,CLEER	:CLEAR ERRORS
2383	010610	004737	050210			JSR	R7,ERRST	
2384								
2385								
2386								
2387								
2388								
2389	010614	000004						
2390	010616	023727	003366	160100		CMP	DEVIC1,#160100	:CHECK FOR WHAT REG END
2391	010624	001000				BNE	1\$	:WE ARE OK
2392	010626	013704	003356		1\$:	MOV	RHDT,R4	:SETUP TO TEST RH11
2393	010632	005724				TST	(R4)+	:CORRECT ADDRESS
2394	010634	023704	003360			CMP	RHBAE,R4	:ARE ALL REGISTERS CHECKED
2395	010640	001526				BEQ	ERR3	:WERE THERE ANY ERRORS
2396	010642	005724			2\$:	TST	(R4)+	:TEST REGISTER
2397	010644	001004				BNE	3\$	:SOME INFORMATION WAS FOUND
2398	010646	023704	003360			CMP	RHBAE,R4	:ARE ALL REGISTERS CHECKED
2399	010652	001521				BEQ	ERR3	:WAS THERE ANY ERRORS
2400	010654	000772				BR	2\$	:TEST NOT COMPLETED
2401	010656	005744			3\$:	TST	-(R4)	:CORRECT ADDRESS
2402	010660	010437	003416			MOV	R4,BAE	:SAVE ADDRESS
2403	010664	011437	001162			MOV	(R4),SREGO	:GET CONTENTS
2404	010670	017737	172452	003412		MOV	@RHAS,AS	:GET ATTENTION SUMMARY
2405	010676	104052				ERROR	52	:FALSE INFO IN FAKE REGISTER
2406	010700	005003				CLR	R3	:GET OFFSET READY
2407	010702	013737	003330	003420		MOV	RHCS1,CS1	:GET ADDRESS TO START CHECKING
2408	010710	027737	172504	001162	29\$:	CMP	@CS1,SREGO	:HAS A REGISTER BEEN FOUND THAT COMPARES

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2409 010716 001412      BEQ      28$      ;YES,PRINT IT OUT
2410 010720 023737 003356 003420 30$:  CMP      RHD1,CS1      ;IS IT LAST REG IN RH11
2411 010726 001473      BEQ      ERR3      ;WAS THERE ANY ERRORS
2412 010730 062737 000002 003420      ADD      #TWO,CS1      ;NO,CORRECT FOR NEXT CHECK
2413 010736 062703 000004      ADD      #4,R3      ;CORRECT OFFSET
2414 010742 000762      BR       29$      ;CONTINUE TEST
2415 010744 032737 020000 177570 28$:  BIT      #SW13,@#177570      ;SKIP ERROR PRINTOUT
2416 010752 001024      BNE      55$      ;SKIP MESSAGE
2417 010754 104401 010762      TYPE      ,65$      ;:TYPE ASCIZ STRING
2418 010760 000421      BR       64$      ;:GET OVER THE ASCIZ
2419      ;:65$: .ASCIZ <15><12>/REGISTER CONTENTS COMPARES TO:/
2420 011024      64$:
2421 011024 000163 011030      55$: JMP      27$(R3)      ;PRINT REGISTER
2422 011030 104053      27$: ERROR 53      ;RHCS1
2423 011032 000732      BR       30$      ;CONTINUE TEST
2424 011034 104054      ERROR 54      ;RHWC
2425 011036 000730      BR       30$      ;CONTINUE TEST
2426 011040 104055      ERROR 55      ;RHBA
2427 011042 000726      BR       30$      ;CONTINUE TEST
2428 011044 104056      ERROR 56      ;RHMR2
2429 011046 000724      BR       30$      ;CONTINUE TEST
2430 011050 104057      ERROR 57      ;RHCS2
2431 011052 000722      BR       30$      ;CONTINUE TEST
2432 011054 104060      ERROR 60      ;RHST
2433 011056 000720      BR       30$      ;CONTINUE TEST
2434 011060 104061      ERROR 61      ;RHER
2435 011062 000716      BR       30$      ;CONTINUE TEST
2436 011064 104062      ERROR 62      ;RHAS
2437 011066 000714      BR       30$      ;CONTINUE TEST
2438 011070 104063      ERROR 63      ;RHTD3
2439 011072 000712      BR       30$      ;CONTINUE TEST
2440 011074 104064      ERROR 64      ;RHDB
2441 011076 000710      BR       30$      ;CONTINUE TEST
2442 011100 104065      ERROR 65      ;RHMR1
2443 011102 000706      BR       30$      ;CONTINUE TEST
2444 011104 104066      ERROR 66      ;RHD1
2445 011106 000704      BR       30$      ;CONTINUE TEST
2446 011110 104067      ERROR 67      ;RHBAE
2447 011112 000702      BR       30$      ;CONTINUE TEST
2448 011114 104070      ERROR 70      ;RHCS3
2449 011116 004737 050210 ERR3: JSR      R7,ERR1ST
2450 011122 004737 006572      JSR      R7,CLEER      ;CLEAR ERRORS
2451
2452      ;*****
2453      ;*TEST 11      RHCS3 TEST
2454      ;*THIS TEST CHECKS THE READ/WRITE BITS
2455      ;*IN THE RHCS3 REGISTER CAN BE CLEARED AND SET.
2456      ;*****
2457 011126 000004      TST11: SCOPE
2458 011130 012777 000040 172202      MOV      #CLR,@RHCS2      ;CLEAR TESTER
2459 011136 012777 000007 172174      MOV      #7,@RHCS2      ;SETUP UNIT SEVEN
2460 011144 005701      TST      R1      ;IS IT AN RH70
2461 011146 001122      BNE      TST12      ;:THIS IS A RH11
2462 011150 012737 000004 003450      MOV      #4,LOOCNT      ;SETUP LOOP COUT OF FOUR
2463 011156 012737 000001 001162      MOV      #1,$REGO      ;SETUP BIT TO BE TESTED
2464 011164 013777 001162 172170 1$:  MOV      $RFG0,@RHCS3      ;SET THE BIT

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Address	Offset	PC	PC+1	PC+2	Instruction	Comment
2465	011172	017737	172164	003424	MOV @RHCS3,CS3	;SAVE CONTENTS OF RHCS3
2466	011200	013737	003424	001200	MOV CS3,\$TMP1	;SETUP FOR WHAT BIT IF NEEDED
2467	011206	123777	001162	172146	CMPB \$REG0,@RHCS3	;IS THE BIT SET?
2468	011214	001022			BNE 2\$	;NO,GO TO ERROR
2469	011216	006137	001162		ROL \$REG0	;SETUP TO TEST NEXT BIT
2470	011222	005337	003450		DEC LOOCNT	; -1 TO THE LOOP COUNT
2471	011226	001356			BNE 1\$	;TEST NEXT BIT
2472	011230	012737	000100	001162	MOV #IE3,\$REG0	;SET INTERRUPT BIT
2473	011236	013777	001162	172116	MOV \$REG0,@RHCS3	;SET BIT
2474	011244	017737	172112	003424	MOV @RHCS3,CS3	
2475	011252	023777	001162	172102	CMP \$REG0,@RHCS3	;SAVE CONTENTS
2476	011260	001451			BEQ ERR5	;IS BIT SET?
2477	011262					;WAS THERE AN ERROR
2478	011262	017737	172042	003420	MOV @RHCS1,CS1	;SAVE RHCS1
2479	011270	017737	172036	003444	MOV @RHWC,WC	;SAVE WORD COUNT
2480	011276	017737	172032	003414	MOV @RHBA,BA	;SAVE BUS ADDRESS
2481	011304	005701			TST R1	;IS IT AN RH11
2482	011306	001406			BEQ 87\$	;NO IT'S A 70
2483	011310	005037	003416		CLR BAE	;CLEAR BAE
2484	011314	005037	003424		CLR CS3	;CLEAR CS3
2485	011320	000137	011340		JMP 86\$	;CONTINUE
2486	011324	017737	172030	003416	MOV @RHBAE,BAE	;SAVE BUS ADDRESS EXTENSION
2487	011332	017737	172024	003424	MOV @RHCS3,CS3	;SAVE RHCS3
2488	011340	017737	171774	003422	MOV @RHCS2,CS2	;SAVE CS2
2489	011346	017737	171770	003432	MOV @RHST,DS1	;SAVE TESTER STATUS
2490	011354	017737	171764	003436	MOV @RHER,ER1	;SAVE ERROR REGISTER
2491	011362	017737	171762	003442	MOV @RHTDB,TDR	;SAVE TESTER DATA REG.
2492	011370	017737	171742	003440	MOV @RHMR2,TC	;SAVE MR2 TESTER REG.
2493	011376	104035			ERROR 35	;BIT DID NOT SET
2494	011400	004737	046362		JSR R7,WATBIT	;TELL WHAT BIT POSITION IS NO GOOD
2495	011404	004737	050210		JSR R7,ERRTST	
2496	011410	004737	000572		JSR R7,CLEER	;CLEAR ERRORS
2497						
2498						
2499						
2500						
2501						
2502						
2503						
2504						
2505						
2506	011414	000004			TST12: SCOPE	
2507	011416	012737	000001	001162	MOV #ONE,\$REG0	;SET UP REFERENCE WORD
2508	011424	013777	001162	171700	MOV \$REG0,@RHWC	;MOVE BIT INTO WORD COUNT REGISTER
2509	011432	023777	001162	171672	CMP \$REG0,@RHWC	;IS BIT SET?
2510	011440	001454			BEQ 1\$	;YES,CONTINUE BIT TEST
2511	011442	013737	003444	001200	MOV WC,\$TMP1	;SETUP FOR WATBIT PROG.
2512	011450	004737	046362		JSR R7,WATBIT	;GO TO WATBIT PROGRAM
2513	011454	017737	171650	003420	MOV @RHCS1,CS1	;SAVE RHCS1
2514	011462	017737	171644	003444	MOV @RHWC,WC	;SAVE WORD COUNT
2515	011470	017737	171640	003414	MOV @RHBA,BA	;SAVE BUS ADDRESS
2516	011476	005701			TST R1	;IS IT AN RH11
2517	011500	001406			BEQ 87\$	;NO IT'S A 70
2518	011502	005037	003416		CLR BAE	;CLEAR BAE
2519	011506	005037	003424		CLR CS3	;CLEAR CS3
2520	011512	000137	01132		JMP 86\$	;CONTINUE

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

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2577 012134 017737 171210 003442      MOV    @RHTDB,TDR      ;SAVE TESTER DATA REG.
2578 012142 017737 171170 003440      MOV    @RHMR2,TC      ;SAVE MR2 TESTER REG.
2579 012150 104001                ERROR 1      ;OPPISITE BIT TEST FAILED
2580 012152 013737 003332 004142 ERR6: MOV    RHWC,$RHWC      ;GET READY TO TEST BYTES
2581 012160 012777 000000 171144      MOV    #ZERO,@RHWC    ;CLEAR WC FIRST
2582 012166 113777 004120 171746      MOVB   MINUS,@$RHWC    ;CHECK LOBYTE
2583 012174 022777 000377 171130      CMP     #377,@RHWC     ;ANY EXTRA BITS
2584 012202 001401                BEQ     HIBYTE      ;OK SO FAR
2585 012204 104200                ERROR 200      ;HIBYTE GATE NOT WORKING PROPERLY
2586 012206 005237 004142      HIBYTE: INC    $RHWC      ;GET READY FOR NEXT BYTE
2587 012212 012777 000000 171112      MOV    #ZERO,@RHWC    ;CLEAR WC
2588 012220 113777 004121 171714      MOVB   MINUS+1,@$RHWC ;CHECK THE HI BYTE
2589 012226 022777 177400 171076      CMP     #177400,@RHWC ;IS IT OK
2590 012234 001401                BEQ     ALRIGT      ;ITS OK
2591 012236 104200                ERROR 200      ;LOBYTE GATE NOT WORKING PROPERLY
2592 012240 004737 050210      ALRIGT: JSR    R7,ERRTST
2593 012244 012777 000000 171060      MOV    #ZERO,@RHWC    ;CLEAR WORD COUNT
2594 012252 004737 006572      JSR     R7,CLEER      ;CLEAR ERRORS
2595
2596
2597
2598
2599
2600
2601
2602
2603 012256 000004
2604 012260 005701
2605 012262 001104
2606 012264 012737 000001 001162
2607 012272 013777 001162 171060      BAETST: MOV    $REGO,@RHBAE
2608 012300 017737 171054 003416      MOV    @RHBAE,BAE     ;SAVE CONTENTS OF RHBAE REGISTER
2609 012306 023777 001162 171044      CMP     $REGO,@RHBAE  ;IS IT SET?
2610 012314 001454                BEQ     1$        ;YES CONTINUE TEST
2611 012316 013737 003416 001200      MOV     BAE,$TMP1     ;SETUP FOR WATBIT PROG.
2612 012324 004737 046362      JSR     R7,WATBIT     ;GO TO WATBIT PROGRAM
2613 012330 017737 170774 003420      MOV     @RHCS1,CS1    ;SAVE RHCS1
2614 012336 017737 170770 003444      MOV     @RHWC,WC      ;SAVE WORD COUNT
2615 012344 017737 170764 003414      MOV     @RHBA,BA      ;SAVE BUS ADDRESS
2616 012352 005701                TST     R1        ;IS IT AN RH11
2617 012354 001406                BEQ     87$        ;NO IT'S A 70
2618 012356 005037 003416      CLR     BAE          ;CLEAR BAE
2619 012362 005037 003424      CLR     CS3         ;CLEAR CS3
2620 012366 000137 012406      JMP     86$        ;CONTINUE
2621 012372 017737 170762 003416 87$: MOV    @RHBAE,BAE     ;SAVE BUS ADDRESS EXTENSION
2622 012400 017737 170756 003424      MOV     @RHCS3,CS3    ;SAVE RHCS3
2623 012406 017737 170726 003422 86$: MOV    @RHCS2,CS2    ;SAVE CS2
2624 012414 017737 170722 003432      MOV     @RHST,DS1     ;SAVE TESTER STATUS
2625 012422 017737 170716 003436      MOV     @RHER,ER1     ;SAVE ERROR REGISTER
2626 012430 017737 170714 003442      MOV     @RHTDB,TDR    ;SAVE TESTER DATA REG.
2627 012436 017737 170674 003440      MOV     @RHMR2,TC     ;SAVE MR2 TESTER REG.
2628 012444 104002                ERROR 2      ;BIT DID NOT SET
2629 012446 022737 000040 001162 1$: CMP     #40,$REGO    ;IS IT LAST BIT TO BE TESTED
2630 012454 001403                BEQ     ERR7        ;WAS THERE AN ERROR
2631 012456 006137 001162      ROL     $REGO        ;NO,SET UP FOR NEXT BIT
2632 012462 000703                BR      BAETST      ;CONTINUE TEST

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2633 012464 004737 006572
2634 012470 004737 050210

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

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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).

2645 012474 000004

IST14: SCOPE

2646
2647 012476 012737 000002 001162
2648 012504 013777 001162 170622
2649 012512 017737 170616 003414
2650 012520 023777 001162 170606
2651 012526 001454
2652 012530 013737 003414 001200
2653 012536 017737 170566 003420
2654 012544 017737 170562 003444
2655 012552 017737 170556 003414
2656 012560 005701
2657 012562 001406
2658 012564 005037 003416
2659 012570 005037 003424
2660 012574 000137 012614
2661 012600 017737 170554 003416
2662 012606 017737 170550 003424
2663 012614 017737 170520 003422
2664 012622 017737 170514 003432
2665 012630 017737 170510 003436
2666 012636 017737 170506 003442
2667 012644 017737 170466 003440
2668 012652 104003
2669 012654 004737 046362
2670 012660 005737 001162
2671 012664 100403
2672 012666 006137 001162
2673 012672 000704
2674 012674 012737 052525 001162
2675 012702 042737 000001 001162
2676 012710 013777 001162 170416
2677 012716 017737 170412 003414
2678 012724 023777 001162 170402
2679 012732 001454
2680 012734 013737 003414 001200
2681 012742 017737 170362 003420
2682 012750 017737 170356 003444
2683 012756 017737 170352 003414
2684 012764 005701
2685 012766 001406
2686 012770 005037 003416
2687 012774 005037 003424
2688 013000 000137 013020

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

Address	Offset	Label	Instruction	Comment	
2689	013004	017737	170350	003416	87\$: MOV @RHBAE,BAE ;SAVE BUS ADDRESS EXTENSION
2690	013012	017737	170344	003424	MOV @RHCS3,CS3 ;SAVE RHCS3
2691	013020	017737	170314	003422	86\$: MOV @RHCS2,CS2 ;SAVE CS2
2692	013026	017737	170310	003432	MOV @RHST,DS1 ;SAVE TESTER STATUS
2693	013034	017737	170304	003436	MOV @RHER,ER1 ;SAVE ERROR REGISTER
2694	013042	017737	170302	003442	MOV @RHTDB,TDR ;SAVE TESTER DATA REG.
2695	013050	017737	170262	003440	MOV @RHMR2,TC ;SAVE MR2 TESTER REG.
2696	013056	104003			ERROR 3 ;NO,CORRECT BITS ARE NOT SET
2697	013060	004737	046362		JSR R7,WATBIT ;GO TO WATBIT PROGRAM
2698	013064	012737	125252	001162	1\$: MOV #0AB,\$REGO ;SET UP OPPOSITE ALTERNATE BIT TEST
2699	013072	013777	001162	170234	MOV \$REGO,@RHBA ;SET BITS IN RHBA REGISTER
2700	013100	017737	170230	003414	MOV @RHBA,BA ;SAVE CONTENTS OF BA REGISTER
2701	013106	023777	001162	170220	CMP \$REGO,@RHBA ;ARE CORRECT BITS SET
2702	013114	001454			BEQ ERR10 ;WAS THERE AN ERROR
2703	013116	013737	003414	001200	MOV BA,\$TMP1 ;SETUP FOR WATBIT PROG.
2704	013124				GOOFED:
2705	013124	017737	170200	003420	MOV @RHCS1,CS1 ;SAVE RHCS1
2706	013132	017737	170174	003444	MOV @RHWC,WC ;SAVE WORD COUNT
2707	013140	017737	170170	003414	MOV @RHBA,BA ;SAVE BUS ADDRESS
2708	013146	005701			TST R1 ;IS IT AN RH11
2709	013150	001406			BEQ 87\$;NO IT'S A 70
2710	013152	005037	003416		CLR BAE ;CLEAR BAE
2711	013156	005037	003424		CLR CS3 ;CLEAR CS3
2712	013162	000137	013202		JMP 86\$;CONTINUE
2713	013166	017737	170166	003416	87\$: MOV @RHBAE,BAE ;SAVE BUS ADDRESS EXTENSION
2714	013174	017737	170162	003424	MOV @RHCS3,CS3 ;SAVE RHCS3
2715	013202	017737	170132	003422	86\$: MOV @RHCS2,CS2 ;SAVE CS2
2716	013210	017737	170126	003432	MOV @RHST,DS1 ;SAVE TESTER STATUS
2717	013216	017737	170122	003436	MOV @RHER,ER1 ;SAVE ERROR REGISTER
2718	013224	017737	170120	003442	MOV @RHTDB,TDR ;SAVE TESTER DATA REG.
2719	013232	017737	170100	003440	MOV @RHMR2,TC ;SAVE MR2 TESTER REG.
2720	013240	104003			ERROR 3 ;NO,CORRECT BITS ARE NOT SET
2721	013242	004737	046362		JSR R7,WATBIT ;GO TO WATBIT PROGRAM
2722	013246	013737	003334	004136	ERR10: MOV RHBA,\$RHBA ;GET READY TO TEST BYTES
2723	013254	012777	000000	170052	MOV #ZERO,@RHBA ;ZERO THE BUS ADDRESS
2724	013262	113777	004120	170646	MOVB MINUS,@\$RHBA ;MOVE THE BYTE
2725	013270	022777	000376	170036	CMP #376,@RHBA ;DID IT GET THERE ALRIGHT
2726	013276	001401			BEQ 99\$;YES,CHECK NEXT BYTE
2727	013300	104202			ERROR 202 ;HIGH BYTE DOES NOT SEEM TO BE WORKING
2728	013302	005237	004136		99\$: INC \$RHBA ;GET READY FOR NEXT BYTE
2729	013306	012777	000000	170020	MOV #ZERO,@RHBA ;ZERO THE BUS ADDRESS
2730	013314	113777	004121	170614	MOVB MINUS+1,@\$RHBA ;MOVE TO UPPER BYTE
2731	013322	022777	177400	170004	CMP #177400,@RHBA ;DID IT GET THERE ALRIGHT
2732	013330	001401			BEQ 98\$;YES,EXIT TEST
2733	013332	104202			ERROR 202 ;LOBYTE IS NOT WORKING PROPERLY
2734	013334	004737	006572		98\$: JSR R7,CLEER ;CLAER ERPORS
2735	013340	004737	050210		JSR R7,ERR1ST
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2746 013344 000004
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2749 013346 005037 003450
2750 013352 012737 000001 001162
2751 013360 013777 001162 167764 DBTST:
2752 013366 005037 003446
2753 013372 032777 000200 167730 18$:
2754 013400 001015
2755 013402 005237 003446
2756 013406 001371
2757 013410 005037 003446
2758 013414 032777 000200 167706 19$:
2759 013422 001004
2760 013424 005237 003446
2761 013430 001401
2762 013432 000770
2763 013434
2764 013434 017737 167670 003420
2765 013442 017737 167664 003444
2766 013450 017737 167660 003414
2767 013456 005701
2768 013460 001406
2769 013462 005037 003416
2770 013466 005037 003424
2771 013472 000137 013512
2772 013476 017737 167656 003416 87$:
2773 013504 017737 167652 003424
2774 013512 017737 167622 003422 86$:
2775 013520 017737 167616 003432
2776 013526 017737 167612 003436
2777 013534 017737 167610 003442
2778 013542 017737 167570 003440
2779 013550 032777 000200 167552
2780 013556 001003
2781 013560 104102
2782 013562 004737 007224
2783 013566 032777 000200 167544 RDYSET:
2784 013574 001004
2785 013576 017737 167550 003426
2786 013604 104041
2787 013606 017737 167540 003426 ORSET:
2788 013614 023737 001162 003426
2789 013622 001406
2790 013624 013737 003426 001200
2791 013632 104004
2792 013634 004737 046362

*****
*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

CLR LOOCNT ;CLEAR LOOP COUNT
MOV #ONE,$REGO ;SET UP BIT TEST
MOV $REGO,@RHDB ;SET BIT IN RHDB REGISTER
CLR BITCNT ;CLEAR BIT COUNTER
BIT #RDY,@RHCS1 ;IS RDY SET
BNE ABLE ;BIT IS SET
INC BITCNT ;COUNT UP
BNE 18$ ;NOT FINISHED COUNTING
CLR BITCNT ;GET READY TO DO IT AGAIN
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 @RHW,WC ;SAVE WORD COUNT
MOV @RHEA,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
MP 86$ ;CONTINUE
MOV @RHBAE,BAE ;SAVE BUS ADDRESS EXTENSION
MOV @RHCS3,CS3 ;SAVE RHCS3
MOV @RHCS2,CS2 ;SAVE CS2
MOV @RHST,DSI ;SAVE TESTER STATUS
MOV @RHER,ER1 ;SAVE ERROR REGISTER
MOV RHTDB,TDR ;SAVE TESTER DATA REG.
MOV @RHM2,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
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
MOV @RHDB,DB ;SAVE CONTENTS OF REGISTER
CMP $REGO,DB ;IS CORPECT BIT SET?
BEQ 1$ ;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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2793	013640	005737	001162	1\$:	TST	\$REGO	:WAS BIT 15 THE LAST BIT TESTED
2794	013644	100415			BMI	DBTSTA	:YES, GO TO ALTERNATE BIT PATTERN TEST
2795	013646	022737	000001 003450		CMP	#ONE, LOOCNT	:IS IT FIRST TIME
2796	013654	001404			BEQ	2\$	:NO, IT'S SECOND
2797	013656	005237	003450		INC	LOOCNT	:YES,
2798	013662	000137	013360		JMP	DBTST	:CONTINUE TEST
2799	013666	005037	003450	2\$:	CLR	LOOCNT	:CLEAR LOOP COUNT
2800	013672	006137	001162		ROL	\$REGO	:NO, SET UP TO TEST NEXT BIT
2801	013676	000630			BR	DBTST	:GO AND TEST BIT
2802	013700	022737	000001 003450	DBTSTA:	CMP	#ONE, LOOCNT	:IS IT FIRST TIME
2803	013706	001404			BEQ	1\$	:NO
2804	013710	005237	003450		INC	LOOCNT	:INCREMENT LOOP COUNTER
2805	013714	000137	013360		JMP	DBTST	:DO AGAIN
2806	013720	012737	052525 001162	1\$:	MOV	#AB, \$REGO	:SET UP BIT PATTERN TEST
2807	013726	013777	001162 167416		MOV	\$REGO, @RHDB	:SET BITS IN REGISTER
2808	013734	005037	003446		CLR	BITCNT	:CLEAR BIT COUNTER
2809	013740	032777	000200 167372	18\$:	BIT	#OR, @RHCS2	:IS OR SET
2810	013746	001015			BNE	DBOUT	:BIT IS SET
2811	013750	005237	003446		INC	BITCNT	:COUNT UP
2812	013754	001371			BNE	18\$	:NOT FINISHED COUNTING
2813	013756	005037	003446		CLR	BITCNT	:GET READY TO DO IT AGAIN
2814	013762	032777	000200 167350	19\$:	BIT	#OR, @RHCS2	:IS IT SET YET?
2815	013770	001004			BNE	DBOUT	:YES
2816	013772	005237	003446		INC	BITCNT	:COUNT UP
2817	013776	001401			BEQ	DBOUT	:BIT IS NOT GOING TO SET
2818	014000	000770			BR	19\$	
2819	014002			DBOUT:			
2820	014002	017737	167322 003420		MOV	@RHCS1, CS1	:SAVE RHCS1
2821	014010	017737	167316 003444		MOV	@RHWC, WC	:SAVE WORD COUNT
2822	014016	017737	167312 003414		MOV	@RHBA, BA	:SAVE BUS ADDRESS
2823	014024	005701			TST	R1	:IS IT AN RH11
2824	014026	001406			BEQ	87\$	:NO IT'S A 70
2825	014030	005037	003416		CLR	BAE	:CLEAR BAE
2826	014034	005037	003424		CLR	CS3	:CLEAR CS3
2827	014040	000137	014060		JMP	86\$	:CONTINUE
2828	014044	017737	167310 003416	87\$:	MOV	@RHBAE, BAE	:SAVE BUS ADDRESS EXTENSION
2829	014052	017737	167304 003424		MOV	@RHCS3, CS3	:SAVE RHCS3
2830	014060	017737	167254 003422	86\$:	MOV	@RHCS2, CS2	:SAVE CS2
2831	014066	017737	167250 003432		MOV	@RHST, DS1	:SAVE TESTER STATUS
2832	014074	017737	167244 003436		MOV	@RHER, ER1	:SAVE ERROR REGISTER
2833	014102	017737	167242 003442		MOV	@RHTDB, TDR	:SAVE TESTER DATA REG.
2834	014110	017737	167222 003440		MOV	@RHMR2, TC	:SAVE MR2 TESTER REG.
2835	014116	032777	000200 167214		BIT	#OR, @RHCS2	:IS OUTPUT READY ?
2836	014124	001001			BNE	2\$	:YES CONTINUE TEST
2837	014126	104041			ERROR	41	:OUTPUT READY DID NOT SET
2838	014130	023777	001162 167214	2\$:	CMP	\$REGO, @RHDB	:ARE CORRECT BITS SET?
2839	014136	001411			BEQ	1\$	:YES, CONTINUE TESTS
2840	014140	017737	167206 003426		MOV	@RHDB, DB	:SAVE CONTENTS OF REGISTER
2841	014146	013737	003426 001200		MOV	DB, \$TMP1	:SETUP FOR WATBIT TEST
2842	014154	104004			ERROR	4	:NO, CORRECT BITS ARE NOT SET
2843	014156	004737	046362		JSR	R7, WATBIT	:GO TO WATBIT PROGRAM
2844	014162	012737	125252 001162	1\$:	MOV	#OAB, \$REGO	:SET UP OPPOSITE ALTERNATE BIT PATTERN TEST
2845	014170	013777	001162 167154		MOV	\$REGO, @RHDB	:SET BITS IN REGISTER
2846	014176	005037	003446		CLR	BITCNT	:CLEAR BIT COUNTER
2847	014202	032777	000200 167130	18\$:	BIT	#OR, @RHCS2	:IS OR SET
2848	014210	001015			BNE	OABTSI	:BIT IS SET

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

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2905	014514	005237	003446		INC	BITCNT	:COUNT UP
2906	014520	001371			BNE	18\$	:NOT FINISHED COUNTING
2907	014522	005037	003446		CLR	BITCNT	:GET READY TO DO IT AGAIN
2908	014526	032777	000200	166574	BIT	#RDY,@RHCS1	:IS IT SET YET?
2909	014534	001004			BNE	6\$	:YES
2910	014536	005237	003446		INC	BITCNT	:COUNT UP
2911	014542	001401			BEQ	6\$	:BIT IS NOT GOING TO SET
2912	014544	000770			BR	19\$	
2913	014546			6\$:			
2914	014546	017737	166556	003420	MOV	@RHCS1,CS1	:SAVE RHCS1
2915	014554	017737	166552	003444	MOV	@RHCW,W	:SAVE WORD COUNT
2916	014562	017737	166546	003414	MOV	@RHBA,BA	:SAVE BUS ADDRESS
2917	014570	005701			TST	R1	:IS IT AN R#11
2918	014572	001406			BEQ	87\$	:NO IT'S A 70
2919	014574	005037	003416		CLR	BAE	:CLEAR BAE
2920	014600	005037	003424		CLR	CS3	:CLEAR CS3
2921	014604	000137	014624		JMP	86\$	:CONTINUE
2922	014610	017737	166544	003416	MOV	@RHBAE,BAE	:SAVE BUS ADDRESS EXTENSION
2923	014616	017737	166540	003424	MOV	@RHCS3,CS3	:SAVE RHCS3
2924	014624	017737	166510	003422	MOV	@RHCS2,CS2	:SAVE CS2
2925	014632	017737	166504	003432	MOV	@RHST,DS1	:SAVE TESTER STATUS
2926	014640	017737	166500	003436	MOV	@RHER,ER1	:SAVE ERROR REGISTER
2927	014646	017737	166476	003442	MOV	@RHTDB,TDR	:SAVE TESTER DATA REG.
2928	014654	017737	166456	003440	MOV	@RHMR2,TC	:SAVE MR2 TESTER REG.
2929	014662	032777	000200	166440	BIT	#RDY,@RHCS1	:IS READY SET
2930	014670	001007			BNE	2\$	:YES
2931	014672	005777	166434		TST	@RHCW	:DOES WC=0
2932	014676	001425			BEQ	3\$	:YES
2933	014700	022777	177777	166424	CMP	#-1,@RHCW	:IS IT EQUAL TO OLD
2934	014706	001410			BEQ	4\$	:YES,SEE IF DATA WAS WRITTEN
2935	014710	005777	166416		TST	@RHCW	:DID WC INCREMENT ?
2936	014714	001435		2\$:	BEQ	8\$	:YES,EXIT TEST
2937	014716	005037	001162		CLR	\$REGO	:SETUP GOOD DATA
2938	014722	104077			ERROR	77	:RDY DID NOT SET, WC DID NOT CLEAR
2939	014724	004737	007224		JSR	R7,WHYFO	:ARE ANY ERROR BITS SET
2940	014730	023777	001204	166412	CMP	\$TMP3,@RHTDB	:WAS INFO WRITTEN TO TESTER
2941	014736	001414			BEQ	5\$	:INFO WAS WRITTEN TO TESTER
2942	014740	005037	001162		CLR	\$REGO	:SETUP GOOD DATA
2943	014744	104123			ERROR	123	:WRITE OPERATION DID NOT WORK
2944	014746	000137	015010		JMP	8\$	:RH DID NOT START OPERATION
2945	014752	023777	001204	166370	CMP	\$TMP3,@RHTDB	
2946	014760	001010			BNE	7\$	
2947	014762	104102			ERROR	102	:RDY BIT NOT SET
2948							:INFORMATION WAS WRITTEN TO TEST DB
2949	014764	000137	015010		JMP	8\$	
2950	014770	005037	001162		CLR	\$REGO	:SETUP GOOD DATA
2951	014774	104103		5\$:	ERROR	103	:DURING A WRITE OPERATION RDY
2952							:DID NOT SET, WC DID NOT INCREMENT
2953							:BUT CORRECT INFO DID GET WRITTEN
2954							:TO TESTER
2955	014776	000137	015010		JMP	8\$	
2956							
2957	015002	104104		7\$:	ERROR	104	:RDY BIT DID NOT SET AFTER
2958							:A WRITE OPERATION, WC WAS INC
2959							:AND INF WAS NOT WRITTEN TO
2960							:TESTER

2961	015004	004737	007224			JSR	R7,WHYFO	:WAS AN ERROR SET
2962	015010	004737	006572			JSR	R7,CLEER	:CLEAR ERRORS
2963	015014	004737	050210			JSR	R7,ERRST	:WAS THER ANY ERRORS
2964								
2965								
2966						*****		
2967						:TEST 17 RHBA OPERATIONAL TEST		
2968						:THIS TEST CHECKS THAT THE BUS ADDRESS REGISTER		
2969						:WILL CARRY THROUGH TO THE HIGHEST BI		
2970						:IN THE BUS ADDRESS EXTENSION REGISTER OR BIT A17		
2971						:IN THE RHCS1 REGISTER AFTER IT IS INCREMENTED		
2972	015020	000004				*****		
2973	015022	012737	000001	001212		TST17:	SCOPE	
2974						MOV	#1,\$TIMES	::DO 1 ITERATION
2975	015030	005701				TST	R1	:IS IT AN 11 OR A 70
2976	015032	100403				BMI	1\$	:IT'S AN RH11
2977	015034	012777	000037	166316		MOV	#37,@RHBAE	:SETUP BAE IN RH70
2978	015042	012777	177776	166264	1\$:	MOV	#177776,@RHBA	:SETUP BA
2979	015050	012777	177777	166254		MOV	#-1,@RHWC	:SETUP WORD COUNT
2980	015056	005701				TST	R1	:IS IT A RH70
2981	015060	001404				BEQ	34\$	:YES
2982	015062	012777	000461	166240		MOV	#A16!WRITE0,@RHCS1	:TELL IT TO WRITE
2983	015070	000403				BR	35\$	:SKIP OVER 70 CODE
2984	015072	112777	000061	166230	34\$:	MOVB	#WRITE0,@RHCS1	:TELL IT TO WRITE
2985	015100				35\$:			
2986	015100	005037	003446			CLR	BITCNT	:CLEAR BIT COUNTER
2987	015104	032777	000200	166216	18\$:	BIT	#RDY,@RHCS1	:IS RDY SET
2988	015112	001015				BNE	2\$	:BIT IS SET
2989	015114	005237	003446			INC	BITCNT	:COUNT UP
2990	015120	001371				BNE	18\$	:NOT FINISHED COUNTING
2991	015122	005037	003446			CLR	BITCNT	:GET READY TO DO IT AGAIN
2992	015126	032777	000200	166174	19\$:	BIT	#RDY,@RH: S1	:IS IT SET YET?
2993	015134	001004				BNE	2\$	:YES
2994	015136	005237	003446			INC	BITCNT	:COUNT UP
2995	015142	001401				BEQ	2\$	:BIT IS NOT GOING TO SET
2996	015144	000770				BR	19\$	
2997	015146				2\$:			
2998	015146	017737	166156	003420		MOV	@RHCS1,CS1	:SAVE RHCS1
2999	015154	017737	166152	003444		MOV	@RHWC,WC	:SAVE WORD COUNT
3000	015162	017737	166146	003414		MOV	@RHBA,BA	:SAVE BUS ADDRESS
3001	015170	005701				TST	R1	:IS IT AN RH11
3002	015172	001406				BEQ	87\$	:NO IT'S A 70
3003	015174	005037	003416			CLR	BAE	:CLEAR BAE
3004	015200	005037	003424			CLR	CS3	:CLEAR CS3
3005	015204	000137	015224			JMP	86\$	:CONTINUE
3006	015210	017737	166144	003416	87\$:	MOV	@RHBAE,BAE	:SAVE BUS ADDRESS EXTENSION
3007	015216	017737	166140	003424		MOV	@RHCS3,CS3	:SAVE RHCS3
3008	015224	017737	166110	003422	86\$:	MOV	@RHCS2,CS2	:SAVE CS2
3009	015232	017737	166104	003432		MOV	@RHST,DS1	:SAVE TESTER STATUS
3010	015240	017737	166100	003436		MOV	@RHER,ER1	:SAVE ERROR REGISTER
3011	015246	017737	166076	003442		MOV	@RHTDB,TDR	:SAVE TESTER DATA REG.
3012	015254	017737	166056	003440		MOV	@RHMR2,TC	:SAVE MR2 TESTER REG.
3013	015262	005701				TST	R1	:IS IT AN 11 OR A 70
3014	015264	001406				BEQ	12\$	:DO RH70 PART OF TEST
3015	015266	032777	001000	166034		BIT	#A17,@RHCS1	:DID A17 GET SET
3016	015274	001022				BNE	4\$	:YES

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

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

3129	016102	012737	177777	004122		MOV	#-1,BEFORE	:TELL WHYFO ITS FOR SHORTS
3130	016110	004737	007224			JSR	R7,WHYFO	:TEST FOR SHORTS
3131	016114	005037	004122			CLR	BEFORE	:WE HAVE CHECKED FOR SHORTS
3132	016120	000137	016212			JMP	8\$	:LEAVE THE TEST
3133	016124	032737	040000	001162	22\$:	BIT	#TRE,\$REGO	:THEN IS THE TRE BIT SET
3134	016132	001022				BNE	6\$	:SC BIT DID NOT SEE TRE BIT
3135	016134	032737	100000	001162		BIT	#SC,\$REGO	:IS THE SC BIT SET
3136	016142	001022				BNE	7\$	:TRE HAS AN OPEN GOING TO BUS
3137	016144	104006				ERROR	6	:TRE SET LOGIC NOT WORKING
3138	016146	000421				BR	8\$	:SET UP TO TEST AGAIN
3139	016150	104007			2\$:	ERROR	7	:NEM HAS OPEN IN LINE GOING TO BUS
3140	016152	004737	007224			JSR	R7,WHYFO	:SEE IF ANY OTHER ERROR BIT IS
3141								:SET OTHER THAN NEM
3142	016156	000415				BR	8\$	:SET UP TO TEST AGAIN
3143	016160	104010			3\$:	ERROR	10	:SOMTHING WRONG WITH TRE BIT
3144	016162	004737	007224			JSR	R7,WHYFO	:SEE IF AN ERROR BIT IS SET
3145								:OR BOTH NEM IN RHCS2 AND SC IN
3146								:RHCS1 HAS AN OPEN BETWEEN IT AND THE BUS
3147	016166	000411				BR	8\$	:SET UP TO TEST AGAIN
3148	016170	104011			4\$:	ERROR	11	:SC BIT WAS SET BY EITHER ATTN OR
3149	016172	004737	007224			JSR	R7,WHYFO	:FIND WHAT ERROR BIT IS SET
3150								:MCPE ERROR OR SC IS SHORTED TO +5 VOLTS
3151	016176	000405				BR	8\$	:SETUP TO TEST AGAIN
3152	016200	104012			6\$:	ERROR	12	:TRE WAS SET BY OTHER THAN NEM
3153	016202	004737	007224			JSR	R7,WHYFO	:FIND ERROR BIT THAT SET TRE
3154	016206	000401				BR	8\$	:SETUP TO TEST AGAIN
3155	016210	104013			7\$:	ERROR	13	:TRE HAS AN OPEN GOING TO THE BUS
3156	016212	032737	041400	177570	8\$:	BIT	#SW14!SW9!SW8,@177570	:ANY LOOPING BEEING DONE
3157	016220	001003				BNE	21\$	:YES,LOAD TRE NO MATTER WHAT
3158	016222	105737	001103			TSTB	\$ERFLG	:WAS THERE AN ERROR
3159	016226	001010				BNE	9\$	:SKIP TRE CHECK
3160	016230	112777	000100	165126	21\$:	MOVB	#TREB,@RHCS1B	:LOAD TRE
3161	016236	032777	004000	165074		BIT	#NEM,@RHCS2	:DID ERROR CLEAR
3162	016244	001401				BEQ	9\$	:YES EXIT TEST
3163	016246	104050				ERROR	50	:LOADING TRE DID NOT CLEAR ERROR
3164	016250	004737	006572		9\$:	JSR	R7,CLEER	:SEE IF ERRORS ARE CLEARED
3165	016254	004737	050210			JSR	R7,ERRTST	

3166								
3167								
3168								
3169								
3170								
3171								
3172								
3173	016260	000004				TST21:	SCOPE	
3174	016262	012777	177777	165042		MOV	#-1,@RHWC	:ONE WORD TRANSFER
3175	016270	012777	000007	165042		MOV	#7,@RHCS2	:TO UNIT ONE
3176	016276	005701				TST	R1	:IS IT AN RH70
3177	016300	001003				BNE	9\$	:NO
3178	016302	012777	000000	165050		MOV	#ZERO,@RHBAE	:SETUP RHBAE REGISTER
3179	016310	012777	001172	165016	9\$:	MOV	#REG4,@RHBA	:SETUP BUS ADDRESS
3180	016316	012737	052525	001172		MOV	#AB,\$REG4	:CREATE INFORMATION
3181	016324	012777	000061	164776		MOV	#WRITE0,@RHCS1	:TELL IT TO WRITE
3182	016332	005037	003446			CLR	BITCNT	:CLEAR BIT COUNTER
3183	016336	032777	000200	164764	18\$:	BIT	#RDY,@RHCS1	:IS RDY SET
3184	016344	001015				BNE	WCETST	:BIT IS SET

3185	016346	005237	003446		INC	BITCNT		:COUNT UP
3186	016352	001371			BNE	18\$		:NOT FINISHED COUNTING
3187	016354	005037	003446		CLR	BITCNT		:GET READY TO DO IT AGAIN
3188	016360	032777	000200	164742	19\$:	BIT	#RDY,@RHCS1	:IS IT SET YET?
3189	016366	001004			BNE	WCETST		:YES
3190	016370	005237	003446		INC	BITCNT		:COUNT UP
3191	016374	001401			BEQ	WCETST		:BIT IS NOT GOING TO SET
3192	016376	000770			BR	19\$		
3193	016400				WCETST:			
3194	016400	052777	000040	164732	BIS	#40,@RHCS2		:DO A CONTROLLER CLEAR
3195	016406	005037	003446		CLR	BITCNT		:SET UP FOR DELAY
3196	016412	005237	003446		17\$:	INC	BITCNT	:COUNT UP
3197	016416	001375			BNE	17\$		
3198	016420	012777	000007	164712	MOV	#7,@RHCS2		:SELECT UNIT #
3199	016426	005037	003446		CLR	BITCNT		:CLEAR BIT COUNTER
3200	016432	032777	000200	164670	18\$:	BIT	#RDY,@RHCS1	:IS RDY SET
3201	016440	001015			BNE	WCTST		:BIT IS SET
3202	016442	005237	003446		INC	BITCNT		:COUNT UP
3203	016446	001371			BNE	18\$		:NOT FINISHED COUNTING
3204	016450	005037	003446		CLR	BITCNT		:GET READY TO DO IT AGAIN
3205	016454	032777	000200	164646	19\$:	BIT	#RDY,@RHCS1	:IS IT SET YET?
3206	016462	001004			BNE	WCTST		:YES
3207	016464	005237	003446		INC	BITCNT		:COUNT UP
3208	016470	001401			BEQ	WCTST		:BIT IS NOT GOING TO SET
3209	016472	000770			BR	19\$		
3210	016474				WCTST:			
3211	016474	032777	000200	164626	BIT	#RDY,@RHCS1		:IS READY SET
3212	016502	001003			BNE	20\$		:YES
3213	016504	104102			ERROR	102		:READY NOT SET
3214	016506	004737	007224		JSR	R7,WHYFO		:ANY ERRORS SET
3215	016512	012777	177777	164612	20\$:	MOV	#-1,@RHWC	:RESET WORD COUNT
3216	016520	012777	001172	164606	MOV	#SREG4,@RHBA		:RESET BUS ADDRESS
3217	016526	012737	125252	001172	MOV	#OAB,\$SREG4		:CREATE WRITE CHECK ERROR
3218	016534	012777	000051	164566	MOV	#WRCH0,@RHCS1		:MAKE THE ERROR
3219	016542	005037	003446		CLR	BITCNT		:CLEAR BIT COUNTER
3220	016546	032777	000200	164554	18\$:	BIT	#RDY,@RHCS1	:IS RDY SET
3221	016554	001015			BNE	WCETRE		:BIT IS SET
3222	016556	005237	003446		INC	BITCNT		:COUNT UP
3223	016562	001371			BNE	18\$		:NOT FINISHED COUNTING
3224	016564	005037	003446		CLR	BITCNT		:GET READY TO DO IT AGAIN
3225	016570	032777	000200	164532	19\$:	BIT	#RDY,@RHCS1	:IS IT SET YET?
3226	016576	001004			BNE	WCETRE		:YES
3227	016600	005237	003446		INC	BITCNT		:COUNT UP
3228	016604	001401			BEQ	WCETRE		:BIT IS NOT GOING TO SET
3229	016606	000770			BR	19\$		
3230	016610				WCETRE:			
3231	016610	017737	164524	003422	MOV	@RHCS2,CS2		:SAVE CONTENTS
3232	016616	017737	164506	001162	MOV	@RHCS1,\$REG0		:SET UP NEEDED BITS ONLY
3233	016624	042737	027777	001162	BIC	#GO!IE!RDY.A16!A17!PSEL!DVA!MCPE!READ6,\$REG0		:CLEAR BITS NOT NEEDED
3234								
3235	016632	017737	164472	003420	MOV	@RHCS1,CS1		:SAVE RHCS1
3236	016640	017737	164466	003444	MOV	@RHWC,WC		:SAVE WORD COUNT
3237	016646	017737	164462	003414	MOV	@RHBA,BA		:SAVE BUS ADDRESS
3238	016654	005701			TST	R1		:IS IT AN RH11
3239	016656	001406			BEQ	87\$		:NO IT'S A 70
3240	016660	005037	003416		CLR	BAE		:CLEAR BAE

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

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3297 017204 104013 7$: ERROR 13 ;TRE HAS AN OPEN GOING TO THE BUS
3298 017206 032737 041400 177570 8$: BIT #SW14.SW9!SW8,@#177570 ;ANY LOOPING BEEING DONE
3299 017214 001003 BNE 21$ ;YES,LOAD TRE NO MATTER WHAT
3300 017216 105737 001103 TSTB $ERFLG ;WAS THERE AN ERRCR
3301 017222 001010 BNE 9$ ;SKIP TRE CHECK
3302 017224 112777 000100 164132 21$: MOVB #TREB,@RHCS1B ;LOAD TRE
3303 017232 032777 040000 164100 BIT #WCE,@RHCS2 ;DID ERROR CLEAR
3304 017240 001401 BEQ 9$ ;YES EXIT TEST
3305 017242 104050 ERROR 50 ;LOADING TRE DID NOT CLEAR ERROR
3306 017244 004737 006572 9$: JSR R7,CLEER ;SEE IF ERRORS ARE CLEARED
3307 017250 004737 050210 JSR R7,ERRTST
3308
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3310
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3315 017254 000004
3316 017256 012777 000007 164054
3317 017264 012777 177774 164040
3318 017272 005701
3319 017274 001003
3320 017276 012777 000000 164054
3321 017304 012777 004100 164022 9$:
3322 017312 012777 000071 164010
3323 017320 012777 000027 164012
3324 017326 017737 164006 003422
3325 017334 005037 003446
3326 017340 032777 000200 163762 18$:
3327 017346 001015
3328 017350 005237 003446
3329 017354 001371
3330 017356 005037 003446
3331 017362 032777 000200 163740 19$:
3332 017370 001004
3333 017372 005237 003446
3334 017376 001401
3335 017400 000770
3336 017402
3337 017402 017737 163722 001162
3338 017410 042737 027777 001162
3339
3340 017416 017737 163706 003420
3341 017424 017737 163702 003444
3342 017432 017737 163676 003414
3343 017440 005701
3344 017442 001406
3345 017444 005037 003416
3346 017450 005037 003424
3347 017454 000137 017474
3348 017460 017737 163674 003416 87$:
3349 017466 017737 163670 003424
3350 017474 017737 163640 003422 86$:
3351 017502 017737 163634 003432
3352 017510 017737 163630 003436

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*****
;*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.....
*****

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TST22: SCOPE
MOV #7,@RHCS2 ;SET UNIT #
MOV #-4,@RHWC ;SET UP WORD COUNT
TST R1 ;IS IT AN RH70
BNE 9$ ;NO ITS AN RH11
MOV #ZERO,@RHBAE ;SET UP BAE REGISTER
MOV #RBUF,@RHBA ;SET UP BUS ADDRESS
MOV #READ0,@RHCS1 ;TELL IT TO READ
MOV #PAT!7,@RHCS2 ;INVERT PARITY
MOV @RHCS2,CS2 ;SAVE CONTENTS
CLR BITCNT ;CLEAR BIT COUNTER
BIT #RDY,@RHCS1 ;IS RDY SET
BNE UPETRE ;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 UPETRE ;YES
INC BITCNT ;COUNT UP
BEQ UPETRE ;BIT IS NOT GOING TO SET
BR 19$

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UPETRE:
MOV @RHCS1,$REGO ;SET UP NEEDED BITS ONLY
BIC #GO!IE!RDY.A16!A17!PSEL!DVA!MCPE!READ6,$REGO ;CLEAR BITS NOT NEEDED
MOV @RHCS1,CS1 ;SAVE RHCS1
MOV @RHWC,WC ;SAVE WORD COUNT
MOV @RHBA,BA ;SAVE BUS ADDRESS
TST R1 ;IS IT AN RH11
BEQ 87$ ;NO IT'S A 70
CLR BAE ;CLEAR BAE
CLR CS3 ;CLEAR CS3
JMP 86$ ;CONTINUE
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

```

3353	017516	017737	163626	003442		MOV	@RHTDB,TDR	:SAVE TESTER DATA REG.
3354	017524	017737	163606	003440		MOV	@RHM2,TC	:SAVE MR2 TESTER REG.
3355	017532	032777	000200	163570		BIT	#RDY,@RHCS1	:IS READY SET
3356	017540	001003				BNE	99\$	:YES CONTINUE TEST
3357	017542	104102				ERROR	102	:READY NOT SET
3358	017544	004737	007224			JSR	R7,WHYFO	:ANY ERRORS SET
3359	017550	032777	000400	163562	99\$:	BIT	#MPE,@RHCS2	:IS MPE SET
3360	017556	001016				BNE	1\$	:YES CHECK TRE AND SC
3361	017560	022737	140000	001162		CMP	#SC!TRE,\$REGO	:IS THE SC AND TRE BITS SET
3362	017566	001460				BEQ	2\$	:YES MPE IS IN ERROR
3363	017570	032737	040000	001162		BIT	#TRE,\$REGO	:IS JUST THE TRE BIT SET
3364	017576	001060				BNE	3\$	:TRE BIT MUST BE IN ERROR
3365	017600	032737	100000	001162		BIT	#SC,\$REGO	:IS JUST THE SC BIT SET
3366	017606	001060				BNE	4\$	:SC BIT SET ERRONIOUSLY
3367	017610	104116				ERROR	116	:MPE NOT SET IN RHCS2
3368	017612	000467				BR	8\$	:SET UP TO TEST AGAIN
3369	017614	022737	140000	001162	1\$:	CMP	#SC!TRE,\$REGO	:IS SC AND TRE SET
3370	017622	001030				BNE	22\$	:FIND THE ERROR
3371	017624	013737	004124	004124		MOV	\$CS1,\$CS1	:TEST FOR SHORTS
3372	017632	012737	177000	004126		MOV	#MXF!PGE.NEM.NED!UPE.WCE.DLT,\$CS2	
3373	017640	012737	174000	004130		MOV	#WCELO!WCEHI.DPELO.DPEHI.APE,\$CS3	
3374	017646	013737	004132	004132		MOV	\$ST,\$ST	
3375	017654	013737	004134	004134		MOV	\$ER,\$ER	
3376	017662	012737	177777	004122		MOV	#-1,BEFORE	
3377	017670	004737	007224			JSR	R7,WHYFO	:TELL WHYFO ITS FOR SHORTS
3378	017674	005037	004122			CLR	BEFORE	:TEST FOR SHORTS
3379	017700	000137	017772			JMP	8\$	:WE HAVE CHECKED FOR SHORTS
3380	017704	032737	040000	001162	22\$:	BIT	#TRF,\$REGO	:LEAVE THE TEST
3381	017712	001022				BNE	6\$	:THEN IS THE TRE BIT SET
3382	017714	032737	100000	001162		BIT	#SC,\$REGO	:SC BIT DID NOT SEE TRE BIT
3383	017722	001022				BNE	7\$	:IS THE SC BIT SET
3384	017724	104006				ERROR	6	:TRE HAS AN OPEN GOING TO BUS
3385	017726	000421				BR	8\$	:TRE SET LOGIC NOT WORKING
3386	017730	104120			2\$:	ERROR	120	:SET UP TO TEST AGAIN
3387	017732	004737	007224			JSR	R7,WHYFO	:MPE HAS OPEN IN LINE GOING TO BUS
3388								:SEE IF ANY OTHER ERROR BIT IS
3389	017736	000415				BR	8\$	:SET OTHER THAN MPE
3390	017740	104121			3\$:	ERROR	121	:SET UP TO TEST AGAIN
3391	017742	004737	007224			JSR	R7,WHYFO	:SOMTHING WRONG WITH TRE BIT
3392								:SEE IF AN ERROR BIT IS SET
3393								:OR BOTH MPE IN RHCS2 AND SC IN
3394	017746	000411				BR	8\$	:RHCS1 HAS AN OPEN BETWEEN IT AND THE BUS
3395	017750	104011			4\$:	ERROR	11	:SET UP TO TEST AGAIN
3396	017752	004737	007224			JSR	R7,WHYFO	:SC BIT WAS SET BY EITHER ATTN OR
3397								:FIND WHAT ERROR BIT IS SET
3398	017756	000405				BR	8\$	:MCPE ERROR OR SC IS SHORTED TO +5 VOLTS
3399	017760	104122			6\$:	ERROR	122	:SETUP TO TEST AGAIN
3400	017762	004737	007224			JSR	R7,WHYFO	:TRE WAS SET BY OTHER THAN MPE
3401	017766	000401				BR	8\$	:FIND ERROR BIT THAT SET TRE
3402	017770	104013			7\$:	ERROR	13	:SETUP TO TEST AGAIN
3403	017772	032737	041400	177570	8\$:	BIT	#SW14!SW9!SW8,@#177570	:TRE HAS AN OPEN GOING TO THE BUS
3404	020000	001003				BNE	21\$	:ANY LOOPING BEEING DONE
3405	020002	105737	001103			TSTB	\$ERFLG	:YES,LOAD TRE NO MATTER WHAT
3406	020006	001010				BNE	9\$	:WAS THERE AN ERROR
3407	020010	112777	000100	163346	21\$:	MOVB	#TREB,@RHCS1B	:SKIP TRE CHECK
3408	020016	032777	000400	163314		BIT	#MPE,@RHCS2	:LOAD TRE
								:DID ERROR CLEAR

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3409 020024 001401          BEQ      9$          ;YES EXIT TEST
3410 020026 104050          ERROR    50          ;LOADING TRE DID NOT CLEAR ERROR
3411 020030 004737 006572   9$:      JSR      R7,CLEER      ;SEE IF ERRORS ARE CLEARED
3412 020034 004737 050210          JSR      R7,ERRST
3413
3414
3415
3416
3417
3418
3419
3420 020040 000004          ;*****
3421
3422 020042 012777 000007 163270      MOV      #7,@RHCS2      ;SET UP UNIT 7
3423 020050 005701          TST      R1          ;IS IT AN RH11
3424 020052 100402          BMI      FITIT      ;IT'S AN RH11,DO THE TEST
3425 020054 000137 020524          JMP      FIT      ;IT'S AN RH70, EXIT TEST
3426 020060 012777 020007 163252      FITIT: MOV      #UPE!7,@RHCS2      ;SET PARITY ERROR IN RH11'S CS2 REG
3427 020066 017737 163236 001162      MOV      @RHCS1,$REG0      ;SET UP NEEDED BITS ONLY
3428 020074 042737 027777 001162      BIC      #GO!IE!RDY.A16!A17!PSEL!DVA!MCPE!READ6,$REG0
3429
3430 020102 017737 163222 003420      MOV      @RHCS1,CS1      ;CLEAR BITS NOT NEEDED
3431 020110 017737 163216 003444      MOV      @RHWC,WC      ;SAVE RHCS1
3432 020116 017737 163212 003414      MOV      @RHBA,BA      ;SAVE WORD COUNT
3433 020124 005701          TST      R1          ;SAVE BUS ADDRESS
3434 020126 001406          BEQ      87$          ;IS IT AN RH11
3435 020130 005037 003416          CLR      BAE      ;NO IT'S A 70
3436 020134 005037 003424          CLR      CS3      ;CLEAR BAE
3437 020140 000137 020160          JMP      86$          ;CLEAR CS3
3438 020144 017737 163210 003416      87$:      MOV      @RHBAE,BAE      ;CONTINUE
3439 020152 017737 163204 003424      MOV      @RHCS3,CS3      ;SAVE BUS ADDRESS EXTENSION
3440 020160 017737 163154 003422      86$:      MOV      @RHCS2,CS2      ;SAVE RHCS3
3441 020166 017737 163150 003432      MOV      @RHST,DS1      ;SAVE CS2
3442 020174 017737 163144 003436      MOV      @RHER,ER1      ;SAVE TESTER STATUS
3443 020202 017737 163142 003442      MOV      @RHTDB,TDR      ;SAVE ERROR REGISTER
3444 020210 017737 163122 003440      MOV      @RHMR2,TC      ;SAVE TESTER DATA REG.
3445 020216 032777 000200 163104      BIT      #RDY,@RHCS1      ;SAVE MR2 TESTER REG.
3446 020224 001003          BNE      99$          ;IS READY SET
3447 020226 104102          ERROR    102         ;YES CONTINUE TEST
3448 020230 004737 007224          JSR      R7,WHYFO      ;READY NOT SET
3449 020234 032777 020000 163076      99$:      BIT      #UPE,@RHCS2      ;ANY ERRORS SET
3450 020242 001016          BNE      1$          ;IS UPE SET
3451 020244 022737 140000 001162      CMP      #SC!TRE,$REG0      ;YES CHECK TRE AND SC
3452 020252 001460          BEQ      2$          ;IS THE SC AND TRE BITS SET
3453 020254 032737 040000 001162      BIT      #TRE,$REG0      ;YES UPE IS IN ERROR
3454 020262 001060          BNE      3$          ;IS JUST THE TRE BIT SET
3455 020264 032737 100000 001162      BIT      #SC,$REG0      ;TRE BIT MUST BE IN ERROR
3456 020272 001060          BNE      4$          ;IS JUST THE SC BIT SET
3457 020274 104020          ERROR    20          ;SC BIT SET ERRONIOUSLY
3458 020276 000467          BR       8$          ;UPE NOT SET IN RHCS2
3459 020300 022737 140000 001162      1$:      CMP      #SC!TRE,$REG0      ;SET UP TO TEST AGAIN
3460 020306 001030          BNE      22$         ;IS SC AND TRE SET
3461 020310 013737 004124 004124      MOV      $CS1,$CS1      ;FIND THE ERROR
3462 020316 012737 157400 004126      MOV      #MPE.MXF!PGE.NEM!NED.WCE!DLT,$CS2      ;TEST FOR SHORTS
3463 020324 013737 004130 004130      MOV      $CS3,$CS3
3464 020332 013737 004132 004132      MOV      $ST,$ST

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3465	020340	013737	004134	004134		MOV	\$ER,\$ER	
3466	020346	012737	177777	004122		MOV	#-1,BEFORE	;TELL WHYFO ITS FOR SHORTS
3467	020354	004737	007224			JSR	R7,WHYFO	;TEST FOR SHORTS
3468	020360	005037	004122			CLR	BEFORE	;WE HAVE CHECKED FOR SHORTS
3469	020364	000137	020456			JMP	8\$	;LEAVE THE TEST
3470	020370	032737	040000	001162	22\$:	BIT	#TRE,\$REGO	;THEN IS THE TRE BIT SET
3471	020376	001022				BNE	6\$	;SC BIT DID NOT SEE TRE BIT
3472	020400	032737	100000	001162		BIT	#SC,\$REGO	;IS THE SC BIT SET
3473	020406	001022				BNE	7\$	;TRE HAS AN OPEN GOING TO BUS
3474	020410	104006				ERROR	6	;TRE SET LOGIC NOT WORKING
3475	020412	000421				BR	8\$	;SET UP TO TEST AGAIN
3476	020414	104021			2\$:	ERROR	21	;UPE HAS OPEN IN LINE GOING TO BUS
3477	020416	004737	007224			JSR	R7,WHYFO	;SEE IF ANY OTHER ERROR BIT IS
3478								;SET OTHER THAN UPE
3479	020422	000415				BR	8\$	;SET UP TO TEST AGAIN
3480	020424	104023			3\$:	ERROR	23	;SOMTHING WRONG WITH TRE BIT
3481	020426	004737	007224			JSR	R7,WHYFO	;SEE IF AN ERORR BIT IS SET
3482								;OR BOTH UPE IN RHCS2 AND SC IN
3483								;RHCS1 HAS AN OPEN BETWEEN IT AND THE BUS
3484	020432	000411				BR	8\$	;SET UP TO TEST AGAIN
3485	020434	104011			4\$:	ERROR	11	;SC BIT WAS SET BY EITHER ATTN OR
3486	020436	004737	007224			JSR	R7,WHYFO	;FIND WHAT ERROR BIT IS SET
3487								;MCPE ERROR OR SC IS SHORTED TO +5 VOLTS
3488	020442	000405				BR	8\$	;SETUP TO TEST AGAIN
3489	020444	104022			6\$:	ERROR	22	;TRE WAS SET BY OTHER THAN UPE
3490	020446	004737	007224			JSR	R7,WHYFO	;FIND ERROR BIT THAT SET TRE
3491	020452	000401				BR	8\$	;SETUP TO TEST AGAIN
3492	020454	104013			7\$:	ERROR	13	;TRE HAS AN OPEN GOING TO THE BUS
3493	020456	032737	041400	177570	8\$:	BIT	#SW14!SW9.SW8,@#177570	;ANY LOOPING BEEING DONE
3494	020464	001003				BNE	21\$	;YES,LOAD TRE NO MATTER WHAT
3495	020466	105737	001103			TSTB	\$ERFLG	;WAS THERE AN ERROR
3496	020472	001010				BNE	9\$	;SKIP TRE CHECK
3497	020474	112777	000100	162662	21\$:	MOVb	#TREB,@RHCS1B	;LOAD TRE
3498	020502	032777	020600	162630		BIT	#UPE,@RHCS2	;DID ERROR CLEAR
3499	020510	001401				BEQ	9\$	;YES EXIT TEST
3500	020512	104050				ERROR	50	;LOADING TRF DID NOT CLEAR ERROR
3501	020514	004737	006572		9\$:	JSR	R7,CLEER	;SEE IF ERRORS ARE CLEARED
3502	020520	004737	050210			JSR	R7,ERRTST	
3503								
3504	020524							
3505								
3506								
3507								
3508								
3509								
3510								
3511	020524	000004						
3512								
3513	020526	012777	000007	162604		MOV	#7,@RHCS2	;SETUP UNIT 7
3514	020534	005701				TST	R1	;IS IT AN RH11
3515	020536	001402				BEQ	PLACE	;IT'S AN RH70
3516	020540	000137	021306			JMP	FANGIE	;IT'S AN RH11, EXIT TEST
3517	020544	012777	000004	162610	PLACE:	MOV	#IPCK2,@RHCS3	;SETUP FOR PARITY ERROR
3518	020552	012777	177776	162552		MOV	#-2,@RHWC	;SETUP WORD COUNT TO TWO WORDS
3519	020560	012777	000000	162572		MOV	#ZERO,@RHBAE	;SETUP BAE
3520	020566	012777	001162	162540		MOV	#\$REGO,@RHBA	;SETUP ADDRESS

3521	020574	012777	000061	162526		MOV	#WRITE0,@RHCS1	; TELL IT TO WRITE
3522	020602	005037	003446			CLR	BITCNT	; CLEAR BIT COUNTER
3523	020606	032777	000200	162514	18\$:	BIT	#RDY,@RHCS1	; IS RDY SET
3524	020614	001015				BNE	DYNO	; BIT IS SET
3525	020616	005237	003446			INC	BITCNT	; COUNT UP
3526	020622	001371				BNE	18\$	; NOT FINISHED COUNTING
3527	020624	005037	003446			CLR	BITCNT	; GET READY TO DO IT AGAIN
3528	020630	032777	000200	162472	19\$:	BIT	#RDY,@RHCS1	; IS IT SET YET?
3529	020636	001004				BNE	DYNO	; YES
3530	020640	005237	003446			INC	BITCNT	; COUNT UP
3531	020644	001401				BEQ	DYNO	; BIT IS NOT GOING TO SET
3532	020646	000770				BR	19\$	
3533	020650							
3534	020650	017737	162454	001162		MOV	@RHCS1,\$REGO	; SET UP NEEDED BITS ONLY
3535	020656	042737	027777	001162		BIC	#GO!IE!RDY.A16!A17!PSEL!	; DVA.MCPE!READ6,\$REGO
3536								; CLEAR BITS NOT NEEDED
3537	020664	017737	162440	003420		MOV	@RHCS1,CS1	; SAVE RHCS1
3538	020672	017737	162434	003444		MOV	@RHWC,WC	; SAVE WORD COUNT
3539	020700	017737	162430	003414		MOV	@RHBA,BA	; SAVE BUS ADDRESS
3540	020706	005701				TST	R1	; IS IT AN RH11
3541	020710	001406				BEQ	87\$	; NO IT'S A 70
3542	020712	005037	003416			CLR	BAE	; CLEAR BAE
3543	020716	005037	003424			CLR	CS3	; CLEAR CS3
3544	020722	000137	020742			JMP	86\$	; CONTINUE
3545	020726	017737	162426	003416	87\$:	MOV	@RHBAE,BAE	; SAVE BUS ADDRESS EXTENSION
3546	020734	017737	162422	003424		MOV	@RHCS3,CS3	; SAVE RHCS3
3547	020742	017737	162372	003422	86\$:	MOV	@RHCS2,CS2	; SAVE CS2
3548	020750	017737	162366	003432		MOV	@RHST,DS1	; SAVE TESTER STATUS
3549	020756	017737	162362	003436		MOV	@RHER,ER1	; SAVE ERROR REGISTER
3550	020764	017737	162360	003442		MOV	@RHTDB,TDR	; SAVE TESTER DATA REG.
3551	020772	017737	162340	003440		MOV	@RHMR2,TC	; SAVE MR2 TESTER REG.
3552	021000	032777	000200	162322		BIT	#RDY,@RHCS1	; IS READY SET
3553	021006	001003				BNE	99\$	; YES CONTINUE TEST
3554	021010	104102				ERROR	102	; READY NOT SET
3555	021012	004737	007224			JSR	R7,WHYFO	; ANY ERRORS SET
3556	021016	032777	020000	162314	99\$:	BIT	#UPE,@RHCS2	; IS UPE SET
3557	021024	001016				BNE	1\$	; YES CHECK TRE AND SC
3558	021026	022737	140000	001162		CMP	#SC!TRE,\$REGO	; IS THE SC AND TRE BITS SET
3559	021034	001460				BEQ	2\$	; YES UPE IS IN ERROR
3560	021036	032737	040000	001162		BIT	#TRE,\$REGO	; IS JUST THE TRE BIT SET
3561	021044	001060				BNE	3\$	; TRE BIT MUST BE IN ERROR
3562	021046	032737	100000	001162		BIT	#SC,\$REGO	; IS JUST THE SC BIT SET
3563	021054	001060				BNE	4\$	; SC BIT SET ERRONIOUSLY
3564	021056	104020				ERROR	20	; UPE NOT SET IN RHCS2
3565	021060	000467				BR	8\$	; SET UP TO TEST AGAIN
3566	021062	022737	140000	001162	1\$:	CMP	#SC!TRE,\$REGO	; IS SC AND TRE SET
3567	021070	001030				BNE	22\$	; FIND THE ERROR
3568	021072	013737	004124	004124		MOV	\$CS1,\$CS1	; TEST FOR SHORTS
3569	021100	012737	157400	004126		MOV	#MPE!MXF!PGE!NEM.NED!WCE!DLT,\$CS2	
3570	021106	012737	134100	004130		MOV	#APE!DPELO!WCEHI!WCELO!IE3,\$CS3	
3571	021114	013737	004132	004132		MOV	\$ST,\$ST	
3572	021122	013737	004134	004134		MOV	\$ER,\$ER	
3573	021130	012737	177777	004122		MOV	#-1,BEFORE	; TELL WHYFO ITS FOR SHORTS
3574	021136	004737	007224			JSR	R7,WHYFO	; TEST FOR SHORTS
3575	021142	005037	004122			CLR	BEFORE	; WE HAVE CHECKED FOR SHORTS
3576	021146	000137	021240			JMP	8\$	; LEAVE THE TEST

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

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FANGIE:

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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.....
*****
TST25: SCOPE

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3610 021306
3611
3612
3613
3614
3615
3616
3617
3618 021306 000004
3619
3620 021310 012777 000000 162022 MOV #ZERO,@RHCS2 ;SETUP NED
3621 021316 005701 TST R1 ;RH11 OR RH70
3622 021320 100403 BMI NEDERR ;IT'S AN RH11
3623 021322 012777 000000 162030 MOV #ZERO,@RHBAE ;SETUP BA EXTENSION
3624 021330 012777 177777 161774 NEDERR: MOV #-1,@RHWC ;FOR A 1 WORD TRANSFER
3625 021336 012777 001172 161770 MOV #REG4,@RHBA ;SETUP BA
3626 021344 012777 000061 161756 MOV #WRITE0,@RHCS1 ;TELL IT TO WRITE
3627 021352 005037 003446 CLR BITCNT ;CLEAR BIT COUNTER
3628 021356 032777 000200 161744 18$: BIT #RDY,@RHCS1 ;IS RDY SET
3629 021364 001015 BNF BAKER ;BIT IS SET
3630 021366 005237 003446 INL BITCNT ;COUNT UP
3631 021372 001371 BNE 18$ ;NOT FINISHED COUNTING
3632 021374 005037 003446 CLR BITCNT ;GET READY TO DO IT AGA:

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3633	021400	032777	000200	161722	19\$:	BIT	#RDY,@RHCS1	:IS IT SET YET?
3634	021406	001004				BNE	BAKER	:YES
3635	021410	005237	003446			INC	BITCNT	:COUNT UP
3636	021414	001401				BEQ	BAKER	:BIT IS NOT GOING TO SET
3637	021416	000770				BR	19\$	
3638	021420				BAKER:			
3639	021420	017737	161704	001162		MOV	@RHCS1,\$REGO	:SET UP NEEDED BITS ONLY
3640	021426	042737	027777	001162		BIC	#GO!IE.RDY!A16.A17!PSEL!DVA!MCPE!READ6,\$REGO	:CLEAR BITS NOT NEEDED
3641								:SAVE RHCS1
3642	021434	017737	161670	003420		MOV	@RHCS1,CS1	:SAVE WORD COUNT
3643	021442	017737	161664	003444		MOV	@RHWC,WC	:SAVE BUS ADDRESS
3644	021450	017737	161660	003414		MOV	@RHBA,BA	:IS IT AN RH11
3645	021456	005701				TST	R1	:NO IT'S A 70
3646	021460	001406				BEQ	87\$	:CLEAR BAE
3647	021462	005037	003416			CLR	BAE	:CLEAR CS3
3648	021466	005037	003424			CLR	CS3	:CONTINUE
3649	021472	000137	021512			JMP	86\$	:SAVE BUS ADDRESS EXTENSION
3650	021476	017737	161656	003416	87\$:	MOV	@RHBAE,BAE	:SAVE RHCS3
3651	021504	017737	161652	003424		MOV	@RHCS3,CS3	:SAVE CS2
3652	021512	017737	161622	003422	86\$:	MOV	@RHCS2,CS2	:SAVE TESTER STATUS
3653	021520	017737	161616	003432		MOV	@RHST,DS1	:SAVE ERROR REGISTER
3654	021526	017737	161612	003436		MOV	@RHER,ER1	:SAVE TESTER DATA REG.
3655	021534	017737	161610	003442		MOV	@RHTDB,TDR	:SAVE MR2 TESTER REG.
3656	021542	017737	161570	003440		MOV	@RHMR2,TC	:IS READY SET
3657	021550	032777	000200	161552		BIT	#RDY,@RHCS1	:YES CONTINUE TEST
3658	021556	001003				BNE	99\$	:READY NOT SET
3659	021560	104102				ERROR	102	:ANY ERRORS SET
3660	021562	004737	007224			JSR	R7,WHYFO	:IS NED SET
3661	021566	032777	010000	161544	99\$:	BIT	#NED,@RHCS2	:YES CHECK TRE AND SC
3662	021574	001016				BNE	1\$	:IS THE SC AND TRE BITS SET
3663	021576	022737	140000	001162		CMP	#SC!TRE,\$REGO	:YES NED IS IN ERROR
3664	021604	001460				BEQ	2\$	:IS JUST THE TRE BIT SET
3665	021606	032737	040000	001162		BIT	#TRE,\$REGO	:TRE BIT MUST BE IN ERROR
3666	021614	001060				BNE	3\$	:IS JUST THE SC BIT SET
3667	021616	032737	100000	001162		BIT	#SC,\$REGO	:SC BIT SET ERRONIOUSLY
3668	021624	001060				BNE	4\$	:NED NOT SET IN RHCS2
3669	021626	104024				ERROR	24	:SET UP TO TEST AGAIN
3670	021630	000467				BR	8\$	:IS SC AND TRE SET
3671	021632	022737	140000	001162	1\$:	CMP	#SC!TRE,\$REGO	:FIND THE ERROR
3672	021640	001030				BNE	22\$	:TEST FOR SHORTS
3673	021642	012737	000000	004124		MOV	#ZERO,\$CS1	
3674	021650	012737	167400	004126		MOV	#MPE!MXF!PGE!NEM!UFE!WCE!DLT,\$CS2	
3675	021656	012737	174100	004130		MOV	#APE!DPEHI!DPELO!WCEHI!WCELO!IE3,\$CS3	
3676	021664	013737	004132	004132		MOV	\$ST,\$ST	
3677	021672	013737	004134	004134		MOV	\$ER,\$ER	
3678	021700	012737	177777	004122		MOV	#-1,BEFORE	:TELL WHYFO ITS FOR SHORTS
3679	021706	004737	007224			JSR	R7,WHYFO	:TEST FOR SHORTS
3680	021712	005037	004122			CLR	BEFORE	:WE HAVE CHECKED FOR SHORTS
3681	021716	000137	022010			JMP	8\$	:LEAVE THE TEST
3682	021722	032737	040000	001162	22\$:	BIT	#TRE,\$REGO	:THEN IS THE TRE BIT SET
3683	021730	001022				BNE	6\$	:SC BIT DID NOT SEE TRE BIT
3684	021732	032737	100000	001162		BIT	#SC,\$REGO	:IS THE SC BIT SET
3685	021740	001022				BNE	7\$	:TRE HAS AN OPEN GOING TO BUS
3686	021742	104006				ERROR	6	:TRE SET LOGIC NOT WORKING
3687	021744	000421				BR	8\$	:SET UP TO TEST AGAIN
3688	021746	104025			2\$:	ERROR	25	:NED HAS OPEN IN LINE GOING TO BUS

3689	021750	004737	007224		JSR	R7,WHYFO	:SEE IF ANY OTHER ERROR BIT IS
3690							:SET OTHER THAN NED
3691	021754	000415			BR	8\$	:SET UP TO TEST AGAIN
3692	021755	104026		3\$:	ERROR	26	:SOMTHING WRONG WITH TRE BIT
3693	021760	004737	007224		JSR	R7,WHYFO	:SEE IF AN ERROR BIT IS SET
3694							:OR BOTH NED IN RHCS2 AND SC IN
3695							:RHCS1 HAS AN OPEN BETWEEN IT AND THE BUS
3696	021764	000411			BR	8\$	:SET UP TO TEST AGAIN
3697	021766	104011		4\$:	ERROR	11	:SC BIT WAS SET BY EITHER ATTN OR
3698	021770	004737	007224		JSR	R7,WHYFO	:FIND WHAT ERROR BIT IS SET
3699							:MCPE ERROR OR SC IS SHORTED TO +5 VOLTS
3700	021774	000405			BR	8\$	:SETUP TO TEST AGAIN
3701	021776	104027		6\$:	ERROR	27	:TRE WAS SET BY OTHER THAN NED
3702	022000	004737	007224		JSR	R7,WHYFO	:FIND ERROR BIT THAT SET TRE
3703	022004	000401			BR	8\$	:SETUP TO TEST AGAIN
3704	022006	104013		7\$:	ERROR	13	:TRE HAS AN OPEN GOING TO THE BUS
3705	022010	032737	041400 177570	8\$:	BIT	#SW14!SW9.SW8,@#177570	:ANY LOOPING BEING DONE
3706	022016	001003			BNE	21\$	:YES,LOAD TRE NO MATTER WHAT
3707	022020	105737	001103		TSTB	\$ERFLG	:WAS THERE AN ERROR
3708	022024	001010			BNE	9\$	:SKIP TRE CHECK
3709	022026	112777	000100 161330	21\$:	MOVB	#TREB,@RHCS1B	:LOAD TRE
3710	022034	032777	010000 161276		BIT	#NED,@RHCS2	:DID ERROR CLEAR
3711	022042	001401			BEQ	9\$	:YES EXIT TEST
3712	022044	104050			ERROR	50	:LOADING TRE DID NOT CLEAR ERROR
3713	022046	004737	006572	9\$:	JSR	R7,CLEER	:SEE IF ERRORS ARE CLEARED
3714	022052	004737	050210		JSR	R7,ERRTST	

:TEST 26 MXF TRE AND SC BIT TEST
:THIS TEST WILL CHECK THAT MXF
:(MISSED TRANSFER ERROR) WILL
:SET TRE AND SC BITS.....

3723	022056	000004		TST26:	SCOPE		
3724							
3725	022060	012777	000027 161252		MOV	#PAT!7,@RHCS2	:SET MXF BIT
3726	022066	012777	177777 161236		MOV	#-1,@RHWC	:SET UP WORD COUNT
3727	022074	012777	004100 161232		MOV	#RBUF,@RHBA	:SETUP BA
3728	022102	012777	000000 161240		MOV	#ZERO,@RHTDB	:SET MXF ERROR
3729	022110	012777	000061 161212		MOV	#WRITE0,@RHCS1	:TELL IT TO WRITE
3730	022116	005037	003446		CLR	BITCNT	:CLEAR BIT COUNTER
3731	022122	032777	000200 161200	18\$:	BIT	#RDY,@RHCS1	:IS RDY SET
3732	022130	001015			BNE	CHARLE	:BIT IS SET
3733	022132	005237	003446		INC	BITCNT	:COUNT UP
3734	022136	001371			BNE	18\$	:NOT FINISHED COUNTING
3735	022140	005037	003446		CLR	BITCNT	:GET READY TO DO IT AGAIN
3736	022144	032777	000200 161156	19\$:	BIT	#RDY,@RHCS1	:IS IT SET YET?
3737	022152	001004			BNE	CHARLE	:YES
3738	022154	005237	003446		INC	BITCNT	:COUNT UP
3739	022160	001401			BEQ	CHARLE	:BIT IS NOT GOING TO SET
3740	022162	003770			BR	19\$	
3741	022164			CHARLE:			
3742	022164	017737	161140 001162		MOV	@RHCS1,\$REGO	:SET UP NEEDED BITS ONLY
3743	022172	042737	027777 001162		BIC	#GO.IE.RDY A16.A17.PSEL.DVA.MCPE.READ6,\$REGO	:CLEAR BITS NOT NEEDED
3744							

3745	022200	017737	161124	003420		MOV	@RHCS1,CS1	:SAVE RHCS1
3746	022206	017737	161120	003444		MOV	@RHWC,WC	:SAVE WORD COUNT
3747	022214	017737	161114	003414		MOV	@RHBA,BA	:SAVE BUS ADDRESS
3748	022222	005701				TST	R1	:IS IT AN RH11
3749	022224	001406				BEQ	87\$	:NO IT'S A 70
3750	022226	005037	003416			CLR	BAE	:CLEAR BAE
3751	022232	005037	003424			CLR	CS3	:CLEAR CS3
3752	022236	000137	022256			JMP	86\$	:CONTINUE
3753	022242	017737	161112	003416	87\$:	MOV	@RHBAE,BAE	:SAVE BUS ADDRESS EXTENSION
3754	022250	017737	161106	003424		MOV	@RHCS3,CS3	:SAVE RHCS3
3755	022256	017737	161056	003422	86\$:	MOV	@RHCS2,CS2	:SAVE CS2
3756	022264	017737	161052	003432		MOV	@RHST,DS1	:SAVE TESTER STATUS
3757	022272	017737	161046	003436		MOV	@RHER,ER1	:SAVE ERROR REGISTER
3758	022300	017737	161044	003442		MOV	@RHTDB,TDR	:SAVE TESTER DATA REG.
3759	022306	017737	161024	003440		MOV	@RMR2,TC	:SAVE MR2 TESTER REG.
3760	022314	032777	000200	161006		BIT	#RDY,@RHCS1	:IS READY SET
3761	022322	001003				BNE	99\$	:YES CONTINUE TEST
3762	022324	104102				ERROR	102	:READY NOT SET
3763	022326	004737	007224			JSR	R7,WHYFO	:ANY ERRORS SET
3764	022332	032777	001000	161000	99\$:	BIT	#MXF,@RHCS2	:IS MXF SET
3765	022340	001016				BNE	1\$	:YES CHECK TRE AND SC
3766	022342	022737	140000	001162		CMP	#SC!TRE,\$REGO	:IS THE SC AND TRE BITS SET
3767	022350	001460				BEQ	2\$	:YES MXF IS IN ERROR
3768	022352	032737	040000	001162		BIT	#TRE,\$REGO	:IS JUST THE TRE BIT SET
3769	022360	001060				BNE	3\$	:TRE BIT MUST BE IN ERROR
3770	022362	032737	100000	001162		BIT	#SC,\$REGO	:IS JUST THE SC BIT SET
3771	022370	001060				BNE	4\$	:SC BIT SET ERRONIOUSLY
3772	022372	104030				ERROR	30	:MXF NOT SET IN RHCS2
3773	022374	000467				BR	8\$	:SET UP TO TEST AGAIN
3774	022376	022737	140000	001162	1\$:	CMP	#SC!TRE,\$REGO	:IS SC AND TRE SET
3775	022404	001030				BNE	22\$	:FIND THE ERROR
3776	022406	012737	020000	004124		MOV	#MCPE,\$CS1	:TEST FOR SHORTS
3777	022414	012737	176400	004126		MOV	#MPE!PGE!NEM!NED!UPE!WCE!DLT,\$CS2	
3778	022422	013737	004130	004130		MOV	\$CS3,\$CS3	
3779	022430	013737	004132	004132		MOV	\$ST,\$ST	
3780	022436	012737	030165	004134		MOV	#ILF!RMR!DPE!RMBEX!RFAIL!DTE!OPI,\$ER	
3781	022444	012737	177777	004122		MOV	#-1,BEFORE	:TELL WHYFO ITS FOR SHORTS
3782	022452	004737	007224			JSR	R7,WHYFO	:TEST FOR SHORTS
3783	022456	005037	004122			CLR	BEFORE	:WE HAVE CHECKED FOR SHORTS
3784	022462	000137	022554			JMP	8\$	:LEAVE THE TEST
3785	022466	032737	040000	001162	22\$:	BIT	#TRE,\$REGO	:THEN IS THE TRE BIT SET
3786	022474	001022				BNE	6\$	:SC BIT DID NOT SEE TRE BIT
3787	022476	032737	100000	001162		BIT	#SC,\$REGO	:IS THE SC BIT SET
3788	022504	001022				BNE	7\$	:TRE HAS AN OPEN GOING TO BUS
3789	022506	104006				ERROR	6	:TRE SET LOGIC NOT WORKING
3790	022510	000421				BR	8\$	:SET UP TO TEST AGAIN
3791	022512	104031			2\$:	ERROR	31	:MXF HAS OPEN IN LINE GOING TO BUS
3792	022514	004737	007224			JSR	R7,WHYFO	:SEE IF ANY OTHER ERROR BIT IS
3793								:SET OTHER THAN MXF
3794	022520	000415				BR	8\$	:SET UP TO TEST AGAIN
3795	022522	104032			3\$:	ERROR	32	:SOMTHING WRONG WITH TRE BIT
3796	022524	004737	007224			JSR	R7,WHYFO	:SEE IF AN ERROR BIT IS SET
3797								:OR BOTH MXF IN RHCS2 AND SC IN
3798								:RHCS1 HAS AN OPEN BETWEEN IT AND THE BUS
3799	022530	000411				BR	8\$	:SET UP TO TEST AGAIN
3800	022532	104011			4\$:	ERROR		:SC BIT WAS SET BY EITHER ATTN OR

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3801 022534 004737 007224      JSR      R7,WHYFO      ;FIND WHAT ERROR BIT IS SET
3802                                ;MCPE ERROR OR SC IS SHORTED TO +5 VOLTS
3803 022540 000405      BR      8$      ;SETUP TO TEST AGAIN
3804 022542 104033      6$:  ERROR 33      ;TRE WAS SET BY OTHER THAN MXF
3805 022544 004737 007224      JSR      R7,WHYFO      ;FIND ERROR BIT THAT SET TRE
3806 022550 000401      BR      8$      ;SETUP TO TEST AGAIN
3807 022552 104013      7$:  ERROR 13      ;TRE HAS AN OPEN GOING TO THE BUS
3808 022554 032737 041400 177570 8$:  BIT  #SW14!SW9!SW8,@#177570 ;ANY LOOPING BEEING DONE
3809 022562 001003      BNE      21$      ;YES,LOAD TRE NO MATTER WHAT
3810 022564 105737 001103      TSTB   $ERFLG      ;WAS THERE AN ERROR
3811 022570 001010      BNE      9$      ;SKIP TRE CHECK
3812 022572 112777 000100 160564 21$:  MOVB  #TRE@,@RHCS1B ;LOAD TRE
3813 022600 032777 001000 160532      BIT  #MXF,@RHCS2      ;DID ERROR CLEAR
3814 022606 001401      BEQ      9$      ;YES EXIT TEST
3815 022610 104050      ERROR 50      ;LOADING TRE DID NOT CLEAR ERROR
3816 022612 004737 006572      9$:  JSR      R7,CLEER      ;SEE IF ERRORS ARE CLEARED
3817 022616 004737 050210      JSR      R7,ERRTST
3818
3819      ;*****
3820      ;*TEST 27      PGE ERROR BIT TEST
3821      ;*THIS TEST FORCES PGE TO SET IN RHCS2
3822      ;*AND VERIFYS TRE AND SC IS SET IN RHCS1
3823      ;*****
3823 022622 000004      TST27:  SCOPE
3824 022624 012777 000007 160506      MOV  #7,@RHCS2      ;SET UNIT NUMBER
3825 022632 012777 004000 160474      MOV  #EVENAD,@RHBA      ;SETUP BUS ADDRESS
3826 022640 005701      TST      R1      ;IS IT AN 11 OR A 70
3827 022642 100403      BMI      JUMP      ;ITS AN RH11
3828 022644 012777 000000 160506      MOV  #ZERO,@RHBAE      ;SETUP BAE
3829 022652 012777 000061 160450      JUMP:  MOV  #WRITE0,@RHCS1      ;TELL IT TO WRITE
3830 022660 012777 000061 160442      MOV  #WRITE0,@RHCS1      ;CREATE THE ERROR
3831 022666 005037 003446      CLR      BITCNT      ;CLEAR BIT COUNTER
3832 022672 032777 000200 160430 18$:  BIT  #RDY,@RHCS1      ;IS RDY SET
3833 022700 001015      BNE      PGETST      ;BIT IS SET
3834 022702 005237 003446      INC      BITCNT      ;COUNT UP
3835 022706 001371      BNE      18$      ;NOT FINISHED COUNTING
3836 022710 005037 003446      CLR      BITCNT      ;GET READY TO DO IT AGAIN
3837 022714 032777 000200 160406 19$:  BIT  #RDY,@RHCS1      ;IS IT SET YET?
3838 022722 001004      BNE      PGETST      ;YES
3839 022724 005237 003446      INC      BITCNT      ;COUNT UP
3840 022730 001401      BEQ      PGETST      ;BIT IS NOT GOING TO SET
3841 022732 000770      BR      19$
3842 022734
3843 022734 017737 160370 001162      PGETST:  MOV  @RHCS1,$REGO      ;SET UP NEEDED BITS ONLY
3844 022742 042737 027777 001162      BIC  #GO!IE!RDY!A16!A17!PSEL.DVA!MCPE!READ6,$REGO
3845                                ;CLEAR BITS NOT NEEDED
3846 022750 017737 160354 003420      MOV  @RHCS1,CS1      ;SAVE RHCS1
3847 022756 017737 160350 003444      MOV  @RHWC,Wc      ;SAVE WORD COUNT
3848 022764 017737 160344 003414      MOV  @RHBA,BA      ;SAVE BUS ADDRESS
3849 022772 005701      TST      R1      ;IS IT AN RH11
3850 022774 001406      BEQ      87$      ;NO IT'S A 70
3851 022776 005037 003416      CLR      BAE      ;CLEAR BAE
3852 023002 005037 003424      CLR      CS3      ;CLEAR CS3
3853 023006 000137 023026      JMP      86$      ;CONTINUE
3854 023012 017737 160342 003416 87$:  MOV  @RHBAE,BAE      ;SAVE BUS ADDRESS EXTENSION
3855 023020 017737 160336 003424      MOV  @RHCS3,CS3      ;SAVE RHCS3
3856 023026 017737 160306 003422 86$:  MOV  @RHCS2,CS2      ;SAVE CS2

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3857	023034	017737	160302	003432	MOV	@RHST,DS1	:SAVE TESTER STATUS	
3858	023042	017737	160276	003436	MOV	@RHER,ER1	:SAVE ERROR REGISTER	
3859	023050	017737	160274	003442	MOV	@RHIDB,TDR	:SAVE TESTER DATA REG.	
3860	023056	017737	160254	003440	MOV	@RHMR2,TC	:SAVE MR2 TESTER REG.	
3861	023064	032777	000200	160236	BIT	#RDY,@RHCS1	:IS READY SET	
3862	023072	001003			BNE	99\$	:YES CONTINUE TEST	
3863	023074	104102			ERROR	102	:READY NOT SET	
3864	023076	004737	007224		JSR	R7,WHYFO	:ANY ERRORS SET	
3865	023102	032777	002000	160230	99\$:	BIT	#PGE,@RHCS2	:IS PGE SET
3866	023110	001016			BNE	1\$	:YES CHECK TRE AND SC	
3867	023112	022737	140000	001162	CMF	#SC!TRE,\$REGO	:IS THE SC AND TRE BITS SET	
3868	023120	001460			BEQ	2\$	:YES PGE IS IN ERROR	
3869	023122	032737	040000	001162	BIT	#TRE,\$REGO	:IS JUST THE TRE BIT SET	
3870	023130	001060			BNE	3\$	:TRE BIT MUST BE IN ERROR	
3871	023132	032737	100000	001162	BIT	#SC,\$REGO	:IS JUST THE SC BIT SET	
3872	023140	001060			BNE	4\$	:SC BIT SET ERRONIOUSLY	
3873	023142	104051			ERROR	51	:PGE NOT SET IN RHCS2	
3874	023144	000467			BR	8\$	:SET UP TO TEST AGAIN	
3875	023146	022737	140000	001162	1\$:	CMF	#SC!TRE,\$REGO	:IS SC AND TRE SET
3876	023154	001030			BNE	22\$	:FIND THE ERROR	
3877	023156	013737	004124	004124	MOV	\$CS1,\$CS1	:TEST FOR SHORTS	
3878	023164	012737	175400	004126	MOV	#MPE!MXF!NEM!NED!UPE!WCE.DLT,\$CS2		
3879	023172	013737	004130	004130	MOV	\$CS3,\$CS3		
3880	023200	013737	004132	004132	MOV	\$ST,\$ST		
3881	023206	012737	030175	004134	MOV	#ILF!CPE!RMR!DPE!RMBEX.RFAIL!DTE!OPI,\$EP		
3882	023214	012737	177777	004122	MOV	#-1,BEFORE	:TELL WHYFO ITS FOR SHORTS	
3883	023222	004737	007224		JSR	R7,WHYFO	:TEST FOR SHORTS	
3884	023226	005037	004122		CLR	BEFORE	:WE HAVE CHECKED FOR SHORTS	
3885	023232	000137	023324		JMP	8\$	:LEAVE THE TEST	
3886	023236	032737	040000	001162	22\$:	BIT	#TRE,\$REGO	:THEN IS THE TRE BIT SET
3887	023244	001022			BNE	6\$	:SC BIT DID NOT SEE TRE BIT	
3888	023246	032737	100000	001162	BIT	#SC,\$REGO	:IS THE SC BIT SET	
3889	023254	001022			BNE	7\$	:TRE HAS AN OPEN GOING TO BUS	
3890	023256	104006			ERROR	6	:TRE SET LOGIC NOT WORKING	
3891	023260	000421			BR	8\$	:SET UP TO TEST AGAIN	
3892	023262	104123			2\$:	ERROR	123	:PGE HAS OPEN IN LINE GOING TO BUS
3893	023264	004737	007224		JSR	R7,WHYFO	:SEE IF ANY OTHER ERROR BIT IS	
3894							:SET OTHER THAN PGE	
3895	023270	000415			BR	8\$	:SET UP TO TEST AGAIN	
3896	023272	104171			3\$:	ERROR	171	:SOMTHING WRONG WITH TRE BIT
3897	023274	004737	007224		JSR	R7,WHYFO	:SEE IF AN ERROR BIT IS SET	
3898							:OR BOTH PGE IN RHCS2 AND SC IN	
3899							:RHCS1 HAS AN OPEN BETWEEN IT AND THE BUS	
3900	023300	000411			BR	8\$	:SET UP TO TEST AGAIN	
3901	023302	104011			4\$:	ERROR	11	:SC BIT WAS SET BY EITHER ATTN OR
3902	023304	004737	007224		JSR	R7,WHYFO	:FIND WHAT ERROR BIT IS SET	
3903							:MCPE ERROR OR SC IS SHORTED TO +5 VOLTS	
3904	023310	000405			BR	6\$	:SETUP TO TEST AGAIN	
3905	023312	104172			6\$:	ERROR	172	:TRE WAS SET BY OTHER THAN PGE
3906	023314	004737	007224		JSR	R7,WHYFO	:FIND ERROR BIT THAT SET TRE	
3907	023320	000401			BR	8\$	:SETUP TO TEST AGAIN	
3908	023322	104013			7\$:	ERROR	13	:TRE HAS AN OPEN GOING TO THE BUS
3909	023324	032737	041400	177570	8\$:	BIT	#SW14.SW9:SW8,@177570	:ANY LOOPING BEING DONE
3910	023332	001003			BNE	21\$	:YES,LOAD TRE NO MATTER WHAT	
3911	023334	105737	001103		TSTB	\$ERFLG	:WAS THERE AN ERROR	
3912	023340	001010			BNE	9\$	:SKIP TRE CHECK	

3913	023342	112777	000100	160014	21\$:	MOVB	#TREB,@RHCS1B	:LOAD TRE
3914	023350	032777	002000	157762		BIT	#PGE,@RHCS2	:DID ERROR CLEAR
3915	023356	001401				BEQ	9\$	:YES EXIT TEST
3916	023360	104050				ERROR	50	:LOADING TRE DID NOT CLEAR ERROR
3917	023362	004737	006572		9\$:	JSR	R7,CLEER	:SEE IF ERRORS ARE CLEARED
3918	023366	004737	050210			JSR	R7,ERRTST	
3919								
3920								
3921								
3922								
3923								
3924								
3925								
3926	023372	000004						
3927	023374	005701						
3928	023376	100402						
3929	023400	000137	024124					
3930	023404	012777	000007	157726	LEAP:	MOV	#7,@RHCS2	:SETUP UNIT 7
3931	023412	052777	001000	157720		BIS	#MXF,@RHCS2	:SET MXF
3932	023420	005037	003446			CLR	BITCNT	:CLEAR BIT COUNTER
3933	023424	032777	001000	157706	18\$:	BIT	#MXF,@RHCS2	:IS MXF SET
3934	023432	001015				BNE	MIXIT	:BIT IS SET
3935	023434	005237	003446			INC	BITCNT	:COUNT UP
3936	023440	001371				BNE	18\$	:NOT FINISHED COUNTING
3937	023442	005037	003446			CLR	BITCNT	:GET READY TO DO IT AGAIN
3938	023446	032777	001000	157664	19\$:	BIT	#MXF,@RHCS2	:IS IT SET YET?
3939	023454	001004				BNE	MIXIT	:YES
3940	023456	005237	003446			INC	BITCNT	:COUNT UP
3941	023462	001401				BEQ	MIXIT	:BIT IS NOT GOING TO SET
3942	023464	000770				BR	19\$	
3943	023466							
3944	023466	017737	157636	001162	MIXIT:	MOV	@RHCS1,\$REGO	:SET UP NEEDED BITS ONLY
3945	023474	042737	027777	001162		BIC	#GO!IE.RDY!A16!A17!PSEL!DVA!MCPE!READ6,\$REGO	:CLEAR BITS NOT NEEDED
3946								
3947	023502	017737	157622	003420		MOV	@RHCS1,CS1	:SAVE RHCS1
3948	023510	017737	157616	003444		MOV	@RHWC,WC	:SAVE WORD COUNT
3949	023516	017737	157612	003414		MOV	@RHBA,BA	:SAVE BUS ADDRESS
3950	023524	005701				TST	R1	:IS IT AN RH11
3951	023526	001406				BEQ	87\$	:NO IT'S A 70
3952	023530	005037	003416			CLR	BAE	:CLEAR BAE
3953	023534	005037	003424			CLR	CS3	:CLEAR CS3
3954	023540	000137	023560			JMP	86\$	:CONTINUE
3955	023544	017737	157610	003416	87\$:	MOV	@RHBAE,BAE	:SAVE BUS ADDRESS EXTENSION
3956	023552	017737	157604	003424		MOV	@RHCS3,CS3	:SAVE RHCS3
3957	023560	017737	157554	003422	86\$:	MOV	@RHCS2,CS2	:SAVE CS2
3958	023566	017737	157550	003432		MOV	@RHST,DS1	:SAVE TESTER STATUS
3959	023574	017737	157544	003436		MOV	@RHER,ER1	:SAVE ERROR REGISTER
3960	023602	017737	157542	003442		MOV	@RHTDB,TDR	:SAVE TESTER DATA REG.
3961	023610	017737	157522	003440		MOV	@RHMP2,TC	:SAVE MR2 TESTER REG.
3962	023616	032777	000200	157504		BIT	#RDY,@RHCS1	:IS READY SET
3963	023624	001003				BNE	99\$	:YES CONTINUE TEST
3964	023626	104102				ERROR	102	:READY NOT SET
3965	023630	004737	007224			JSR	R7,WHYFO	:ANY ERRORS SET
3966	023634	032777	001000	157476	99\$:	BIT	#MXF,@RHCS2	:IS MXF SET
3967	023642	001016				BNE	1\$	:YES CHECK TRE AND SC
3968	023644	022737	140000	001162		CMP	#SC,TRE,\$REGO	:IS THE SC AND TRE BITS SET

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

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

*****
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 @RHCW,WC ;SAVE WORD COUNT
MOV @RHBA,BA ;SAVE BUS ADDRESS
TST R1 ;IS IT AN RH11
BEQ 87$ ;NO IT'S A 70
CLR BAF ;CLEAR BAE
CLR CS3 ;CLEAR CS3
JMP 86$ ;CONTINUE
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
22$: ERROR 130 ;GET OUT OF TEST
;MCPE ERROR OK BUT SC DID
;NOT SET SC HAS OPEN TC
;BUS OR MCPE GOING TO OR
;GATE FOR SC WAS NOT SEEN

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

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4081
4082
4083
4084
4085
4086
4087
4088 024456 000004
4089 024460 005701
4090 024462 100532
4091 024464 012777 177777 156640
4092 024472 012777 004000 156634
4093 024500 012777 000000 156652
4094 024506 012777 000007 156624
4095 024514 012777 000061 156606
4096 024522 005037 003446
4097 024526 032777 000200 156574 18$:
4098 024534 001015
4099 024536 005237 003446
4100 024542 001371
4101 024544 005037 003446
4102 024550 032777 000200 156552 19$:
4103 024556 001004
4104 024560 005237 003446
4105 024564 001401
4106 024566 000770
4107 024570
4108 024570 017737 156534 003420
4109 024576 017737 156530 003444
4110 024604 017737 156524 003414
4111 024612 005701
4112 024614 001406
4113 024616 005037 003416
4114 024622 005037 003424
4115 024626 000137 024646
4116 024632 017737 156522 003416 87$:
4117 024640 017737 156516 003424
4118 024646 017737 156466 003422 86$:
4119 024654 017737 156462 003432
4120 024662 017737 156456 003436
4121 024670 017737 156454 003442
4122 024676 017737 156434 003440
4123 024704 032777 000200 156416
4124 024712 001003
4125 024714 104102
4126 024716 004737 007224
4127 024722 032777 002000 156432 1$:
4128 024730 001403
4129 024732 104125
4130 024734 004737 007224
4131 024740 004737 006572
4132 024744 004737 050210
4133
4134
4135
4136

*****
;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
IMP 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
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

```

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4137
4138
4139 024750 000004
4140 024752 005701
4141 024754 100524
4142 024756 012777 177776 156346
4143 024764 012777 004000 156342
4144 024772 012777 000061 156330
4145 025000 005037 003446
4146 025004 032777 000200 156316 18$:
4147 025012 001015
4148 025014 005237 003446
4149 025020 001371
4150 025022 005037 003446
4151 025026 032777 000200 156274 19$:
4152 025034 001004
4153 025036 005237 003446
4154 025042 001401
4155 025044 000770
4156 025046
4157 025046 017737 156256 003420
4158 025054 017737 156252 003444
4159 025062 017737 156246 003414
4160 025070 005701
4161 025072 001406
4162 025074 005037 003416
4163 025100 005037 003424
4164 025104 000137 025124
4165 025110 017737 156244 003416 87$:
4166 025116 017737 156240 003424
4167 025124 017737 156210 003422 86$:
4168 025132 017737 156204 003432
4169 025140 017737 156200 003436
4170 025146 017737 156176 003442
4171 025154 017737 156156 003440
4172 025162 032777 000200 156140
4173 025170 001003
4174 025172 104102
4175 025174 004737 007224
4176 025200 032777 002000 156154
4177 025206 001003
4178 025210 104127
4179 025212 004737 007224
4180 025216 004737 006572
4181 025222 004737 050210
4182
4183
4184
4185
4186
4187
4188
4189 025226 000104
4190 025230 005701
4191 025232 100524
4192 025234 012777 177775 156070

; *DIVISABLE BY 4.....RH70 ONLY.....
;*****
TST33: SCOPE
TST R1 ;IS IT AN 11 OR A 70
BMI TST34 ;:GET OUT OF TEST
MOV #-2,@RHCW ;SETUP WORD COUNT FOR DOUBLE TRANSFER
MOV #EVENAD,@RHBA ;CORRECT BA
MOV #WRITE0,@RHCS1 ;FILL IT TO WRITE
CLR BITCNT ;CLEAR BIT COUNTER
BIT #RDY,@RHCS1 ;IS RDY SET
BNE DBLWDS ;BIT IS SET
INC BITCNT ;COUNT UP
BNE 18$ ;NOT FINISHED COUNTING
CLR BITCNT ;GET READY TO DO IT AGAIN
BIT #RDY,@RHCS1 ;IS IT SET YET?
BNE DBLWDS ;YES
INC BITCNT ;COUNT UP
BEQ DBLWDS ;BIT IS NOT GOING TO SET
BR 19$

DBLWDS:
MOV @RHCS1,CS1 ;SAVE RHCS1
MOV @RHCW,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,@RHCW ;SET UP FOR A 3 WORD TRANSFER

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4193 025242 012777 004000 156064      MOV      #EVENAD,@RHBA      ;CORRECT BA
4194 025250 012777 000061 156052      MOV      #WRITE0,@RHCS1    ;TELL IT TO WRITE
4195 025256 005037 003446             CLR      BITCNT           ;CLEAR BIT COUNTER
4196 025262 032777 000200 156040 18$:  BIT      #RDY,@RHCS1      ;IS RDY SET
4197 025270 001015             BNE      THREE           ;BIT IS SET
4198 025272 005237 003446             INC      BITCNT           ;COUNT UP
4199 025276 001371             BNE      18$              ;NOT FINISHED COUNTING
4200 025300 005037 003446             CLR      BITCNT           ;GET READY TO DO IT AGAIN
4201 025304 032777 000200 156016 19$:  BIT      #RDY,@RHCS1      ;IS IT SET YET?
4202 025312 001004             BNE      THREE           ;YES
4203 025314 005237 003446             INC      BITCNT           ;COUNT UP
4204 025320 001401             BEQ      THREE           ;BIT IS NOT GOING TO SET
4205 025322 000770             BR       19$
4206 025324             THREE:
4207 025324 017737 156000 003420      MOV      @RHCS1,CS1        ;SAVE RHCS1
4208 025332 017737 155774 003444      MOV      @RHWC,WC         ;SAVE WORD COUNT
4209 025340 017737 155770 003414      MOV      @RHBA,BA         ;SAVE BUS ADDRESS
4210 025346 005701             TST      R1              ;IS IT AN RH11
4211 025350 001406             BEQ      87$              ;NO IT'S A 70
4212 025352 005037 003416             CLR      BAE              ;CLEAR BAE
4213 025356 005037 003424             CLR      CS3             ;CLEAR CS3
4214 025362 000137 025402             JMP      86$              ;CONTINUE
4215 025366 017737 155766 003416 87$:  MOV      @RHBAE,BAE        ;SAVE BUS ADDRESS EXTENSION
4216 025374 017737 155762 003424      MOV      @RHCS3,CS3       ;SAVE RHCS3
4217 025402 017737 155732 003422 86$:  MOV      @RHCS2,CS2       ;SAVE CS2
4218 025410 017737 155726 003432      MOV      @RHST,DS1        ;SAVE TESTER STATUS
4219 025416 017737 155722 003436      MOV      @RHER,ER1        ;SAVE ERROR REGISTER
4220 025424 017737 155720 003442      MOV      @RHTDB,TDR       ;SAVE TESTER DATA REG.
4221 025432 017737 155700 003440      MOV      @RHMR2,TC        ;SAVE MR2 TESTER REG.
4222 025440 032777 000200 155662      BIT      #RDY,@RHCS1      ;IS READY SET
4223 025446 001003             BNE      ERRIP           ;RDY IS SET
4224 025450 104102             ERFOR      102          ;RDY DID NOT SET
4225 025452 004737 007224             JSR      R7,WHYFO          ;ANY ERRORS SET
4226 025456 032777 002000 155676 ERRIP: BIT      #DBL,@RHCS3      ;IS DOUBLE SET
4227 025464 001403             BEQ      ERPIP           ;DBL IS SET
4228 025466 104126             ERROR      126         ;DOUBLE SET ON A 3 WORD TRANSFER
4229 025470 004737 007224             JSR      R7,WHYFO          ;SEE IF ANY ERROR BITS ARE SET
4230 025474 004737 006572             JSR      R7,CLEER         ;CLEAR ERRORS
4231 025500 004737 050210             JSR      R7,ERRTST
4232 *****
4233 ;*TEST 35      DOUBLE TEST ,4 WORDS FROM A BASE 4 ADDRESS
4234 ;*THIS TEST CHECKS THAT DBL WILL SET IN RHCS3
4235 ;*AFTER A 4 WORD TRANSFER STARTING WITH AN
4236 ;*ADDRESS DIVISIBLE BY 4*****
4237 ;*.....RH70 ONLY.....
4238 *****
4239 TST35: SCOPE
4240 TST      R1              ;IS IT AN 11 OR A 70
4241 BMI      TST36           ;:GET OUT OF TEST
4242 MOV      #-4,@RHWC        ;SET UP FOR 4 WORD TRANSFER
4243 MOV      #EVENAD,@RHBA    ;CORRECT BA
4244 MOV      #WRITE0,@RHCS1   ;TELL IT TO WRITE
4245 CLR      BITCNT           ;CLEAR BIT COUNTER
4246 025540 032777 000200 155562 18$:  BIT      #RDY,@RHCS1      ;IS RDY SET
4247 025546 001015             BNE      DBLED           ;BIT IS SET
4248 025550 005237 003446             INC      BITCNT           ;COUNT UP

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```

4249 025554 001371      BNE      18$      ;NOT FINISHED COUNTING
4250 025556 005037 003446 CLR      BITCNT ;GET READY TO DO IT AGAIN
4251 025562 032777 000200 155540 19$: BIT      #RDY,@RHCS1 ;IS IT SET YET?
4252 025570 001004      BNE      DBLED    ;YES
4253 025572 005237 003446 INC      BITCNT ;COUNT UP
4254 025576 001401      BEQ      DBLED    ;BIT IS NOT GOING TO SET
4255 025600 000770      BR       19$
4256 025602      DBLED:
4257 025602 017737 155522 003420 MOV      @RHCS1,CS1 ;SAVE RHCS1
4258 025610 017737 155516 003444 MOV      @RHWC,WC ;SAVE WORD COUNT
4259 025616 017737 155512 003414 MOV      @RHBA,BA ;SAVE BUS ADDRESS
4260 025624 005701      TST      R1 ;IS IT AN RH11
4261 025626 001406      BEQ      87$      ;NO IT'S A 70
4262 025630 005037 003416 CLR      BAE ;CLEAR BAE
4263 025634 005037 003424 CLR      CS3 ;CLEAR CS3
4264 025640 000137 025660      JMP      86$      ;CONTINUE
4265 025644 017737 155510 003416 87$: MOV      @RHBAE,BAE ;SAVE BUS ADDRESS EXTENSION
4266 025652 017737 155504 003424 MOV      @RHCS3,CS3 ;SAVE RHCS3
4267 025660 017737 155454 003422 86$: MOV      @RHCS2,CS2 ;SAVE CS2
4268 025666 017737 155450 003432 MOV      @RHST,DS1 ;SAVE TESTER STATUS
4269 025674 017737 155444 003436 MOV      @RHER,ER1 ;SAVE ERROR REGISTER
4270 025702 017737 155442 003442 MOV      @RHTDB,TDR ;SAVE TESTER DATA REG.
4271 025710 017737 155422 003440 MOV      @RHMR2,TC ;SAVE MR2 TESTER REG.
4272 025716 032777 000200 155404 BIT      #RDY,@RHCS1 ;IS READY SET
4273 025724 001003      BNE      DAYAMS ;RDY IS SET
4274 025726 104102      ERROR 102 ;RDY DID NOT SET
4275 025730 004737 007224      JSR      R7,WHYFO ;WHAT ERRORS ARE SET
4276 025734 032777 002000 155420 DAYAMS: BIT      #DBL,@RHCS3 ;IS DOUBLE SET
4277 025742 001003      BNE      ERR29 ;TEST IS OK
4278 025744 104124      ERROR 124 ;DOUBLE DID NOT SET AFTER A 4 WORD
4279 025746 004737 007224      JSR      R7,WHYFO ;SEE IF ANY ERROR ARE SET
4280 025752 004737 006572      JSR      R7,CLEER ;CLEAR ERRORS
4281 025756 004737 050210      JSR      R7,ERRTST
4282
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4291
4292 025762 000004      TST36: SCOPE
4293 025764 005701      TST      R1 ;IS IN AN RH11
4294 025766 100532      BMI      TST37 ;:GET OUT OF TEST
4295 025770 012777 177777 155334 MOV      #-1,@RHWC ;SET UP WC FOR ONE WORD
4296 025776 012777 004000 155330 MOV      #EVENAD,@RHBA ;SETUP BUS ADDRESS
4297 026004 012777 000000 155346 MOV      #ZERO,@RHBAE ;SETUP BUS ADDRESS EXTENSION
4298 026012 012777 000007 155320 MOV      #7,@RHCS2 ;DEVICE 7
4299 026020 012777 000071 155302 MOV      #READO,@RHCS1 ;TELL IT TO READO
4300 026026 005037 003446 CLR      BITCNT ;CLEAR BIT COUNTER
4301 026032 032777 000200 155270 18$: BIT      #RDY,@RHCS1 ;IS RDY SET
4302 026040 001015      BNE      3$ ;BIT IS SET
4303 026042 005237 003446 INC      BITCNT ;COUNT UP
4304 026046 001371      BNE      18$ ;NOT FINISHED COUNTING

```

```

*****
*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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```

4305 026050 005037 003446          CLR      BITCNT          ;GET READY TO DO IT AGAIN
4306 026054 032777 000200 155246 19$: BIT      #RDY,@RHCS1      ;IS IT SET YET?
4307 026062 001004          BNE      3$          ;YES
4308 026064 005237 003446          INC      BITCNT          ;COUNT UP
4309 026070 001401          BEQ      3$          ;BIT IS NOT GOING TO SET
4310 026072 000770          BR       19$
4311 026074          3$:
4312 026074 017737 155230 003420      MOV      @RHCS1,CS1      ;SAVE RHCS1
4313 026102 017737 155224 003444      MOV      @RHWC,WC      ;SAVE WORD COUNT
4314 026110 017737 155220 003414      MOV      @RHBA,BA      ;SAVE BUS ADDRESS
4315 026116 005701          TST      R1          ;IS IT AN RH11
4316 026120 001406          BEQ      87$          ;NO IT'S A 70
4317 026122 005037 003416          CLR      BAE          ;CLEAR BAE
4318 026126 005037 003424          CLR      CS3          ;CLEAR CS3
4319 026132 000137 026152          JMP      86$          ;CONTINUE
4320 026136 017737 155216 003416 87$: MOV      @RHBAE,BAE      ;SAVE BUS ADDRESS EXTENSION
4321 026144 017737 155212 003424      MOV      @RHCS3,CS3      ;SAVE RHCS3
4322 026152 017737 155162 003422 86$: MOV      @RHCS2,CS2      ;SAVE CS2
4323 026160 017737 155156 003432      MOV      @RHST,DS1      ;SAVE TESTER STATUS
4324 026166 017737 155152 003436      MOV      @RHER,ER1      ;SAVE ERROR REGISTER
4325 026174 017737 155150 003442      MOV      @RHTDB,TDR      ;SAVE TESTER DATA REG.
4326 026202 017737 155130 003440      MOV      @RHMR2,TC      ;SAVE MR2 TESTER REG.
4327 026210 032777 000200 155112      BIT      #RDY,@RHCS1      ;IS READY SET
4328 026216 001003          BNE      1$          ;RDY SET CONT. TEST
4329 026220 104102          ERROR    102          ;READY DID NOT SET
4330 026222 004737 007224          JSR      R7,WHYFO      ;ANY ERRORS SET
4331 026226 032777 002000 155126 1$: BIT      #DBL,@RHCS3      ;IS DOUBLE SET
4332 026234 001403          BEQ      2$          ;DBL SET
4333 026236 104154          ERROR    154          ;DBL DID SET ON A 1 WORD TRANSFER
4334 026240 004737 007224          JSR      R7,WHYFO      ;TELL WHY NOT
4335 026244 004737 006572          JSR      R7,CLEER      ;CLEAR ERRORS
4336 026250 004737 050210          JSR      R7,ERRTST
4337 *****
4338 *TEST 37      DOUBLE TEST WITH 2 WORD TRANSFER AND BAI SET
4339 ;*THESE TEST CHECK DBL IN RHCS3 WITHREAD FWD AND REV
4340 ;*WRITE FWD AND REV AND WITH BAI SET IN RHCS2
4341 ;*OPERATION BEING PREFORMED WILL BE PRINTED OUT
4342 ;*IN ERROR MESSAGE.
4343 ;*.....RH70 ONLY.....
4344 *****
4345 TST37: SCOPE
4346 TST      R1          ;IS IN AN RH11
4347 BMI      TST40      ;;GET OUT OF TEST
4348 MOV      #-2,@RHWC      ;SET UP WC FOR TWO WORD
4349 MOV      #EVENAD,@RHBA      ;SETUP BUS ADDRESS
4350 MOV      #ZERO,@RHBAE      ;SETUP BUS ADDRESS EXTENSION
4351 MOV      #7!BAI,@RHCS2      ;DEVICE 7
4352 MOV      #WRITE0,@RHCS1      ;TELL IT TO WRITE0
4353 CLR      BITCNT      ;CLEAR BIT COUNTER
4354 026324 032777 000200 154776 18$: BIT      #RDY,@RHCS1      ;IS RDY SET
4355 026332 001015          BNE      3$          ;BIT IS SET
4356 026334 005237 003446          INC      BITCNT      ;COUNT UP
4357 026340 001371          BNE      18$          ;NOT FINISHED COUNTING
4358 026342 005037 003446          CLR      BITCNT      ;GET READY TO DO IT AGAIN
4359 026346 032777 000200 154754 19$: BIT      #RDY,@RHCS1      ;IS IT SET YET?
4360 026354 001004          BNE      3$          ;YES

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4361 026356 005237 003446      INC      BITCNT      ;COUNT UP
4362 026362 001401      BEQ      3$      ;BIT IS NOT GOING TO SET
4363 026364 000770      BR       19$
4364 026366
4365 026366 017737 154736 003420 3$:      MOV      @RHCS1,CS1      ;SAVE RHCS1
4366 026374 017737 154732 003444      MOV      @RHWC,WC      ;SAVE WORD COUNT
4367 026402 017737 154726 003414      MOV      @RHBA,BA      ;SAVE BUS ADDRESS
4368 026410 005701      TST      R1      ;IS IT AN RH11
4369 026412 001406      BEQ      87$      ;NO IT'S A 70
4370 026414 005037 003416      CLR      BAE      ;CLEAR BAE
4371 026420 005037 003424      CLR      CS3      ;CLEAR CS3
4372 026424 000137 026444      JMP      86$      ;CONTINUE
4373 026430 017737 154724 003416 87$:      MOV      @RHBAE,BAE      ;SAVE BUS ADDRESS EXTENSION
4374 026436 017737 154720 003424      MOV      @RHCS3,CS3      ;SAVE RHCS3
4375 026444 017737 154670 003422 86$:      MOV      @RHCS2,CS2      ;SAVE CS2
4376 026452 017737 154664 003432      MOV      @RHST,DS1      ;SAVE TESTER STATUS
4377 026460 017737 154660 003436      MOV      @RHER,ER1      ;SAVE ERROR REGISTER
4378 026466 017737 154656 003442      MOV      @RHTDB,TDR      ;SAVE TESTER DATA REG.
4379 026474 017737 154636 003440      MOV      @RHMR2,TC      ;SAVE MR2 TESTER REG.
4380 026502 032777 000200 154620      BIT      #RDY,@RHCS1      ;IS READY SET
4381 026510 001003      BNE      1$      ;RDY SET CONT. TEST
4382 026512 104102      ERRORR 102      ;READY DID NOT SET
4383 026514 004737 007224      JSR      R7,WHYFO      ;ANY ERRORS SET
4384 026520 032777 002000 154634 1$:      BIT      #DBL,@RHCS3      ;IS DOUBLE SET
4385 026526 001403      BEQ      2$      ;DBL SET
4386 026530 104153      ERROR 153      ;DBL DID SET ON A 2 WORD TRANSFER
4387 026532 004737 007224      JSR      R7,WHYFO      ;TELL WHY NOT
4388 026536 004737 006572 2$:      JSR      R7,CLEER      ;CLEAR ERRORS
4389 026542 004737 050210      JSR      R7,ERRTST
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4398 026546 000004      TST40: SCOPE
4399 026550 005701      TST      R1      ;IS IN AN RH11
4400 026552 100532      BMI      TST41      ;;GET OUT OF TEST
4401 026554 012777 177776 154550      MOV      #-2,@RHWC      ;SET UP WC FOR TWO WORD
4402 026562 012777 004000 154544      MOV      #EVENAD,@RHBA      ;SETUP BUS ADDRESS
4403 026570 012777 000000 154562      MOV      #ZERO,@RHBAE      ;SETUP BUS ADDRESS EXTENSION
4404 026576 012777 000017 154534      MOV      #7!BAI,@RHCS2      ;DEVICE 7
4405 026604 012777 000067 154516      MOV      #WRITE6,@RHCS1      ;TELL IT TO WRITE6
4406 026612 005037 003446      CLR      BITCNT      ;CLEAR BIT COUNTER
4407 026616 032777 000200 154504 18$:      BIT      #RDY,@RHCS1      ;IS RDY SET
4408 026624 001015      BNE      3$      ;BIT IS SET
4409 026626 005237 003446      INC      BITCNT      ;COUNT UP
4410 026632 001371      BNE      18$      ;NOT FINISHED COUNTING
4411 026634 005037 003446      CLR      BITCNT      ;GET READY TO DO IT AGAIN
4412 026640 032777 000200 154462 19$:      BIT      #RDY,@RHCS1      ;IS IT SET YET?
4413 026646 001004      BNE      3$      ;YES
4414 026650 005237 003446      INC      BITCNT      ;COUNT UP
4415 026654 001401      BEQ      3$      ;BIT IS NOT GOING TO SET
4416 026656 000770      BR       19$

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4417 026660
4418 026660 017737 154444 003420
4419 026666 017737 154440 003444
4420 026674 017737 154434 003414
4421 026702 005701
4422 026704 001406
4423 026706 005037 003416
4424 026712 005037 003424
4425 026716 000137 026736
4426 026722 017737 154432 003416 87$: MOV @RHBAE,BAE ;SAVE BUS ADDRESS EXTENSION
4427 026730 017737 154426 003424 MOV @RHCS3,CS3 ;SAVE RHCS3
4428 026736 017737 154376 003422 86$: MOV @RHCS2,CS2 ;SAVE CS2
4429 026744 017737 154372 003432 MOV @RHST,DS1 ;SAVE TESTER STATUS
4430 026752 017737 154366 003436 MOV @RHER,ER1 ;SAVE ERROR REGISTER
4431 026760 017737 154364 003442 MOV @RHIDB,TDR ;SAVE TESTER DATA REG.
4432 026766 017737 154344 003440 MOV @RHMR2,TC ;SAVE MR2 TESTER REG.
4433 026774 032777 000200 154326 BIT #RDY,@RHCS1 ;IS READY SET
4434 027002 001003 BNE 1$ ;RDY SET CONT. TEST
4435 027004 104102 ERROR 102 ;READY DID NOT SET
4436 027006 004737 007224 JSR R7,WHYFO ;ANY ERRORS SET
4437 027012 032777 002000 154342 1$: BIT #DBL,@RHCS3 ;IS DOUBLE SET
4438 027020 001403 BEQ 2$ ;DBL SET
4439 027022 104155 ERROR 155 ;DBL DID SET ON A 2 WORD TRANSFER
4440 027024 004737 007224 JSR R7,WHYFO ;TELL WHY NOT
4441 027030 004737 006572 2$: JSR R7,CLEER ;CLEAR ERRORS
4442 027034 004737 050210 JSR R7,ERRTST
4443 *****
4444 *TEST 41 DBL TEST 2 WORD TRANSFER ODD ADD.
4445 ;*THESE TEST CHECK DBL IN RHCS3 WITHREAD FWD AND REV
4446 ;*WRITE FWD AND REV AND WITH BAI SET IN RHCS2
4447 ;*OPERATION BEING PREFORMED WILL BE PRINTED OUT
4448 ;*IN ERROR MESSAGE.
4449 ;*.....RH70 ONLY.....
4450 *****
4451 027040 000004 ST41: SCOPE
4452 027042 005701 TST R1 ;IS IN AN RH11
4453 027044 100532 BMI TST42 ;;GET OUT OF TEST
4454 027046 012777 177776 154256 MOV #-2,@RHWC ;SET UP WC FOR TWO WORD
4455 027054 012777 004002 154252 MOV #ODDAD,@RHBA ;SETUP BUS ADDRESS
4456 027062 012777 000000 154270 MOV #ZERO,@RHBAE ;SETUP BUS ADDRESS EXTENSION
4457 027070 012777 000007 154242 MOV #7,@RHCS2 ;DEVICE 7
4458 027076 012777 000061 154224 MOV #WRITE0,@RHCS1 ;TELL IT TO WRITE0
4459 027084 005037 003446 CLR BITCNT ;CLEAR BIT COUNTER
4460 027110 032777 000200 154212 18$: BIT #RDY,@RHCS1 ;IS RDY SET
4461 027116 001015 BNE 3$ ;BIT IS SET
4462 027120 005237 003446 INC BITCN ;COUNT UP
4463 027124 001371 BNE 18$ ;NOT FINISHED COUNTING
4464 027126 005037 003446 CLR BITCNT ;GET READY TO DO IT AGAIN
4465 027132 032777 000200 154170 19$: BIT #RDY,@RHCS1 ;IS IT SET YET?
4466 027140 001004 BNE 3$ ;YES
4467 027142 005237 003446 INC BITCNT ;COUNT UP
4468 027146 001401 BEQ 3$ ;BIT IS NOT GOING TO SET
4469 027150 000770 BR 19$
4470 027152
4471 027152 017737 154152 003420 3$: MOV @RHCS1,CS1 ;SAVE RHCS1
4472 027160 017737 154146 003444 MOV @RHWC,WC ;SAVE WORD COUNT

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4473 027166 017737 154142 003414      MOV      @RHBA,BA      ;SAVE BUS ADDRESS
4474 027174 005701                      TST      R1          ;IS IT AN RH11
4475 027176 001406                      BEQ      87$         ;NO IT'S A 70
4476 027200 005037 003416              CLR      BAE        ;CLEAR BAE
4477 027204 005037 003424              CLR      CS3       ;CLEAR CS3
4478 027210 000137 027230              JMP      86$         ;CONTINUE
4479 027214 017737 154140 003416 87$: MOV      @RHBAE,BAE    ;SAVE BUS ADDRESS EXTENSION
4480 027222 017737 154134 003424      MOV      @RHCS3,CS3  ;SAVE RHCS3
4481 027230 017737 154104 003422 86$: MOV      @RHCS2,CS2  ;SAVE CS2
4482 027236 017737 154100 003432      MOV      @RHST,DS1   ;SAVE TESTER STATUS
4483 027244 017737 154074 003436      MOV      @RHER,ER1   ;SAVE ERROR REGISTER
4484 027252 017737 154072 003442      MOV      @RHTDB,TDR  ;SAVE TESTER DATA REG.
4485 027260 017737 154052 003440      MOV      @RHMR2,TC   ;SAVE MR2 TESTER REG.
4486 027266 032777 000200 154034      BIT      #RDY,@RHCS1 ;IS READY SET
4487 027274 001003                      BNE      1$          ;RDY SET CONT. TEST
4488 027276 104102                      ERROR  102         ;READY DID NOT SET
4489 027300 004737 007224              JSR      R7,WHYFO     ;ANY ERRORS SET
4490 027304 032777 002000 154050 1$: BIT      #DBL,@RHCS3  ;IS DOUBLE SET
4491 027312 001403                      BEQ      2$          ;DBL SET
4492 027314 104156                      ERROR  156         ;DBL DID SET ON A 2 WORD TRANSFER
4493 027316 004737 007224              JSR      R7,WHYFO     ;TELL WHY NOT
4494 027322 004737 006572              JSR      R7,CLEER     ;CLEAR ERRORS
4495 027326 004737 050210              JSR      R7,ERRTST
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4504 027332 000004                      ;*****
4505 027334 005701                      ;*TEST 42      DBL TEST EVEN ADD. WRITE FWD
4506 027336 100532                      ;*THESE TEST CHECK DBL IN RHCS3 WITHREAD FWD AND REV
4507 027340 012777 177776 153764      ;*WRITE FWD AND REV AND WITH BAI SET IN RHCS2
4508 027346 012777 004000 153760      ;*OPERATION BEING PERFORMED WILL BE PRINTED OUT
4509 027354 012777 000000 153776      ;*IN ERROR MESSAGE.
4510 027362 012777 000007 153750      ;*.....RH70 ONLY.....
4511 027370 012777 000067 153732      ;*****
4512 027376 005037 003446      TST42: SCOPE
4513 027402 032777 000200 153720 18$: TST      R1          ;IS IN AN RH11
4514 027410 001015                      BMI      TST43       ;:GET OUT OF TEST
4515 027412 005237 003446      MOV      #-2,@RHWC    ;SET UP WC FOR TWO WORD
4516 027416 001371                      MOV      #EVEJAD,@RHBA ;SETUP BUS ADDRESS
4517 027420 005037 003446      MOV      #ZERO,@RHBAE  ;SETUP BUS ADDRESS EXTENSION
4518 027424 032777 000200 153676 19$: MOV      #7,@RHCS2    ;DEVICE 7
4519 027432 001004                      MOV      #WRITE6,@RHCS1 ;TELL IT TO WRITE6
4520 027434 005237 003446      CLR      BITCNT      ;CLEAR BIT COUNTER
4521 027440 001401                      BIT      #RDY,@RHCS1  ;IS RDY SET
4522 027442 000770                      BNE      3$          ;BIT IS SET
4523 027444                      INC      BITCNT      ;COUNT UP
4524 027444 017737 153660 003420      BNE      18$         ;NOT FINISHED COUNTING
4525 027452 017737 153654 003444      CLR      BITCNT      ;GET READY TO DO IT AGAIN
4526 027460 017737 153650 003414      BIT      #RDY,@RHCS1 ;IS IT SET YET?
4527 027466 005701                      BNE      3$          ;YES
4528 027470 001406                      INC      BITCNT      ;COUNT UP
4529                      BEQ      3$          ;BIT IS NOT GOING TO SET
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4529 027472 005037 003416      CLR      BAE          ;CLEAR BAE
4530 027476 005037 003424      CLR      CS3          ;CLEAR CS3
4531 027502 000137 027522      JMP      86$          ;CONTINUE
4532 027506 017737 153646 003416 87$: MOV      @RHBAE,BAE      ;SAVE BUS ADDRESS EXTENSION
4533 027514 017737 153642 003424      MOV      @RHCS3,CS3      ;SAVE RHCS3
4534 027522 017737 153612 003422 86$: MOV      @RHCS2,CS2      ;SAVE CS2
4535 027530 017737 153606 003432      MOV      @RHST,DS1      ;SAVE TESTER STATUS
4536 027536 017737 153602 003436      MOV      @RHER,ER1      ;SAVE ERROR REGISTER
4537 027544 017737 153600 003442      MOV      @RHTDB,TDR      ;SAVE TESTER DATA REG.
4538 027552 017737 153560 003440      MOV      @RHMR2,TC      ;SAVE MR2 TESTER REG.
4539 027560 032777 000200 153542      BIT      #RDY,@RHCS1      ;IS READY SET
4540 027566 001003          BNE      1$          ;RDY SET CONT. TEST
4541 027570 104102          ERROR 102          ;READY DID NOT SET
4542 027572 004737 007224          JSR      R7,WHYFO      ;ANY ERRORS SET
4543 027576 032777 002000 153556 1$: BIT      #DBL,@RHCS3      ;IS DOUBLE SET
4544 027604 001403          BEQ      2$          ;DBL SET
4545 027606 104157          ERROR 157          ;DBL DID SET ON A 2 WORD TRANSFER
4546 027610 004737 007224          JSR      R7,WHYFO      ;TELL WHY NOT
4547 027614 004737 006572          JSR      R7,CLEER      ;CLEAR ERRORS
4548 027620 004737 050210          JSR      R7,ERRTS?
4549
4550 *****
4551 *TEST 43 DBL TEST 2 WORD ODD ADD. WRITE REV
4552 *THESE TEST CHECK DBL IN RHCS3 WITHREAD FWD AND REV
4553 *WRITE FWD AND REV AND WITH BAI SET IN RHCS2
4554 *OPERATION BEING PERFORMED WILL BE PRINTED OUT
4555 *IN ERROR MESSAGE.
4556 *.....RH70 ONLY.....
4557 *****
4558 TST43: SCOPE
4559 TST      R1          ;IS IN AN RH11
4560 BMI      TST44          ;;GET OUT OF TEST
4561 MOV      #-2,@RHWC      ;SET UP WC FOR TWO WORD
4562 MOV      #ODDAD,@RHBA      ;SETUP BUS ADDRESS
4563 MOV      #ZERO,@RHBAE      ;SETUP BUS ADDRESS EXTENSION
4564 MOV      #7,@RHCS2      ;DEVICE 7
4565 MOV      #WRITE6,@RHCS1      ;TELL IT TO WRITE6
4566 CLR      BITCNT      ;CLEAR BIT COUNTER
4567 BIT      #RDY,@RHCS1      ;IS RDY SET
4568 BNE      3$          ;BIT IS SET
4569 INC      BITCNT      ;COUNT UP
4570 BNE      18$          ;NOT FINISHED COUNTING
4571 CLR      BITCNT      ;GET READY TO DO IT AGAIN
4572 BIT      #RDY,@RHCS1      ;IS IT SET YET?
4573 BNE      3$          ;YES
4574 INC      BITCNT      ;COUNT UP
4575 BEQ      3$          ;BIT IS NOT GOING TO SET
4576 BR      19$
4577 3$: MOV      @RHCS1,CS1      ;SAVE RHCS1
4578 MOV      @RHWC,WC          ;SAVE WORD COUNT
4579 MOV      @RHBA,BA          ;SAVE BUS ADDRESS
4580 TST      R1          ;IS IT AN RH11
4581 BEQ      87$          ;NO IT'S A 70
4582 CLR      BAE          ;CLEAR BAE
4583 CLR      CS3          ;CLEAR CS3
4584 JMP      86$          ;CONTINUE

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4585 030000 017737 153354 003416 87$: MOV @RHBAE,BAE ;SAVE BUS ADDRESS EXTENSION
4586 030006 017737 153350 003424 MOV @RHCS3,CS3 ;SAVE RHCS3
4587 030014 017737 153320 003422 86$: MOV @RHCS2,CS2 ;SAVE CS2
4588 030022 017737 153314 003432 MOV @RHST,DS1 ;SAVE TESTER STATUS
4589 030030 017737 153310 003436 MOV @RHER,ER1 ;SAVE ERROR REGISTER
4590 030036 017737 153306 003442 MOV @RHTDB,TDR ;SAVE TESTER DATA REG.
4591 030044 017737 153266 003440 MOV @RHMR2,TC ;SAVE MR2 TESTER REG.
4592 030052 032777 000200 153250 BIT #RDY,@RHCS1 ;IS READY SET
4593 030060 001003 BNE 1$ ;RDY SET CONT. TEST
4594 030062 104102 ERROR 102 ;READY DID NOT SET
4595 030064 004737 007224 JSR R7,WHYFO ;ANY ERRORS SET
4596 030070 032777 002000 153264 1$: BIT #DBL,@RHCS3 ;IS DOUBLE SET
4597 030076 001003 BNE 2$ ;DBL SET
4598 030100 104160 ERROR 160 ;DBL DIDN'T SET ON A 2 WORD TRANSFER
4599 030102 004737 007224 JSR R7,WHYFO ;TELL WHY NOT
4600 030106 004737 006572 2$: JSR R7,CLEEK ;CLEAR ERRORS
4601 030112 004737 050210 JSR R7,ERRTST
4602 *****
4603 ;*TEST 44 DBL TEST 3 WORD ODD ADD. WRITE REV
4604 ;*THESE TEST CHECK DBL IN RHCS3 WITH READ FWD AND REV
4605 ;*WRITE FWD AND REV AND WITH BAI SET IN RHCS2
4606 ;*OPERATION BEING PERFORMED WILL BE PRINTED OUT
4607 ;*IN ERROR MESSAGE.
4608 ;*.....RH70 ONLY.....
4609 *****
4610 030116 000004 TST44: SCOPE
4611 030120 005701 TST R1 ;IS IN AN RH11
4612 030122 100532 BMI TST45 ;;GET OUT OF TEST
4613 030124 012777 177775 153200 MOV #-3,@RHWC ;SET UP WC FOR THREE WORD
4614 030132 012777 004002 153174 MOV #ODDAD,@RHBA ;SETUP BUS ADDRESS
4615 030140 012777 006000 153212 MOV #ZERO,@RHBAE ;SETUP BUS ADDRESS EXTENSION
4616 030146 012777 000007 153164 MOV #7,@RHCS2 ;DEVICE 7
4617 030154 012777 000067 153146 MOV #WRITE6,@RHCS1 ;TELL IT TO WRITE6
4618 030162 005037 003446 CLR BITCNT ;CLEAR BIT COUNTER
4619 030166 032777 000200 153134 18$: BIT #RDY,@RHCS1 ;IS RDY SET
4620 030174 001015 BNE 3$ ;BIT IS SET
4621 030176 005237 003446 INC BITCNT ;COUNT UP
4622 030202 001371 BNE 18$ ;NOT FINISHED COUNTING
4623 030204 005037 003446 CLR BITCNT ;GET READY TO DO IT AGAIN
4624 030210 032777 000200 153112 19$: BIT #RDY,@RHCS1 ;IS IT SET YET?
4625 030216 001004 BNE 3$ ;YES
4626 030220 005237 003446 INC BITCNT ;COUNT UP
4627 030224 001401 BEQ 3$ ;BIT IS NOT GOING TO SET
4628 030226 000770 BR 19$
4629 030230 3$:
4630 030230 017737 153074 003420 MOV @RHCS1,CS1 ;SAVE RHCS1
4631 030236 017737 153070 003444 MOV @RHWC,WC ;SAVE WORD COUNT
4632 030244 017737 153064 003414 MOV @RHBA,BA ;SAVE BUS ADDRESS
4633 030252 005701 TST R1 ;IS IT AN RH11
4634 030254 001406 BEQ 87$ ;NO IT'S A 70
4635 030256 005037 003416 CLR BAE ;CLEAR BAE
4636 030262 005037 003424 CLR CS3 ;CLEAR CS3
4637 030266 000137 030306 JMP 86$ ;CONTINUE
4638 030272 017737 153062 003416 87$: MOV @RHBAE,BAE ;SAVE BUS ADDRESS EXTENSION
4639 030300 017737 153056 003424 MOV @RHCS3,CS3 ;SAVE RHCS3
4640 030306 017737 153026 003422 86$: MOV @RHCS2,CS2 ;SAVE CS2

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4641 030314 017737 153022 003432      MOV      @RHST,DS1      ;SAVE TESTER STATUS
4642 030322 017737 153016 003436      MOV      @RHER,ER1      ;SAVE ERROR REGISTER
4643 030330 017737 153014 003442      MOV      @RHTDB,TDR      ;SAVE TESTER DATA REG.
4644 030336 017737 152774 003440      MOV      @RHMR2,TC      ;SAVE MR2 TESTER REG.
4645 030344 032777 000200 152756      BIT      #RDY,@RHCS1      ;IS READY SET
4646 030352 001003          BNE      1$      ;RDY SET CONT. TEST
4647 030354 104102          ERROR    102      ;READY DID NOT SET
4648 030356 004737 007224          JSR      R7,WHYFO      ;ANY ERRORS SET
4649 030362 032777 002000 152772 1$:  BIT      #DBL,@RHCS3      ;IS DOUBLE SET
4650 030370 001403          BEQ      2$      ;DBL SET
4651 030372 104161          ERROR    161      ;DBL DID SET ON A 3 WORD TRANSFER
4652 030374 004737 007224          JSR      R7,WHYFO      ;TELL WHY NOT
4653 030400 004737 006572          JSR      R7,CLEER      ;CLEAR ERRORS
4654 030404 004737 050210          JSR      R7,ERRTST
4655
4656 *****
4657 ;*TEST 45      DBL TEST 2 WORD READ FWD
4658 ;*THESE TEST CHECK DBL IN RHCS3 WITHREAD FWD AND REV
4659 ;*WRITE FWD AND REV AND WITH BAI SET IN RHCS2
4660 ;*OPERATION BEING PREFORMED WILL BE PRINTED OUT
4661 ;*IN ERROR MESSAGE.
4662 ;*.....RH70 ONLY.....
4663 *****
4664 TST45. SCOPE
4665 TST      R1      ;IS IN AN RH11
4666 BMI      TST46      ;:GET OUT OF TEST
4667 MOV      #2,@RHWC      ;SET UP WC FOR TWO WORD
4668 MOV      #EVENAD,@RHBA      ;SETUP BUS ADDRESS
4669 MOV      #ZERO,@RHBAE      ;SETUP BUS ADDRESS EXTENSION
4670 MOV      #7,@RHCS2      ;DEVICE 7
4671 MOV      #READO,@RHCS1      ;TELL IT TO READO
4672 CLR      BITCNT      ;CLEAR BIT COUNTER
4673 030460 032777 000200 152642 18$:  BIT      #RDY,@RHCS1      ;IS RDY SET
4674 030466 001015          BNE      3$      ;BIT IS SET
4675 030470 005237 003446          INC      BITCNT      ;COUNT UP
4676 030474 001371          BNE      18$      ;NOT FINISHED COUNTING
4677 030476 005037 003446          CLR      BITCNT      ;GET READY TO DO IT AGAIN
4678 030502 032777 000200 152620 19$:  BIT      #RDY,@RHCS1      ;IS IT SET YET?
4679 030510 001004          BNE      3$      ;YES
4680 030512 005237 003446          INC      BITCNT      ;COUNT UP
4681 030516 001401          BEQ      3$      ;BIT IS NOT GOING TO SET
4682 030520 000770          BR       19$
4683 030522 017737 152602 003420 3$:  MOV      @RHCS1,CS1      ;SAVE RHCS1
4684 030530 017737 152576 003444      MOV      @RHWC,WC      ;SAVE WORD COUNT
4685 030536 017737 152572 003414      MOV      @RHBA,BA      ;SAVE BUS ADDRESS
4686 030544 005701          TST      R1      ;IS IT AN RH11
4687 030546 001406          BEQ      87$      ;NO IT'S A 70
4688 030550 005037 003416          CLR      BAE      ;CLEAR BAE
4689 030554 005037 003424          CLR      CS3      ;CLEAR CS3
4690 030560 000137 030600          JMP      86$      ;CONTINUE
4691 030564 017737 152570 003416 87$:  MOV      @RHBAE,BAE      ;SAVE BUS ADDRESS EXTENSION
4692 030572 017737 152564 003424      MOV      @RHCS3,CS3      ;SAVE RHCS3
4693 030600 017737 152534 003422 86$:  MOV      @RHCS2,CS2      ;SAVE CS2
4694 030606 017737 152530 003432      MOV      @RHST,DS1      ;SAVE TESTER STATUS
4695 030614 017737 152524 003436      MOV      @RHER,ER1      ;SAVE ERROR REGISTER
4696 030622 017737 152522 003442      MOV      @RHTDB,TDR      ;SAVE TESTER DATA REG.

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

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

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4809 031446 001403      BEQ      2$              ;DBL SET
4810 031450 104164      ERROR    164          ;DBL DID SET ON A 2 WORD TRANSFER
4811 031452 004737 007224 JSR      R7,WHYFO      ;TELL WHY NOT
4812 031456 004737 006572 JSR      R7,CLEER      ;CLEAR ERRORS
4813 031462 004737 050210 JSR      R7,ERRTST
4814
4815 *****
4816 :*TEST 50      DBL TEST 2 WORD ODD ADD. READ REV
4817 :*THESE TEST CHECK DBL IN RHCS3 WITHREAD FWD AND REV
4818 :*WRITE FWD AND REV AND WITH BAI SET IN RHCS2
4819 :*OPERATION BEING PERFORMED WILL BE PRINTED OUT
4820 :*IN ERROR MESSAGE.
4821 :*.....RH70 ONLY.....
4822 *****
4823 TST50: SCOPE
4824 TST      R1              ;IS IN AN RH11
4825 BMI      TST51          ;:GET OUT OF TEST
4826 MOV      #-2,@RHW      ;SET UP WC FOR TWO WORD
4827 MOV      #ODDAD,@RHB   ;SETUP BUS ADDRESS
4828 MOV      #ZERO,@RHB    ;SETUP BUS ADDRESS EXTENSION
4829 MOV      #7,@RHCS2     ;DEVICE 7
4830 MOV      #READ6,@RHCS1 ;TELL IT TO READ6
4831 CLR      BITCNT        ;CLEAR BIT COUNTER
4832 BIT      #RDY,@RHCS1   ;IS RDY SET
4833 BNE      3$            ;BIT IS SET
4834 INC      BITCNT        ;COUNT UP
4835 BNE      18$           ;NOT FINISHED COUNTING
4836 CLR      BITCNT        ;GET READY TO DO IT AGAIN
4837 BIT      #RDY,@RHCS1   ;IS IT SET YET?
4838 BNE      3$            ;YES
4839 INC      BITCNT        ;COUNT UP
4840 BEQ      3$            ;BIT IS NOT GOING TO SET
4841 BR       19$
4842 3$:
4843 MOV      @RHCS1,CS1     ;SAVE RHCS1
4844 MOV      @RHW,WC        ;SAVE WORD COUNT
4845 MOV      @RHB,BA       ;SAVE BUS ADDRESS
4846 TST      R1            ;IS IT AN RH11
4847 BEQ      87$           ;NO IT'S A 70
4848 CLR      BAE           ;CLEAR BAE
4849 CLR      CS3           ;CLEAR CS3
4850 JMP      86$           ;CONTINUE
4851 MOV      @RHB,BAE      ;SAVE BUS ADDRESS EXTENSION
4852 MOV      @RHCS3,CS3    ;SAVE RHCS3
4853 MOV      @RHCS2,CS2    ;SAVE CS2
4854 MOV      @RHST,DS1     ;SAVE TESTER STATUS
4855 MOV      @RHER,ER1     ;SAVE ERROR REGISTER
4856 MOV      @RHTDB,TDR    ;SAVE TESTER DATA REG.
4857 MOV      @RHMR2,TC     ;SAVE MR2 TESTER REG.
4858 BIT      #RDY,@RHCS1   ;IS READY SET
4859 BNE      1$            ;RDY SET CONT. TEST
4860 ERROR    102          ;READY DID NOT SET
4861 JSR      R7,WHYFO      ;ANY ERRORS SET
4862 BIT      #DBL,@RHCS3   ;IS DOUBLE SET
4863 BNE      2$            ;DBL SET
4864 ERKOR    165          ;DBL DIDN'T SET ON A 2 WORD TRANSFER
4865 JSR      R7,WHYFO      ;TELL WHY NOT

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

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

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

87$: MOV @RHBAE,BAE ;SAVE BUS ADDRESS EXTENSION
    MOV @RHCS3,CS3 ;SAVE RHCS3
    MOV @RHCS2,CS2 ;SAVE CS2
    MOV @RHST,DS1 ;SAVE TESTER STATUS
    MOV @RHER,ER1 ;SAVE ERROR REGISTER
    MOV @RHTDB,TDR ;SAVE TESTER DATA REG.
    MOV @RHMR2,TC ;SAVE MR2 TESTER REG.
    BIT #RDY,@RHCS1 ;IS READY SET
    BNE 1$ ;RDY SET CONT. TEST
    ERROR 102 ;READY DID NOT SET
    JSR R7,WHYFO ;ANY ERRORS SET
    BIT #DBL,@RHCS3 ;IS DOUBLE SET
    BEQ 2$ ;DBL SET
    ERROR 166 ;DBL DID SET ON A 3 WORD TRANSFER
    JSR R7,WHYFO ;TELL WHY NOT
    JSR R7,CLEER ;CLEAR ERRORS
    JSR R7,ERRTST
;*****

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4928 032252 000004
4929 032254 005701
4930 032256 100532
4931 032260 012777 177775 151044
4932 032266 012777 004000 151040
4933 032274 012777 000000 151056
4934 032302 012777 000007 151030
4935 032310 012777 000077 151012
4936 032316 005037 003446
4937 032322 032777 000200 151000 18\$:
4938 032330 001015
4939 032332 005237 003446
4940 032336 001371
4941 032340 005037 003446
4942 032344 032777 000200 150756 19\$:
4943 032352 001004
4944 032354 005237 003446
4945 032360 001401
4946 032362 000770
4947 032364
4948 032364 017737 150740 003420
4949 032372 017737 150734 003444
4950 032400 017737 150730 003414
4951 032406 005701
4952 032410 001406
4953 032412 005037 003416
4954 032416 005037 003424
4955 032422 000137 032442
4956 032426 017737 150726 003416 87\$:
4957 032434 017737 150722 003424
4958 032442 017737 150672 003422 86\$:
4959 032450 017737 150666 003432
4960 032456 017737 150662 003436
4961 032464 017737 150660 003442
4962 032472 017737 150640 003440
4963 032500 032777 000200 150622
4964 032506 001003
4965 032510 104102
4966 032512 004737 007224
4967 032516 032777 002000 150636 1\$:
4968 032524 001003
4969 032526 104167
4970 032530 004737 007224
4971 032534 004737 006572
4972 032540 004737 050210
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;*TEST 52      DBL TEST 3 WORD EVEN ADD. READ REV
;*THESE TEST CHECK DBL IN RHCS3 WITHREAD FWD AND REV
;*WRITE FWD AND REV AND WITH BAI SET IN RHCS2
;*OPERATION BEING PREFORMED WILL BE PRINTED OUT
;*IN ERROR MESSAGE.
;*.....RH70 ONLY.....
;*****
TST52: SCOPE
TST      R1      ;IS IN AN RH11
BMI      TST53   ;:GET OUT OF TEST
MOV      #-3,@RHCW ;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$:      MOV      @RHCS1,CS1 ;SAVE RHCS1
MOV      @RHCW,WC ;SAVE WORD COUNT
MOV      @RHBA,BA ;SAVE BUS ADDRESS
TST      R1      ;IS IT AN RH11
BEQ      87$     ;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    167 ;DBL DIDN'T SET ON A 3 WORD TRANSFER
JSR      R7,WHYFO ;TELL WHY NOT
2$:      JSR      R7,CLEER ;CLEAR ERRORS
JSR      R7,ERRTST

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

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4981 032544 000004
4982 032546 012737 000001 001212
4983 032554 005701
4984 032556 001402
4985 032560 000137 033336
4986 032564 012777 000007 150546
4987 032572 012777 000000 150560
4988 032600 012777 004000 150526
4989
4990 032606 013737 004000 004002
4991
4992 032614 012777 177776 150510
4993 032622 012777 000061 150500
4994 032630 005037 003446
4995 032634 032777 000200 150466
4996 032642 001015
4997 032644 005237 003446
4998 032650 001371
4999 032652 005037 003446
5000 032656 032777 000200 150444
5001 032664 001004
5002 032666 005237 003446
5003 032672 001401
5004 032674 000770
5005 032676
5006 032676 017737 150426 003420
5007 032704 017737 150422 003444
5008 032712 017737 150416 003414
5009 032720 005701
5010 032722 001406
5011 032724 005037 003416
5012 032730 005037 003424
5013 032734 000137 032754
5014 032740 017737 150414 003416
5015 032746 017737 150410 003424
5016 032754 017737 150360 003422
5017 032762 017737 150354 003432
5018 032770 017737 150350 003436
5019 032776 017737 150346 003442
5020 033004 017737 150326 003440
5021 033012 032777 000200 150310
5022 033020 001003
5023 033022 104102
5024 033024 004737 007224
5025 033030 005137 004000
5026 033034 012777 004000 150272
5027 033042 012777 177776 150262
5028 033050 012777 000051 150252
5029 033056 005037 003446
5030 033062 032777 000200 150240
5031 033070 001015
5032 033072 005237 003446

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

MITE: MOV @RHCS1,CS1 ;SAVE RHCS1
MOV @RHWC,WC ;SAVE WORD COUNT
MOV @RHBA,BA ;SAVE BUS ADDRESS
TST R1 ;IS IT AN RH11
BEQ 87$ ;NO IT'S A 70
CLR BAE ;CLEAR BAE
CLR CS3 ;CLEAR CS3
JMP 86$ ;CONTINUE
87$: MOV @RHBAE,BAE ;SAVE BUS ADDRESS EXTENSION
MOV @RHCS3,CS3 ;SAVE RHCS3
86$: MOV @RHCS2,CS2 ;SAVE CS2
MOV @RHST,DS1 ;SAVE TESTER STATUS
MOV @RHER,ER1 ;SAVE ERROR REGISTER
MOV @RHTDB,TDR ;SAVE TESTER DATA REG.
MOV @RHMR2,TC ;SAVE MR2 TESTER REG.
BIT #RDY,@RHCS1 ;IS READY SET
BNE VOUS ;RDY IS SET
ERROR 102 ;RDY DID NOT SET
JSR R7,WHYFO ;ANY ERRORS SET
VOUS: COM EVENAD ;INVERT BITS FOR WCELO
MOV #EVENAD,@RHBA ;FIX BUS ADDRESS
MOV #-2,@RHWC ;FIX WORD COUNT
MOV #WRCH0,@RHCS1 ;TELL IT TO WRITE CHECK
CLR BITCNT ;CLEAR BIT COUNTER
18$: BIT #RDY,@RHCS1 ;IS RDY SET
BNE FAST ;BIT IS SET
INC BITCNT ;COUNT UP

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

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

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5145 033744 017737 147364 003414      MOV    @RHBA,BA      ;SAVE BUS ADDRESS
5146 033752 005701                TST    R1            ;IS IT AN RH11
5147 033754 001406                BEQ    87$           ;NO IT'S A 70
5148 033756 005037 003416          CLR    BAE            ;CLEAR BAE
5149 033762 005037 003424          CLR    CS3           ;CLEAR CS3
5150 033766 000137 034006          JMP    86$           ;CONTINUE
5151 033772 017737 147362 003416 87$: MOV    @RHBAE,BAE      ;SAVE BUS ADDRESS EXTENSION
5152 034000 017737 147356 003424      MOV    @RHCS3,CS3     ;SAVE RHCS3
5153 034006 017737 147326 003422 86$: MOV    @RHCS2,CS2     ;SAVE CS2
5154 034014 017737 147322 003432      MOV    @RHST,DS1     ;SAVE TESTER STATUS
5155 034022 017737 147316 003436      MOV    @RHER,ER1     ;SAVE ERROR REGISTER
5156 034030 017737 147314 003442      MOV    @RHTDB,TDR    ;SAVE TESTER DATA REG.
5157 034036 017737 147274 003440      MOV    @RHM2,TC      ;SAVE MR2 TESTER REG.
5158 034044 032777 000200 147256      BIT    #RDY,@RHCS1   ;IS READY SET
5159 034052 001003                BNE     ERTIP          ;RDY IS SET
5160 034054 104102                ERROR  102          ;RDY DID NOT SET
5161 034056 004737 007224          JSR    R7,WHYFO       ;ANY ERRORS SET
5162 034062 032777 010000 147272 ERTIP: BIT    #WCEHI,@RHCS3   ;IS WCEHI SET
5163 034070 001006                BNE     BUSH           ;WCEHI IS SET
5164 034072 104135                ERROR  135          ;WCEHI DID NOT SET IN RHCS3
5165 034074 004737 007224          JSR    R7,WHYFO       ;ANY OTHER ERRORS SET
5166 034100 105737 001103          TSTB   $ERFLG       ;WAS THERE AN ERROR
5167 034104 001012                BNE     LEAGUE          ;YES
5168 034106 032777 004000 147246 BUSH:  BIT    #WCELO,@RHCS3   ;IS WCELO SET
5169 034114 001406                BEQ     LEAGUE          ;NO, WCELO IS OK
5170 034116 104137                ERROR  137          ;WCELO SET WITH WCEHI
5171 034120 032777 040000 147212 LEFOUT: BIT    #WCE,@RHCS2    ;DID WCE SET
5172 034126 001001                BNE     LEAGUE          ;WCE IS SET IN RHCS2
5173 034130 104136                ERROR  136          ;WCE DID NOT SET IN RHCS2
5174 034132 004737 006572          LEAGUE: JSR    R7,CLEER      ;CLEAR ERRORS
5175 034136 004737 050210          JSR    R7,ERRTST
5176 034142                FANGY:
5177                ;*****
5178                ;*TEST 55      INTERRUPT ENABLE TEST
5179                ;*THIS TEST VERIFYS THAT IE WILL SET IN RHCS1
5180                ;*AND IT WILL CAUSE AN INTERRUPT WHEN RDY IS SET
5181                ;*****
5182 034142 000004                TST55: SCOPE
5183 034144 012777 000007 147166      MOV    #7,@RHCS2     ;SETUP UNIT NUMBER
5184 034152 012777 004000 147154      MOV    #EVENAD,@RHBA ;SETUP BUS ADDRESS
5185 034160 005701                TST    R1            ;RH11 OR RH70 ?
5186 034162 100403                BMI     READY          ;ITS AN RH11
5187 034164 012777 000000 147166      MOV    #ZERO,@RHBAE  ;ZERO THE BAE
5188 034172 012777 034454 147206 READY: MOV    #IETST,@VECAD    ;SET UP VECTOR ADDRESS
5189 034200 012737 000340 177776      MOV    #340,PS      ;SET PRIORITY 7
5190 034206 012777 177777 147116      MOV    #-1,@RHWC     ;SET FOR ONE WORD
5191 034214 012777 000161 147106      MOV    #WRITE0!IE,@RHCS1 ;TELL IT TO WRITE
5192 034222 032777 000100 147100      BIT    #IE,@RHCS1    ;IS IE SET
5193 034230 001001                BNF     2$             ;YES CONTINUE TEST
5194 034232 104174                ERROR  174          ;IE WILL NOT SET
5195 034234 005037 177776 2$:      CLR    @177776
5196 034240 005037 003446          CLR    BITCNT       ;CLEAR BIT COUNTER
5197 034244 032777 000200 147056 18$: BIT    #RDY,@RHCS1    ;IS RDY SET
5198 034252 001015                BNE     TSTIE          ;BIT IS SET
5199 034254 005237 003446          INC    BITCNT       ;COUNT UP
5200 034260 00371                BNE     8$             ;NOT FINISHED COUNTING

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

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T55 INTERRUPT ENABLE TEST

SEQ 0099

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

TSTB SERFLG
BEQ SPLIT
ERROR 175
SPLIT: JSR R7,CLEER
JSR R7,ERRTST

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

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

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*****
*TEST 56      READ OPERATIONAL TEST (NORMAL) #1
*THESE TESTS VERIFY ALL READ AND WRITE CODES
*WHETHER IT BE A READ REV. OR FWD OR A WRITE REV. OR FWD
*DURING THESE TESTS THE TESTER TIMING IS MARGINED AND
*NO ERRORS SHOULD OCCUR
*****

TST56: SCOPE
MOV      #7,@RHCS2      ;SETUP UNIT SEVEN
MOV      #-1,@RHWC      ;FOR ONE WORD
MOV      @RBUF,@RHBA    ;SRUP BA
MOV      #ZERO,RBUF     ;SETUP DATA
MOV      #OAB,@RHTDB    ;SETUP TESTER DB
TST      R1              ;IS IT AN 11 OR A 70
BMI      1$              ;IT'S AN RH11
MOV      #ZERO,@RHBAE    ;ZERO BAE
MOV      @READ0,@RHCS1  ;TELL IT TO READ0
CLR      BITCNT          ;CLEAR BIT COUNTER
BIT      #RDY,@RHCS1    ;IS RDY SET
BNE      2$              ;BIT IS SET
INC      BITCNT          ;COUNT UP
BNE      18$             ;NOT FINISHED COUNTING
CLR      BITCNT          ;GET READY TO DO IT AGAIN
BIT      #RDY,@RHCS1    ;IS IT SET YET?
BNE      2$              ;YES
INC      BITCNT          ;COUNT UP
BEQ      2$              ;BIT IS NOT GOING TO SET
BR       19$

2$:      MOV      @RHCS1,CS1 ;SAVE RHCS1
MOV      @RHWC,WC        ;SAVE WORD COUNT
MOV      @RBA,BA        ;SAVE BUS ADDRESS
TST      R1              ;IS IT AN RH11
BEQ      87$             ;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     ;GET DATA
BNE      3$              ;IS OR SET
ERROR    102             ;YES RDY IS SET
JSR      R7,WHYFO        ;READY DID NOT SET
CMP      RBUF,@RHTDB     ;ARE ANY ERRORS SET
BEQ      4$              ;DID INFO GET WRITTEN OR READ
TST      RBUF            ;INFO GOT LOADED
BEQ      5$              ;DOES RBUF = 0
ERROR    147             ;YES INFO DID NOT LOAD
;ALL BITS DID NOT LOAD DURING
;AN READ0 OPERATION

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

```

      JMP      4$
5$:    ERROR   150
      JSR      R7,WHYFO
      TSTB     $ERFLG
      BEQ      6$
      ERROR    146
      ERROR    170
6$:    JSR      R7,CLEER
      JSR      R7,ERRTST
      ;*****
      ;*TEST 57      RH OPERATIONAL WRITE TEST #1
      ;*THESE TESTS VERIFY ALL READ AND WRITE CODES
      ;*WHETHER IT BE A READ REV. OR FWD OR A WRITE REV. OR FWD
      ;*DURING THESE TESTS THE TESTER TIMING IS MARGINED AND
      ;*NO ERRORS SHOULD OCCUR
      ;*****
TST57: SCOPE
      MOV      #7,@RHCS2
      MOV      #0AB,EVENAD
      MOV      #DMD:MCLK,@RHMR1
      MOV      #-1,@RHWC
      TST      R1
      BMI      1$
      MOV      #ZERO,@RHBAE
      MOV      #EVENAD,@RHBA
      MOV      #WRITE0,@RHCS1
      MOV      #DMD,@RHMR1
      CLR      BITCNT
      INC      BITCNT
      CMP      #15,BITCNT
      BNE      2$
      MOV      #DMD:MCLK,@RHMR1
      MOV      #DMD,@RHMR1
      MOV      #DMD:MCLK,@RHMR1
      MOV      #DMD,@RHMR1
      MOV      #ZERO,@RHMR1
      CLR      BITCNT
      BIT      #RDY,@RHCS1
      BNE      7$
      INC      BITCNT
      BNE      18$
      CLR      BITCNT
      BIT      #RDY,@RHCS1
      BNE      7$
      INC      BITCNT
      BEQ      7$
      BR       19$
7$:    MOV      @RHCS1,CS1
      MOV      @RHWC,WC
      MOV      @RHBA,BA
      TST      R1
      BEQ      87$
      CLR      BAE
      ;EXIT TEST
      ;READ0 OPERATION DID NOT WORK
      ;NO BITS WHERE LOADED TO RBUF
      ;ANY ERRORS SET
      ;ANY ERRORS ?
      ;NO,EXIT TEST
      ;PRINT REGISTERS
      ;CLEAR ERRORS
      ;*****
      ;SETUP UNIT SEVEN
      ;SETUP INFORMATION
      ;SETUP DIAG. MODE
      ;FOR ONE WORD
      ;IS IT A 11 OR 70
      ;IT'S AN 11
      ;ZERO BAE
      ;SETUP BA
      ;TELL IT TO WRITETO
      ;MANIPULATE CLOCK
      ;CLEAR LOOP COUNTER
      ;INCREMENT LOOP COUNTER
      ;IS IT THIRD LOOP FOR 5USEC WAIT
      ;NO LOOP AGAIN
      ;START CHANGING CLOCK
      ;CHANGE CLOCK AGAIN
      ;CHANGE CLOCK AGAIN
      ;CHANGE CLOCK AGAIN
      ;CHANGE CLOCK AGAIN
      ;GET OUT OF DIAG MODE
      ;CLEAR BIT COUNTER
      ;IS RDY SET
      ;BIT IS SET
      ;COUNT UP
      ;NOT FINISHED COUNTING
      ;GET READY TO DO IT AGAIN
      ;IS IT SET YET?
      ;YES
      ;COUNT UP
      ;BIT IS NOT GOING TO SET
      ;SAVE RHCS1
      ;SAVE WORD COUNT
      ;SAVE BUS ADDRESS
      ;IS IT AN RH11
      ;NO IT'S A 70
      ;CLEAR BAE

```

5349	035304	005037	003424			CLR	CS3	:CLEAR CS3
5350	035310	000137	035330			JMP	86\$	:CONTINUE
5351	035314	017737	146040	003416	87\$:	MOV	@RHBAE,BAE	:SAVE BUS ADDRESS EXTENSION
5352	035322	017737	146034	003424		MOV	@RHCS3,CS3	:SAVE RHCS3
5353	035330	017737	146004	003422	86\$:	MOV	@RHCS2,CS2	:SAVE CS2
5354	035336	017737	146000	003432		MOV	@RHS1,DS1	:SAVE TESTER STATUS
5355	035344	017737	145774	003436		MOV	@RHER,ER1	:SAVE ERROR REGISTER
5356	035352	017737	145772	003442		MOV	@RHTDB,TDR	:SAVE TESTER DATA REG.
5357	035360	017737	145752	003440		MOV	@RHM2,TC	:SAVE MR2 TESTER REG.
5358	035366	017737	145756	001162		MOV	@RHTDB,\$REGO	:GET DATA
5359	035374	032777	000200	145726		BIT	#RDY,@RHCS1	:IS READY SET
5360	035402	001001				BNE	8\$	:YES,CONTINUE TEST
5361	035404	104102				ERROR	102	:READY DID NOT SET
5362	035406	022777	177777	145716	8\$:	CMP	#-1,@RHWC	:DID WC INCREMENT
5363	035414	001001				BNE	3\$	:YES,CONT TEST
5364	035416	104140				ERROR	140	:WRITETO OPERATION DID NOT INC WC
5365	035420	022777	004002	145706	3\$:	CMP	#ODDAD,@RHBA	:DID BA INCREMENT
5366	035426	001401				BEQ	4\$	:YES CONT TEST
5367	035430	104141				ERROR	141	:BA DID NOT INCREMENT AFTER AN WRITETO OPERATION
5368	035432	023777	004000	145710	4\$:	CMP	EVENAD,@RHTDB	:DID INFO WRITETO TESTER
5369	035440	001401				BEQ	5\$	:YES,CONT
5370	035442	104142				ERROR	142	:INFO DID NOT WRITETO TESTER
5371	035444	004737	007224		5\$:	JSR	R7,WHYFO	:ARE ANY ERROR BITS SET
5372	035450	105737	001103			TSTB	\$ERFLG	:WAS THER AN ERROR
5373	035454	001402				BEQ	6\$	:NO EXIT TEST
5374	035456	104146				ERROR	146	:THESE ARE THE CONTENTS OF ALL RH70 REG.
5375	035460	104170				ERROR	170	:THIS IS TO COMPLETE ERROR PRINTOUT
5376	035462	004737	006572		6\$:	JSR	R7,CLEER	:CLEER ERRORS IF ANY
5377	035466	004737	050210			JSR	R7,ERRTST	
5378								
5379								
5380								
5381								
5382								
5383								
5384								
5385								
5386	035472	000004						
5387	035474	012777	000007	145636		MOV	#7,@RHCS2	:SETUP UNIT SEVEN
5388	035502	012777	177777	145622		MOV	#-1,@RHWC	:FOR ONE WORD
5389	035510	012777	004100	145616		MOV	#RBUF,@RHBA	:SRTUP BA
5390	035516	012737	000000	004100		MOV	#ZERO,RBUF	:SETUP DATA
5391	035524	012777	125252	145616		MOV	#OAB,@RHTDB	:SETUP TESTER DB
5392	035532	005701				TST	R1	:IS IT AN 11 OR A 70
5393	035534	100403				BMI	1\$	:IT'S AN RH11
5394	035536	012777	000000	145614		MOV	#ZERO,@RHBAE	:ZERO BAE
5395	035544	012777	000073	145556	1\$:	MOV	#READ2,@RHCS1	:TELL IT TO READ2
5396	035552	005037	003446			CLR	BITCNT	:CLEAR BIT COUNTER
5397	035556	032777	000200	145544	18\$:	BIT	#RDY,@RHCS1	:IS RDY SET
5398	035564	001015				BNE	2\$	:BIT IS SET
5399	035566	005237	003446			INC	BITCNT	:COUNT UP
5400	035572	001371				BNE	18\$	:NOT FINISHED COUNTING
5401	035574	005037	003446			CLR	BITCNT	:GET READY TO DO IT AGAIN
5402	035600	032777	000200	145522	19\$:	BIT	#RDY,@RHCS1	:IS IT SET YET?
5403	035606	001004				BNE	2\$	:YES
5404	035610	005237	003446			INC	BITCNT	:COUNT UP

: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
MOV #7,@RHCS2 :SETUP UNIT SEVEN
MOV #-1,@RHWC :FOR ONE WORD
MOV #RBUF,@RHBA :SRTUP BA
MOV #ZERO,RBUF :SETUP DATA
MOV #OAB,@RHTDB :SETUP TESTER DB
TST R1 :IS IT AN 11 OR A 70
BMI 1\$:IT'S AN RH11
MOV #ZERO,@RHBAE :ZERO BAE
MOV #READ2,@RHCS1 :TELL IT TO READ2
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

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

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

5517 036456 004737 006572
5518 036462 004737 050210
5519
5520
5521
5522
5523
5524
5525
5526
5527 036466 000004
5528 036470 012777 000007 144642
5529 036476 012777 177777 144626
5530 036504 012777 004100 144622
5531 036512 012737 000000 004100
5532 036520 012777 125252 144622
5533 036526 005701
5534 036530 100403
5535 036532 012777 000000 144620
5536 036540 012777 000075 144562 1\$:
5537 036546 005037 003446
5538 036552 032777 000200 144550 18\$:
5539 036560 001015
5540 036562 005237 003446
5541 036566 001371
5542 036570 005037 003446
5543 036574 032777 000200 144526 19\$:
5544 036602 001004
5545 036604 005237 003446
5546 036610 001401
5547 036612 000770
5548 036614
5549 036614 017737 144510 003420
5550 036622 017737 144504 003444
5551 036630 017737 144500 003414
5552 036636 005701
5553 036640 001406
5554 036642 005037 003416
5555 036646 005037 003424
5556 036652 000137 036672
5557 036656 017737 144476 003416 87\$:
5558 036664 017737 144472 003424
5559 036672 017737 144442 003422 86\$:
5560 036700 017737 144436 003432
5561 036706 017737 144432 003436
5562 036714 017737 144430 003442
5563 036722 017737 144410 003440
5564 036730 017737 144414 001162
5565 036736 032777 000200 144364
5566 036744 001003
5567 036746 104102
5568 036750 004737 007224
5569 036754 023777 004100 144366 3\$:
5570 036762 001407
5571 036764 005737 004100
5572 036770 001403

6\$: JSR R7,CLEER ;CLEER ERRORS IF ANY
JSR R7,ERRTST

*TEST 62 READ OPERATIONAL TEST (NORMAL) #3
*THESE TESTS VERIFY ALL READ AND WRITE CODES
*WHETHER IT BE A READ REV. OR FWD OR A WRITE REV. OR FWD
*DURING THESE TESTS THE TESTER TIMING IS MARGINED AND
*NO ERRORS SHOULD OCCUR

TST62: SCOPE
MOV #7,@RHCS2 ;SETUP UNIT SEVEN
MOV #-1,@RHWC ;FOR ONE WORD
MOV #RBUF,@RHBA ;SETUP 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

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T62 READ OPERATIONAL TEST (NORMAL) #3

SEQ 0106

5573 036772 104147
5574
5575 036774 000137 037002
5576 037000 104150
5577
5578 037002 004737 007224
5579 037006 105737 001103
5580 037012 001402
5581 037014 104146
5582 037016 104170
5583 037020 004737 006572
5584 037024 004737 050210

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

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

MASSBUS RH70 AND RH11 DIAGNOSTIC
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D 9
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T63 RH OPERATIONAL WRITE TEST #2

SFO 0107

5585
5586
5587
5588
5589
5590
5591
5592
5593 037030 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

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

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5650 037422 023777 004000 143720 4$: CMP EVENAD,@RHTDB ;DID INFO WRITEIO TESTER
5651 037430 001401 BEQ 5$ ;YES,CONT
5652 037432 104142 ERROR 142 ;INFO DID NOT WRITETO TESTER
5653 037434 004737 007224 5$: JSR R7,WHYFO ;ARE ANY ERROR BITS SET
5654 037440 105737 001103 TSTB $ERFLG ;WAS THER AN ERROR
5655 037444 001402 BEQ 6$ ;NO EXIT TEST
5656 037446 104146 ERROR 146 ;THESE ARE THE CONTENTS OF ALL RH70 REG.
5657 037450 104170 ERROR 170 ;THIS IS TO COMMMLETE ERROR PRINTOUT
5658 037452 004737 006572 6$: JSR R7,CLEER ;CLEER ERRORS IF ANY
5659 037456 004737 050210 JSR R7,ERRTST
5660 *****
5661 ;*TEST 64 READ OPERATIONAL TEST (NORMAL) #4
5662 ;*THESE TESTS VERIFY ALL READ AND WRITE CODES
5663 ;*WHETHER IT BE A READ REV. OR FWD OR A WRITE REV. OR FWD
5664 ;*DURING THESE TESTS THE TESTER TIMING IS MARGINED AND
5665 ;*NO ERRORS SHOULD OCCUR
5666 *****
5667
5668 037462 000004 TST64: SCOPE
5669 037464 012777 000007 143646 MOV #7,@RHCS2 ;SETUP UNIT SEVEN
5670 037472 012777 177777 143632 MOV #-1,@RHWC ;FOR ONE WORD
5671 037500 012777 004100 143626 MOV #RBUF,@RHBA ;SRTUP BA
5672 037506 012737 000000 004100 MOV #ZERO,RBUF ;SETUP DATA
5673 037514 012777 125252 143626 MOV #OAB,@RHTDB ;SETUP TESTER DB
5674 037522 005701 TST R1 ;IS IT AN 11 OR A 70
5675 037524 100403 BMI 1$ ;IT'S AN RH11
5676 037526 012777 000000 143624 MOV #ZERO,@RHBAE ;ZERO BAE
5677 037534 012777 000077 143566 1$: MOV #READ6,@RHCS1 ;TELL IT TO READ6
5678 037542 005037 003446 CLR BITCNT ;CLEAR BIT COUNTER
5679 037546 032777 000200 143554 18$: BIT #RDY,@RHCS1 ;IS RDY SET
5680 037554 001015 BNE 2$ ;BIT IS SET
5681 037556 005237 003446 INC BITCNT ;COUNT UP
5682 037562 001371 BNE 18$ ;NOT FINISHED COUNTING
5683 037564 005037 003446 CLR BITCNT ;GET READY TO DO IT AGAIN
5684 037570 032777 000200 143532 19$: BIT #RDY,@RHCS1 ;IS IT SET YET?
5685 037576 001004 BNE 2$ ;YES
5686 037600 005237 003446 INC BITCNT ;COUNT UP
5687 037604 001401 BEQ 2$ ;BIT IS NOT GOING TO SET
5688 037606 000770 BR 19$
5689 037610
5690 037610 017737 143514 003420 2$: MOV @RHCS1,CS1 ;SAVE RHCS1
5691 037616 017737 143510 003444 MOV @RHWC,WC ;SAVE WORD COUNT
5692 037624 017737 143504 003414 MOV @RHBA,BA ;SAVE BUS ADDRESS
5693 037632 005701 TST R1 ;IS IT AN RH11
5694 037634 001406 BEQ 87$ ;NO IT'S A 70
5695 037636 005037 003416 CLR BAE ;CLEAR BAE
5696 037642 005037 003424 CLR CS3 ;CLEAR CS3
5697 037646 000137 037666 JMP 86$ ;CONTINUE
5698 037652 017737 143502 003416 87$: MOV @RHBAE,BAE ;SAVE BUS ADDRESS EXTENSION
5699 037660 017737 143476 003424 MOV @RHCS3,CS3 ;SAVE RHCS3
5700 037666 017737 143446 003422 86$: MOV @RHCS2,CS2 ;SAVE CS2
5701 037674 017737 143442 003432 MOV @RHST,DS1 ;SAVE TESTER STATUS
5702 037702 017737 143436 003436 MOV @RHER,ER1 ;SAVE ERROR REGISTER
5703 037710 017737 143434 003442 MOV @RHTDB,TDR ;SAVE TESTER DATA REG.
5704 037716 017737 143414 003440 MOV @RHM2,TC ;SAVE MR2 TESTER REG.
5705 037724 017737 143420 001162 MOV @RHTDB,$REGO ;GET DATA

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

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5762 040226 005237 003446      INC      BITCNT      ;COUNT UP
5763 040232 001401              BEQ       7$          ;BIT IS NOT GOING TO SET
5764 040234 000770              BR        19$
5765 040236                  7$:
5766 040236 017737 143066 003420  MOV      @RHCS1,CS1      ;SAVE RHCS1
5767 040244 017737 143062 003444  MOV      @RHCW,WC        ;SAVE WORD COUNT
5768 040252 017737 143056 003414  MOV      @RHBA,BA        ;SAVE BUS ADDRESS
5769 040260 005701              TST       R1          ;IS IT AN RH11
5770 040262 001406              BEQ       87$         ;NO IT'S A 70
5771 040264 005037 003416      CLR       BAE        ;CLEAR BAE
5772 040270 005037 003424      CLR       CS3        ;CLEAR CS3
5773 040274 000137 040314      JMP       86$         ;CONTINUE
5774 040300 017737 143054 003416 87$: MOV      @RHBAE,BAE      ;SAVE BUS ADDRESS EXTENSION
5775 040306 017737 143050 003424  MOV      @RHCS3,CS3      ;SAVE RHCS3
5776 040314 017737 143020 003422 86$: MOV      @RHCS2,CS2      ;SAVE CS2
5777 040322 017737 143014 003432  MOV      @RHST,DS1      ;SAVE TESTER STATUS
5778 040330 017737 143010 003436  MOV      @RHER,CR1      ;SAVE ERROR REGISTER
5779 040336 017737 143006 003442  MOV      @RHTDB,TDR      ;SAVE TESTER DATA REG.
5780 040344 017737 142766 003440  MOV      @RHMR2,TC       ;SAVE MR2 TESTER REG.
5781 040352 017737 142772 001162  MOV      @RHTDB,$REGO    ;GET DATA
5782 040360 032777 000200 142742  BIT       #RDY,@RHCS1   ;IS READY SET
5783 040366 001001              BNE       8$          ;YES,CONTINUE TEST
5784 040370 104102              ERROR    102         ;READY DID NOT SET
5785 040372 022777 177777 142732 8$: CMP      #-1,@RHCW      ;DID WC INCREMENT
5786 040400 001001              BNE       3$          ;YES,CONT TEST
5787 040402 104143              ERROR    143         ;READFROM OPERATION DID NOT INC WC
5788 040404 022777 004002 142722 3$: CMP      #ODDAD,@RHBA      ;DID BA INCREMENT
5789 040412 001401              BEQ       4$          ;YES CONT TEST
5790 040414 104144              ERROR    144         ;BA DID NOT INCREMENT AFTER AN READFROM OPERATIO
5791 040416 023777 004000 142724 4$: CMP      EVENAD,@RHTDB      ;DID INFO READFROM TESTER
5792 040424 001401              BEQ       5$          ;YES,CONT
5793 040426 104145              ERROR    145         ;INFO DID NOT READFROM TESTER
5794 040430 004737 007224 5$: JSR       R7,WHYFO      ;ARE ANY ERROR BITS SET
5795 040434 105737 001103      TSTB     $ERFLG      ;WAS THER AN ERROR
5796 040440 001402              BEQ       6$          ;NO EXIT TEST
5797 040442 104146              ERROR    146         ;THESE ARE THE CONTENTS OF ALL RH70 REG.
5798 040444 104170              ERROR    170         ;THIS IS TO COMPLETE ERROR PRINTOUT
5799 040446 004737 006572 6$: JSR       R7,CLEER      ;CLEER ERRORS IF ANY
5800 040452 004737 050210      JSR      R7,ERRTST
5801
5802 *****
5803 :*TEST 66 WRITE OPERATIONAL TEST (NORMAL) #1
5804 :*THESE TESTS VERIFY ALL READ AND WRITE CODES
5805 :*WHETHER IT BE A READ REV. OR FWD OR A WRITE REV. OR FWD
5806 :*DURING THESE TESTS THE TESTER TIMING IS MARGINED AND
5807 :*NO ERRORS SHOULD OCCUR
5808 *****
5809 040456 000004      TST66: SCOPE
5810 040460 012777 000007 142652  MOV      #7,@RHCS2      ;SETUP UNIT SEVEN
5811 040466 012777 177777 142636  MOV      #-1,@RHCW      ;FOR ONE WORD
5812 040474 012777 004100 142632  MOV      #RBUF,@RHBA    ;SPTUP BA
5813 040502 012737 125252 004100  MOV      #OAB,RBUF      ;SETUP DATA
5814 040510 012777 000000 142632  MOV      #ZERO,@RHTDB   ;SETUP TESTER DB
5815 040516 005701      TST       R1          ;IS IT AN 11 OR A 70
5816 040520 100403      BMI        1$          ;IT'S AN RH11
5817 040522 012777 000000 142630  MOV      #ZERO,@RHBAF   ;ZERO BAE

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5818 040530 012777 000061 142572 1$: MOV #WRITE0,@RHCS1 ;TELL IT TO WRITE0
5819 040536 005037 003446 CLR BITCNT ;CLEAR BIT COUNTER
5820 040542 032777 000200 142560 18$: BIT #RDY,@RHCS1 ;IS RDY SET
5821 040550 001015 BNE 2$ ;BIT IS SET
5822 040552 005237 003446 INC BITCNT ;COUNT UP
5823 040556 001371 BNE 18$ ;NOT FINISHED COUNTING
5824 040560 005037 003446 CLR BITCNT ;GET READY TO DO IT AGAIN
5825 040564 032777 000200 142536 19$: BIT #RDY,@RHCS1 ;IS IT SET YET?
5826 040572 001004 BNE 2$ ;YES
5827 040574 005237 003446 INC BITCNT ;COUNT UP
5828 040600 001401 BEQ 2$ ;BIT IS NOT GOING TO SET
5829 040602 000770 BR 19$
5830 040604 2$: MOV @RHCS1,CS1 ;SAVE RHCS1
5831 040604 017737 142520 003420 MOV @RHWC,WC ;SAVE WORD COUNT
5832 040612 017737 142514 003444 MOV @RHBA,BA ;SAVE BUS ADDRESS
5833 040620 017737 142510 003414 TST R1 ;IS IT AN RH11
5834 040626 005701 BEQ 87$ ;NO IT'S A 70
5835 040630 001406 CLR BAE ;CLEAR BAE
5836 040632 005037 003416 CLR CS3 ;CLEAR CS3
5837 040636 005037 003424 JMP 86$ ;CONTINUE
5838 040642 000137 040662 87$: MOV @RHBAE,BAE ;SAVE BUS ADDRESS EXTENSION
5839 040646 017737 142506 003416 MOV @RHCS3,CS3 ;SAVE RHCS3
5840 040654 017737 142502 003424 86$: MOV @RHCS2,CS2 ;SAVE CS2
5841 040662 017737 142452 003422 MOV @RHST,DS1 ;SAVE TESTER STATUS
5842 040670 017737 142446 003432 MOV @RHER,ER1 ;SAVE ERROR REGISTER
5843 040676 017737 142442 003436 MOV @RHTDB,TDR ;SAVE TESTER DATA REG.
5844 040704 017737 142440 003442 MOV @RHMR2,TC ;SAVE MR2 TESTER REG.
5845 040712 017737 142420 003440 MOV @RHTDB,$REGO ;GET DATA
5846 040720 017737 142424 001162 BIT #RDY,@RHCS1 ;IS OR SET
5847 040726 032777 000200 142374 BNE 3$ ;YES RDY IS SET
5848 040734 001003 ERROR 102 ;READY DID NOT SET
5849 040736 104102 JSR R7,WHYFO ;ARE ANY ERRORS SET
5850 040740 004737 007224 CMP RBUF,@RHTDB ;DID INFO GET WRITTEN OR READ
5851 040744 023777 004100 142376 3$: BEQ 4$ ;INFO GOT LOADED
5852 040752 001407 TST @RHTDB ;DOES @RHTDB = 0
5853 040754 005777 142370 BEQ 5$ ;YES INFO DID NOT LOAD
5854 040760 001403 ERROR 151 ;ALL BITS DID NOT LOAD DURING
5855 040762 104151 JMP 4$ ;AN WRITE0 OPERATION
5856 040764 000137 040772 5$: ERROR 152 ;EXIT TEST
5857 040770 104152 4$: JSR R7,WHYFO ;WRITE0 OPERATION DID NOT WORK
5858 040772 004737 007224 TSTB $ERFLG ;NO BITS WHERE LOADED TO @RHTDB
5859 040774 105737 001103 BEQ 6$ ;ANY ERRORS SET
5860 040776 004737 007224 ERROR 146 ;ANY ERRORS ?
5861 040778 105737 001103 ERROR 170 ;NO,EXIT TEST
5862 041002 001402 JSR R7,CLEER ;PRINT REGISTERS
5863 041004 104146 JSR R7,ERRTST ;CLEAR ERRORS
5864 041006 104170
5865 041010 004737 006572
5866 041014 004737 050210
5867 *****
5868 ;*TEST 67 RH OPERATIONAL WRITE TEST #3
5869 ;*THESE TESTS VERIFY ALL READ AND WRITE CODES
5870 ;*WHETHER IT BE A READ REV. OR FWD OR A WRITE REV. OR FWD
5871 ;*DURING THESE TESTS THE TESTER TIMING IS MARGINED AND
5872 ;*NO ERRORS SHOULD OCCUR
5873

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5874
5875 041020 000004
5876 041022 012777 000007 142310
5877 041030 012737 125252 004000
5878 041036 012777 003003 142310
5879 041044 012777 177777 142260
5880 041052 005701
5881 041054 100403
5882 041056 012777 000000 142274
5883 041064 012777 004000 142242 1$:
5884 041072 012777 000065 142230
5885 041100 012777 003001 142246
5886 041106 005037 003446
5887 041112 005237 003446 2$:
5888 041116 022737 000015 003446
5889 041124 001372
5890 041126 012777 003003 142220
5891 041134 012777 003001 142212
5892 041142 012777 003003 142204
5893 041150 012777 003001 142176
5894 041156 012777 000000 142170
5895 041164 005037 003446
5896 041170 032777 000200 142132 18$:
5897 041176 001015
5898 041200 005237 003446
5899 041204 001371
5900 041206 005037 003446
5901 041212 032777 000200 142110 19$:
5902 041220 001004
5903 041222 005237 003446
5904 041226 001401
5905 041230 000770
5906 041232
5907 041232 017737 142072 003420 7$:
5908 041240 017737 142066 003444
5909 041246 017737 142062 003414
5910 041254 005701
5911 041256 001406
5912 041260 005037 003416
5913 041264 005037 003424
5914 041270 000137 041310
5915 041274 017737 142060 003416 87$:
5916 041302 017737 142054 003424
5917 041310 017737 142024 003422 86$:
5918 041316 017737 142020 003432
5919 041324 017737 142014 003436
5920 041332 017737 142012 003442
5921 041340 017737 141772 003440
5922 041346 017737 141776 001162
5923 041354 032777 000200 141746
5924 041362 001001
5925 041364 104102
5926 041366 022777 177777 141736 8$:
5927 041374 001001
5928 041376 104140
5929 041400 022777 004002 141726 3$:

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TST67: SCOPE
MOV #7,@RHCS2 ;SFTUP UNIT SEVEN
MOV #0AB,EVENAD ;SETUP INFORMATION
MOV #DMD.MCLK.SLKM.ISLK,@RHMR1 ;SETUP DIAG. MODE
MOV #-1,@RHWC ;FOR ONE WORD
TST R1 ;IS IT A 11 OR 70
BMI 1$ ;IT'S AN 11
MOV #ZERO,@RHBAE ;ZERO BAE
MOV #EVENAD,@RHBA ;SETUP BA
MOV #WRITE4,@RHCS1 ;TELL IT TO WRITETO
MOV #DMD!SLKM!ISLK,@RHMR1 ;MANIPULATE CLOCK
CLR BITCNT ;CLEAR LOOP COUNTER
INC BITCNT ;INCREMENT LOOP COUNTER?
CMP #15,BITCNT ;IS IT THIRD LOOP FOR SUSEC WAIT
BNE 2$ ;NO LOOP AGAIN
MOV #DMD!MCLK!SLKM!ISLK,@RHMR1 ;START CHANGING CLOCK
MOV #DMD.SLKM!ISLK,@RHMR1 ;CHANGE CLOCK AGAIN
MOV #DMD.MCLK!SLKM!ISLK,@RHMR1 ;CHANGE CLOCK AGAIN
MOV #DMD.SLKM!ISLK,@RHMR1 ;CHANGE CLOCK AGAIN
MOV #ZERO,@RHMR1 ;GET OUT OF DIAG MODE
CLR BITCNT ;CLEAR BIT COUNTER
BIT #RDY,@RHCS1 ;IS RDY SET
BNE 7$ ;BIT IS SET
INC BITCNT ;COUNT UP
BNE 18$ ;NOT FINISHED COUNTING
CLR BITCNT ;GET READY TO DO IT AGAIN
BIT #RDY,@RHCS1 ;IS IT SET YET?
BNE 7$ ;YES
INC BITCNT ;COUNT UP
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
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 @KHTDB,TDR ;SAVE TESTER DATA REG.
MOV @RHMR2,TC ;SAVE MR2 TESTER REG.
BIT #RDY,@RHCS1 ;GET DATA
BNE 8$ ;IS READY SET
ERROR 102 ;YES,CONTINUE TEST
CMP #-1,@RHWC ;READY DID NOT SET
BNE 3$ ;DID WC INCREMENT
ERROR 140 ;YES,CONT TEST
CMP #ODDAD,@RHBA ;WRITETO OPERATION DID NOT INC WC

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5930	041406	001401				BEQ	4\$		:YES CONT TEST
5931	041410	104141				ERROR	141		:BA DID NOT INCREMENT AFTER AN WRITETO OPERATION
5932	041412	023777	004000	141730	4\$:	CMP	EVENAD, @RHTDB		:DID INFO WRITETO TESTER
5933	041420	001401				BEQ	5\$		:YES, CONT
5934	041422	104142				ERROR	142		:INFO DID NOT WRITETO TESTER
5935	041424	004737	007224		5\$:	JSR	R7, WHYFO		:ARE ANY ERROR BITS SET
5936	041430	105737	001103			TSTB	\$ERFLG 1		:WAS THER AN ERROR
5937	041434	001402				BEQ	6\$		:NO EXIT TEST
5938	041436	104146				ERROR	146		:THESE ARE THE CONTENTS OF ALL RH70 REG.
5939	041440	104170				ERROR	170		:THIS IS TO COMPLETE ERROR PRINTOUT
5940	041442	004737	006572		6\$:	JSR	R7, CLEER		:CLEER ERRORS IF ANY
5941	041446	004737	050210			JSR	R7, ERRST		
5942						:*****			
5943						: *TEST 70 WRITE OPERATIONAL TEST (NORMAL) #2			
5944						: *THESE TESTS VERIFY ALL READ AND WRITE CODES			
5945						: *WHETHER IT BE A READ REV. OR FWD OR A WRITE REV. OR FWD			
5946						: *DURING THESE TESTS THE TESTER TIMING IS MARGINED AND			
5947						: *NO ERRORS SHOULD OCCUR			
5948						:*****			
5949						:*****			
5950	041452	000004				TST70:	SCOPE		
5951	041454	012777	000007	141656		MOV	#7, @RHCS2		:SETUP UNIT SEVEN
5952	041462	012777	177777	141642		MOV	#-1, @RHC		:FOR ONE WORD
5953	041470	012777	004100	141636		MOV	#RBUF, @RHBA		:SRUP BA
5954	041476	012737	125252	004100		MOV	#OAB, RBUF		:SETUP DATA
5955	041504	012777	000000	141636		MOV	#ZERO, @RHTDB		:SETUP TESTER DB
5956	041512	005701				TST	R1		:IS IT AN 11 OR A 70
5957	041514	100403				BMI	1\$		:IT'S AN RH11
5958	041516	012777	000000	141634		MOV	#ZERO, @RHBAE		:ZERO BAE
5959	041524	012777	000063	141576	1\$:	MOV	#WRITE2, @RHCS1		:TELL IT TO WRITE2
5960	041532	005037	003446			CLR	BITCNT		:CLEAR BIT COUNTER
5961	041536	032777	000200	141564	18\$:	BIT	#RDY, @RHCS1		:IS RDY SET
5962	041544	001015				BNE	2\$		:BIT IS SET
5963	041546	005237	003446			INC	BITCNT		:COUNT UP
5964	041552	001371				BNE	18\$		:NOT FINISHED COUNTING
5965	041554	005037	003446			CLR	BITCNT		:GET READY TO DO IT AGAIN
5966	041560	032777	000200	141542	19\$:	BIT	#RDY, @RHCS1		:IS IT SET YET?
5967	041566	001004				BNE	2\$		:YES
5968	041570	005237	003446			INC	BITCNT		:COUNT UP
5969	041574	001401				BEQ	2\$		:BIT IS NOT GOING TO SET
5970	041576	000770				BR	19\$		
5971	041600				2\$:				
5972	041600	017737	141524	003420		MOV	@RHCS1, CS1		:SAVE RHCS1
5973	041606	017737	141520	003444		MOV	@RHC, WC		:SAVE WORD COUNT
5974	041614	017737	141514	003414		MOV	@RHBA, BA		:SAVE BUS ADDRESS
5975	041622	005701				TST	R1		:IS IT AN RH11
5976	041624	001406				BEQ	87\$		:NO IT'S A 70
5977	041626	005037	003416			CLR	BAE		:CLEAR BAE
5978	041632	005037	003424			CLR	CS3		:CLEAR CS3
5979	041636	000137	041656			JMP	86\$		:CONTINUE
5980	041642	017737	141512	003416	87\$:	MOV	@RHBAE, BAE		:SAVE BUS ADDRESS EXTENSION
5981	041650	017737	141506	003424		MOV	@RHCS3, CS3		:SAVE RHCS3
5982	041656	017737	141456	003422	86\$:	MOV	@RHCS2, CS2		:SAVE CS2
5983	041664	017737	141452	003432		MOV	@RHST, DS1		:SAVE TESTER STATUS
5984	041672	017737	141446	003436		MOV	@RHER, ER1		:SAVE ERROR REGISTER
5985	041700	017737	141444	003442		MOV	@RHTDB, DR		:SAVE TESTER DATA REG.

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5986 041706 017737 141424 003440      MOV      @RHMR2,TC      ;SAVE MR2 TESTER REG.
5987 041714 017737 141430 001162      MOV      @RHTDB,$REGO      ;GET DATA
5988 041722 032777 000200 141400      BIT      #RDY,@RHCS1      ;IS OR SET
5989 041730 001003      BNE      3$      ;YES RDY IS SET
5990 041732 104102      ERROR    102      ;READY DID NOT SET
5991 041734 004737 007224      JSR      R7,WHYFO      ;ARE ANY ERRORS SET
5992 041740 023777 004100 141402 3$:  CMP      RBUF,@RHTDB      ;DID INFO GET WRITTEN OR READ
5993 041746 001407      BEQ      4$      ;INFO GOT LOADED
5994 041750 005777 141374      TST      @RHTDB      ;DOES @RHTDB = 0
5995 041754 001403      BEQ      5$      ;YES INFO DID NOT LOAD
5996 041756 104151      ERROR    151      ;ALL BITS DID NOT LOAD DURING
5997                                ;AN WRITE2 OPERATION
5998 041760 000137 041766      JMP      4$      ;EXIT TEST
5999 041764 104152      5$:  ERROR    152      ;WRITE2 OPERATION DID NOT WORK
6000                                ;NO BITS WERE LOADED TO @RHTDB
6001 041766 004737 007224      4$:  JSR      R7,WHYFO      ;ANY ERRORS SET
6002 041772 105737 001103      TSTB     $ERFLG      ;ANY ERRORS ?
6003 041776 001402      BEQ      6$      ;NO,EXIT TEST
6004 042000 104146      ERROR    146      ;PRINT REGISTERS
6005 042002 104170      ERROR    170
6006 042004 004737 006572      6$:  JSR      R7,CLEER      ;CLEAR ERRORS
6007 042010 004737 050210      JSR      R7,ERRTST
6008
6009 *****
6010 ;*TEST 71      RH OPERATIONAL READ TEST #3
6011 ;*THESE TESTS VERIFY ALL READ AND WRITE CODES
6012 ;*WHETHER IT BE A READ REV. OR FWD OR A WRITE REV. OR FWD
6013 ;*DURING THESE TESTS THE TESTER TIMING IS MARGINED AND
6014 ;*NO ERRORS SHOULD OCCUR
6015 *****
6016 042014 000004      TST71:  SCOPE
6017 042016 012777 000007 141314      MOV      #7,@RHCS2      ;SETUP UNIT SEVEN
6018 042024 012777 052525 141316      MOV      #AB,@RHTDB      ;SETUP INFORMATION
6019 042032 012777 003003 141314      MOV      #DMD!SLKM!ISLK!MCLK,@RHMR1      ;SETUP DIAG. MODE
6020 042040 012777 177777 141264      MOV      #-1,@RHWC      ;FOR ONE WORD
6021 042046 005701      TST      R1      ;IS IT A 11 OR 70
6022 042050 100403      BMI      1$      ;IT'S AN 11
6023 042052 012777 000000 141300      MOV      #ZERO,@RHBAE      ;ZERO BAE-
6024 042060 012777 004000 141246      1$:  MOV      #EVENAD,@RHBA      ;SETUP BA
6025 042066 012777 000075 141234      MOV      #READ4,@RHCS1      ;TELL IT TO READFROM
6026 042074 012777 003001 141252      MOV      #DMD!SLKM!ISLK,@RHMR1      ;MANIPULATE CLOCK
6027 042102 005037 003446      CLR      BITCNT      ;CLEAR LOOP COUNTER
6028 042106 005237 003446      2$:  INC      BITCNT      ;INCREMENT LOOP COUNTER
6029 042112 022737 000015 003446      CMP      #15,BITCNT      ;IS IT THIRD LOOP FOR SUSEC WAIT
6030 042120 001372      BNE      2$      ;NO LOOP AGAIN
6031 042122 012777 003003 141224      MOV      #DMD!SLKM!ISLK!MCLK,@RHMR1      ;START CHANGING CLOCK
6032 042130 012777 003001 141216      MOV      #DMD!SLKM!ISLK,@RHMR1      ;CHANGE CLOCK AGAIN
6033 042136 012777 003003 141210      MOV      #DMD!SLKM!ISLK!MCLK,@RHMR1      ;CHANGE CLOCK AGAIN
6034 042144 012777 003001 141202      MOV      #DMD!SLKM!ISLK,@RHMR1      ;CHANGE CLOCK AGAIN
6035 042152 012777 000000 141174      MOV      #ZERO,@RHMR1      ;GET OUT OF DIAG MODE
6036 042160 005037 003446      CLR      BITCNT      ;CLEAR BIT COUNTER
6037 042164 032777 000200 141136 18$:  BIT      #RDY,@RHCS1      ;IS RDY SET
6038 042172 001015      BNE      7$      ;BIT IS SET
6039 042174 005237 003446      INC      BITCNT      ;COUNT UP
6040 042200 001371      BNE      18$      ;NOT FINISHED COUNTING
6041 042202 005037 003446      CLR      BITCNT      ;GET READY TO DO IT AGAIN

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6042	042206	032777	000200	141114	19\$:	BIT	#RDY,@RHCS1	:IS IT SET YET?
6043	042214	001004				BNE	7\$	:YES
6044	042216	005237	003446			INC	BITCNT	:COUNT UP
6045	042222	001401				BEQ	7\$	:BIT IS NOT GOING TO SET
6046	042224	000770				BR	19\$	
6047	042226				7\$:			
6048	042226	017737	141076	003420		MOV	@RHCS1,CS1	:SAVE RHCS1
6049	042234	017737	141072	003444		MOV	@RHWC,WC	:SAVE WORD COUNT
6050	042242	017737	141066	003414		MOV	@RHBA,BA	:SAVE BUS ADDRESS
6051	042250	005701				TST	R1	:IS IT AN RH11
6052	042252	001406				BEQ	87\$	:NO IT'S A 70
6053	042254	005037	003416			CLR	BAE	:CLEAR BAE
6054	042260	005037	003424			CLR	CS3	:CLEAR CS3
6055	042264	000137	042304			JMP	86\$	:CONTINUE
6056	042270	017737	141064	003416	87\$:	MOV	@RHBAE,BAE	:SAVE BUS ADDRESS EXTENSION
6057	042276	017737	141060	003424		MOV	@RHCS3,CS3	:SAVE RHCS3
6058	042304	017737	141030	003422	86\$:	MOV	@RHCS2,CS2	:SAVE CS2
6059	042312	017737	141024	003432		MOV	@RHST,DS1	:SAVE TESTER STATUS
6060	042320	017737	141020	003436		MOV	@RHER,ER1	:SAVE ERROR REGISTER
6061	042326	017737	141016	003442		MOV	@RHTDB,TDR	:SAVE TESTER DATA REG.
6062	042334	017737	140776	003440		MOV	@RHM2,TC	:SAVE MR2 TESTER REG.
6063	042342	017737	141002	001162		MOV	@RHTDB,\$REGO	:GET DATA
6064	042350	032777	000200	140752		BIT	#RDY,@RHCS1	:IS READY SET
6065	042356	001001				BNE	8\$	:YES,CONTINUE TEST
6066	042360	104102				ERROR	102	:READY DID NOT SET
6067	042362	022777	177777	140742	8\$:	CMP	#-1,@RHWC	:DID WC INCREMENT
6068	042370	001001				BNE	3\$	:YES,CONT TEST
6069	042372	104143				ERROR	143	:READFROM OPERATION DID NOT INC WC
6070	042374	022777	004002	140732	3\$:	CMP	#ODDAD,@RHBA	:DID BA INCREMENT
6071	042402	001401				BEQ	4\$	:YES CONT TEST
6072	042404	104144				ERROR	144	:BA DID NOT INCREMENT AFTER AN READFROM OPERATIO
6073	042406	023777	004000	140734	4\$:	CMP	EVENAD,@RHTDB	:DID INFO READFROM TESTER
6074	042414	001401				BEQ	5\$	:YES,CONT
6075	042416	104145				ERROR	145	:INFO DID NOT READFROM TESTER
6076	042420	004737	007224		5\$:	JSR	R7,WHYFO	:ARE ANY ERROR BITS SET
6077	042424	105737	001103			TSTB	\$ERFLG	:WAS THER AN ERROR
6078	042430	001402				BEQ	6\$	:NO EXIT TEST
6079	042432	104146				ERROR	146	:THESE ARE THE CONTENTS OF ALL RH70 REG.
6080	042434	104170				ERROR	170	:THIS IS TO COMPLETE ERROR PRINTOUT
6081	042436	004737	006572		6\$:	JSR	R7,CLEER	:CLEER ERRORS IF ANY
6082	042442	004737	050210			JSR	R7,ERRTST	

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

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*****
:TEST 72      WRITE OPERATIONAL TEST (NORMAL) #3
:THESE TESTS VERIFY ALL HEAD AND WRITE CODES
:WHETHER IT BE A READ REV. OR FWD OR A WRITE REV. OR FWD
:DURING THESE TESTS THE TESTER TIMING IS MARGINED AND
:NO ERRORS SHOULD OCCUR
*****

TST72:  SCOPE
MOV      #7,@RHCS2      ;SETUP UNIT SEVEN
MOV      #-1,@RHWC      ;FOR ONE WORD
MOV      @RBUF,@RHBA    ;SETUP 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
CMP      RBUF,@RHTDB     ;DID INFO GET WRITTEN OR READ
BEQ      4$             ;INFO GOT LOADED
TST      @RHTDB          ;DOES @RHTDB = 0
BEQ      5$             ;YES INFO DID NOT LOAD
ERROR    151            ;ALL BITS DID NOT LOAD DURING
                        ;AN WRITE4 OPERATION

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6139 042754 000137 042762
6140 042760 104152
6141
6142 042762 004737 007224
6143 042766 105737 001103
6144 042772 001402
6145 042774 104146
6146 042776 104170
6147 043000 004737 006572
6148 043004 004737 050210
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6157 043010 000004
6158 043012 012777 000007 140320
6159 043020 012737 125252 004000
6160 043026 012777 000003 140320
6161 043034 012777 177777 140270
6162 043042 005701
6163 043044 100403
6164 043046 012777 000000 140304
6165 043054 012777 004000 140252
6166 043062 012777 000067 140240
6167 043070 012777 000001 140256
6168 043076 005037 003446
6169 043102 005237 003446
6170 043106 022737 000015 003446
6171 043114 001372
6172 043116 012777 000003 140230
6173 043124 012777 000001 140222
6174 043132 012777 000003 140214
6175 043140 012777 000001 140206
6176 043146 012777 000000 140200
6177 043154 005037 003446
6178 043160 032777 000200 140142
6179 043166 001015
6180 043170 005237 003446
6181 043174 001371
6182 043176 005037 003446
6183 043202 032777 000200 140120
6184 043210 001004
6185 043212 005237 003446
6186 043216 001401
6187 043220 000770
6188 043222
6189 043222 017737 140102 003420
6190 043230 017737 140076 003444
6191 043236 017737 140072 003414
6192 043244 005701
6193 043246 001406
6194 043250 005037 003416

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JMP 4$ ;EXIT TEST
5$: ERROR 152 ;WRITE4 OPERATION DID NOT WORK
;NO BITS WHERE LOADED TO @RH1DB
4$: JSR R7,WHYFO ;ANY ERRORS SET
TSTB $ERFLG ;ANY ERRORS ?
BEQ 6$ ;NO,EXIT TEST
ERROR 146 ;PRINT REGISTERS
ERROR 170
6$: JSR R7,CLEER ;CLEAR ERRORS
JSR R7,ERRTST
;*****
;*TEST 73 RH OPERATIONAL WRITE TEST #4
;*THESE TESTS VERIFY ALL READ AND WRITE CODES
;*WHETHER IT BE A READ REV. OR FWD OR A WRITE REV. OR FWD
;*DURING THESE TESTS THE TESTER TIMING IS MARGINED AND
;*NO ERRORS SHOULD OCCUR
;*****
TST73: SCOPE
MOV #7,@RHCS2 ;SETUP UNIT SEVEN
MOV #0AB,EVENAD ;SETUP INFORMATION
MOV #DMD:MCLK,@RHMR1 ;SETUP DIAG. MODE
MOV #-1,@RHWC ;FOR ONE WORD
TST R1 ;IS IT A 11 OR 70
BMI 1$ ;IT'S AN 11
MOV #ZERO,@RHBAE ;ZERO BAE
1$: MOV #EVENAD,@RHBA ;SETUP BA
MOV #WRITE6,@RHCS1 ;TELL IT TO WRITETO
MOV #DMD,@RHMR1 ;MANIPULATE CLOCK
CLR BITCNT ;CLEAR LOOP COUNTER
2$: INC BITCNT ;INCREMENT LOOP COUNTER
CMP #15,BITCNT ;IS IT THIRD LOOP FOR 5USEC WAIT
BNE 2$ ;NO LOOP AGAIN
MOV #DMD:MCLK,@RHMR1 ;START CHANGING CLOCK
MOV #DMD,@RHMR1 ;CHANGE CLOCK AGAIN
MOV #DMD:MCLK,@RHMR1 ;CHANGE CLOCK AGAIN
MOV #DMD,@RHMR1 ;CHANGE CLOCK AGAIN
MOV #ZERO,@RHMR1 ;GET OUT OF DIAG MODE
CLR BITCNT ;CLEAR BIT COUNTER
18$: BIT #RDY,@RHCS1 ;IS RDY SET
BNE 7$ ;BIT IS SET
INC BITCNT ;COUNT UP
BNE 18$ ;NOT FINISHED COUNTING
CLR BITCNT ;GET READY TO DO IT AGAIN
19$: BIT #RDY,@RHCS1 ;IS IT SET YET?
BNE 7$ ;YES
INC BITCNT ;COUNT UP
BEQ 7$ ;BIT IS NOT GOING TO SET
BR 19$
7$: MOV @RHCS1,CS1 ;SAVE RHCS1
MOV @RHWC,WC ;SAVE WORD COUNT
MOV @RHBA,BA ;SAVE BUS ADDRESS
TST R1 ;IS IT AN RH11
BEQ 87$ ;NO IT'S A 70
CLR BAE ;CLEAR BAE

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6195	043254	005037	003424			CLR	CS3	:CLEAR CS3
6196	043260	000137	043300			JMP	86\$	:CONTINUE
6197	043264	017737	140070	003416	87\$:	MOV	@RHBAE,BAE	:SAVE BUS ADDRESS EXTENSION
6198	043272	017737	140064	003424		MOV	@RHCS3,CS3	:SAVE RHCS3
6199	043300	017737	140034	003422	86\$:	MOV	@RHCS2,CS2	:SAVE CS2
6200	043306	017737	140030	003432		MOV	@RHST,DS1	:SAVE TESTER STATUS
6201	043314	017737	140024	003436		MOV	@RHER,ER1	:SAVE ERROR REGISTER
6202	043322	017737	140022	003442		MOV	@RHTDB,TDR	:SAVE TESTER DATA REG.
6203	043330	017737	140002	003440		MOV	@RHM2,TC	:SAVE MR2 TESTER REG.
6204	043336	017737	140006	001162		MOV	@RHTDB,\$REGO	:GET DATA
6205	043344	032777	000200	137756		BIT	#RDY,@RHCS1	:IS READY SET
6206	043352	001001				BNE	8\$	:YES,CONTINUE TEST
6207	043354	104102				ERROR	102	:READY DID NOT SET
6208	043356	022777	177777	137746	8\$:	CMP	#-1,@RHWC	:DID WC INCREMENT
6209	043364	001001				BNE	3\$	:YES,CONT TEST
6210	043366	104140				ERROR	140	:WRITETO OPERATION DID NOT INC WC
6211	043370	022777	003776	137736	3\$:	CMP	#EVENAD-2,@RHBA	:DID BA INCREMENT
6212	043376	001401				BEQ	4\$	:YES CONT TEST
6213	043400	104141				ERROR	141	:BA DID NOT INCREMENT AFTER AN WRITETO OPERATION
6214	043402	023777	004000	137740	4\$:	CMP	EVENAD,@RH*DB	:DID INFO WRITETO TESTER
6215	043410	001401				BEQ	5\$	:YES,CONT
6216	043412	104142				ERROR	142	:INFO DID NOT WRITETO TESTER
6217	043414	004737	007224		5\$:	JSR	R7,WHYFO	:ARE ANY ERROR BITS SET
6218	043420	105737	001103			TSTB	\$ERFLG	:WAS THER AN ERROR
6219	043424	001402				BEQ	6\$	:NO EXIT TEST
6220	043426	104146				ERROR	146	:THESE ARE THE CONTENTS OF ALL RH70 REG.
6221	043430	104170				ERROR	170	:THIS IS TO COMPLETE ERROR PRINTOUT
6222	043432	004737	006572		6\$:	JSR	R7,CLEER	:CLEER ERRORS IF ANY
6223	043436	004737	050210			JSR	R7,ERRTST	
6224						:*****		
6225						:TEST 74 WRITE OPERATIONAL TEST (NORMAL) #4		
6226						:THESE TESTS VERIFY ALL READ AND WRITE CODES		
6227						:WHETHER IT BE A READ REV. OR FWD OR A WRITE REV. OR FWD		
6228						:DURING THESE TESTS THE TESTER TIMING IS MARGINED AND		
6229						:NO ERRORS SHOULD OCCUR		
6230						:*****		
6231						:TEST 74: SCOPE		
6232	043442	000004				MOV	#7,@RHCS2	:SETUP UNIT SEVEN
6233	043444	012777	000007	137666		MOV	#-1,@RHWC	:FOR ONE WORD
6234	043452	012777	177777	137652		MOV	#RBUF,@RHBA	:SRUP BA
6235	043460	012777	004100	137646		MOV	#OAB,RBUF	:SETUP DATA
6236	043466	012737	125252	004100		MOV	#ZERO,@RHTDB	:SETUP TESTER DB
6237	043474	012777	000000	137646		TST	R1	:IS IT AN 11 OR A 70
6238	043502	005701				BMI	1\$	:IT'S AN RH'1
6239	043504	100403				MOV	#ZERO,@RHBAE	:ZERO BAE
6240	043506	012777	000000	137644		MOV	#WRITE6,@RHCS1	:TELL IT TO WRITE6
6241	043514	012777	000067	137606	1\$:	CLR	BITCNT	:CLEAR BIT COUNTER
6242	043522	005037	003446			BIT	#RDY,@RHCS1	:IS RDY SET
6243	043526	032777	000200	137574	18\$:	BNE	2\$	:BIT IS SET
6244	043534	001015				INC	BITCNT	:COUNT UP
6245	043536	005237	003446			BNE	18\$	:NOT FINISHED COUNTING
6246	043542	001371				CLR	BITCNT	:GET READY TO DO IT AGAIN
6247	043544	005037	003446			BIT	#RDY,@RHCS1	:IS IT SET YET?
6248	043550	032777	000200	137552	19\$:	BNE	2\$	:YES
6249	043556	001004				INC	BITCNT	:COUNT UP
6250	043550	005237	003446					

```

6251 043564 001401      BEQ      2$          ;BIT IS NOT GOING TO SET
6252 043566 000770      BR       19$
6253 043570             2$:      MOV      @RHCS1,CS1      ;SAVE RHCS1
6254 043570 017737 137534 003420      MOV      @RHWC,WC      ;SAVE WORD COUNT
6255 043576 017737 137530 003444      MOV      @RHBA,BA      ;SAVE BUS ADDRESS
6256 043604 017737 137524 003414      TST      R1          ;IS IT AN RH11
6257 043612 005701             BEQ      87$          ;NO IT'S A 70
6258 043614 001406             CLR      BAE          ;CLEAR BAE
6259 043616 005037 003416             CLR      CS3          ;CLEAR CS3
6260 043622 005037 003424             JMP      86$          ;CONTINUE
6261 043626 000137 043646             MOV      @RHBAE,BAE      ;SAVE BUS ADDRESS EXTENSION
6262 043632 017737 137522 003416 87$:      MOV      @RHCS3,CS3      ;SAVE RHCS3
6263 043640 017737 137516 003424 86$:      MOV      @RHCS2,CS2      ;SAVE CS2
6264 043646 017737 137466 003422      MOV      @RHST,DS1      ;SAVE TESTER STATUS
6265 043654 017737 137462 003432      MOV      @RHER,ER1      ;SAVE ERROR REGISTER
6266 043662 017737 137456 003436      MOV      @RHTDB,TDR      ;SAVE TESTER DATA REG.
6267 043670 017737 137454 003442      MOV      @RHMR2,TC      ;SAVE MR2 TESTER REG.
6268 043676 017737 137434 003440      MOV      @RHTDB,$REGO      ;GET DATA
6269 043704 017737 137440 001162      BIT      #RDY,@RHCS1      ;IS OR SET
6270 043712 032777 000200 137410      BNE      3$          ;YES RDY IS SET
6271 043720 001003      ERROR      102      ;READY DID NOT SET
6272 043722 104102      JSR      R7,WHYFO      ;ARE ANY ERRORS SET
6273 043724 004737 007224      CMP      RBUF,@RHTDB      ;DID INFO GET WRITTEN OR READ
6274 043730 023777 004100 137412 3$:      BEQ      4$          ;INFO GOT LOADED
6275 043736 001407      TST      @RHTDB      ;DOES @RHTDB = 0
6276 043740 005777 137404      BEQ      5$          ;YES INFO DID NOT LOAD
6277 043744 001403      ERROR      117      ;ALL BITS DID NOT LOAD DURING
6278 043746 104117      JMP      4$          ;AN WRITE6 OPERATION
6279             ERROR      101      ;EXIT TEST
6280 043750 000137 043756 5$:      JSR      R7,WHYFO      ;WRITE6 OPERATION DID NOT WORK
6281 043754 104101      TSTB      $ERFLG      ;NO BITS WHERE LOADED TO @RHTDB
6282             BEQ      6$          ;ANY ERRORS SET
6283 043756 004737 007224      ERROR      146      ;ANY ERRORS ?
6284 043762 105737 001103      ERROR      170      ;NO,EXIT TEST
6285 043766 001402      JSR      R7,CLEER      ;PRINT REGISTERS
6286 043770 104146      JSR      R7,ERRTST      ;CLEAR ERRORS
6287 043772 104170
6288 043774 004737 006572
6289 044000 004737 050210
6290
6291 *****
6292 ;*TEST 75      RH OPERATIONAL READ TEST #4
6293 ;*THESE TESTS VERIFY ALL READ AND WRITE CODES
6294 ;*WHETHER IT BE A READ REV. OR FWD OR A WRITE REV. OR FWD
6295 ;*DURING THESE TESTS THE TESTER TIMING IS MARGINED AND
6296 ;*NO ERRORS SHOULD OCCUR
6297 *****
6298 044004 000004      TST75: SCOPE
6299 044006 012777 000007 137324      MOV      #7,@RHCS2      ;SETUP UNIT SEVEN
6300 044014 012777 052525 137326      MOV      #AB,@RHTDB      ;SETUP INFORMATION
6301 044022 012777 000003 137324      MOV      #DMD!MCLK,@RHMR1      ;SETUP DIAG. MODE
6302 044030 012777 177777 137274      MOV      #-1,@RHWC      ;FOR ONE WORD
6303 044036 005701      TST      R1          ;IS IT A 11 OR 70
6304 044040 100403      BMI      1$          ;IT'S AN 11
6305 044042 012777 000000 137310      MOV      #ZERO,@RHBAE      ;ZERO BAE
6306 044050 012777 004000 137256 1$:      MOV      #EVENAD,@RHBA      ;SETUP BA

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6307	044056	012777	000077	137244		MOV	#READ6,@RHCS1	:TELL IT TO READFROM
6308	044064	012777	000001	137262		MOV	#DMD,@RHMR1	:MANIPULATE CLOCK
6309	044072	005037	003446			CLR	BITCNT	:CLEAR LOOP COUNTER
6310	044076	005237	003446		2\$:	INC	BITCNT	:INCREMENT LOOP COUNTER
6311	044102	022737	000015	003446		CMP	#15,BITCNT	:IS IT THIRD LOOP FOR 5USEC WAIT
6312	044110	001372				BNE	2\$	:NO LOOP AGAIN
6313	044112	012777	000003	137234		MOV	#DMD!MCLK,@RHMR1	:START CHANGING CLOCK
6314	044120	012777	000001	137226		MOV	#DMD,@RHMR1	:CHANGE CLOCK AGAIN
6315	044126	012777	000003	137220		MOV	#DMD!MCLK,@RHMR1	:CHANGE CLOCK AGAIN
6316	044134	012777	000001	137212		MOV	#DMD,@RHMR1	:CHANGE CLOCK AGAIN
6317	044142	012777	000000	137204		MOV	#ZERO,@RHMR1	:GET OUT OF DIAG MODE
6318	044150	005037	003446			CLR	BITCNT	:CLEAR BIT COUNTER
6319	044154	032777	000200	137146	18\$:	BIT	#RDY,@RHCS1	:IS RDY SET
6320	044162	001015				BNE	7\$	:BIT IS SET
6321	044164	005237	003446			INC	BITCNT	:COUNT UP
6322	044170	001371				BNE	18\$	:NOT FINISHED COUNTING
6323	044172	005037	003446			CLR	BITCNT	:GET READY TO DO IT AGAIN
6324	044176	032777	000200	137124	19\$:	BIT	#RDY,@RHCS1	:IS IT SET YET?
6325	044204	001004				BNE	7\$	:YES
6326	044206	005237	003446			INC	BITCNT	:COUNT UP
6327	044212	001401				BEQ	7\$	:BIT IS NOT GOING TO SET
6328	044214	000770				BR	19\$	
6329	044216				7\$:			
6330	044216	017737	137106	003420		MOV	@RHCS1,CS1	:SAVE RHCS1
6331	044224	017737	137102	003444		MOV	@RHWC,WC	:SAVE WORD COUNT
6332	044232	017737	137076	003414		MOV	@RHBA,BA	:SAVE BUS ADDRESS
6333	044240	005701				TST	R1	:IS IT AN RH11
6334	044242	001406				BEQ	87\$	:NO IT'S A 70
6335	044244	005037	003416			CLR	BAE	:CLEAR BAF
6336	044250	005037	003424			CLR	CS3	:CLEAR CS3
6337	044254	000137	044274			JMP	86\$	:CONTINUE
6338	044260	017737	137074	003416	87\$:	MOV	@RHBAE,BAE	:SAVE BUS ADDRESS EXTENSION
6339	044266	017737	137070	003424		MOV	@RHCS3,CS3	:SAVE RHCS3
6340	044274	017737	137040	003422	86\$:	MOV	@RHCS2,CS2	:SAVE CS2
6341	044302	017737	137034	003432		MOV	@RHST,DS1	:SAVE TESTER STATUS
6342	044310	017737	137030	003436		MOV	@RHER,ER1	:SAVE ERROR REGISTER
6343	044316	017737	137026	003442		MOV	@RHTDB,TDR	:SAVE TESTER DATA REG.
6344	044324	017737	137006	003440		MOV	@RHMR2,TC	:SAVE MR2 TESTER REG.
6345	044332	017737	137012	001162		MOV	@RHTDB,\$REGO	:GET DATA
6346	044340	032777	000200	136762		BIT	#RDY,@RHCS1	:IS READY SET
6347	044346	001001				BNE	8\$	:YES,CONTINUE TEST
6348	044350	104102				ERROR	102	:READY DID NOT SET
6349	044352	022777	177777	136752	8\$:	CMP	#-1,@RHWC	:DID WC INCREMENT
6350	044360	001001				BNE	3\$	:YES,CONT TEST
6351	044362	104143				ERROR	143	:READFROM OPERATION DID NOT INC WC
6352	044364	022777	003776	136742	3\$:	CMP	#EVENAD-2,@RHBA	:DID BA INCREMENT
6353	044372	001401				BEQ	4\$	:YES CONT TEST
6354	044374	104144				ERROR	144	:BA DID NOT INCREMENT AFTER AN READFROM OPERATIO
6355	044376	023777	004000	136744	4\$:	CMP	EVENAD,@RHTDB	:DID INFO READFROM TESTER
6356	044404	001401				BEQ	5\$	:YES,CONT
6357	044406	104145				ERROR	145	:INFO DID NOT READFROM TESTER
6358	044410	004737	007224		5\$:	JSR	R7,WHYFO	:ARE ANY ERROR BITS SET
6359	044414	105737	001103			TSTB	\$ERFLG	:WAS THER AN ERROR
6360	044420	001402				BEQ	6\$	:NO EXIT TEST
6361	044422	104146				ERROR	146	:THESE ARE THE CONTENTS OF ALL RH70 REG.
6362	044424	104170				ERROR	170	:THIS IS TO COMPLETE ERROR PRINTOUT

6363 044426 004737 006572
6364 044432 004737 0502'0
6365
6366
6367
6368
6369
6370
6371 044436 000004
6372
6373
6374 044440 012777 000007 136672
6375 044446 005037 177776
6376 044452 005037 003452
6377 044456 005037 003450
6378 044462 005701
6379 044464 100403
6380 044466 012777 000000 136664
6381 044474 012777 005000 136632
6382 044502 012777 174000 136622
6383 044510 012777 050334 136670
6384
6385 044516 005701
6386 044520 001412
6387 044522 005737 003452
6388 044526 001407
6389 044530 032737 000002 177570
6390 044536 001571
6391 044540 004737 047624
6392 044544 000434
6393 044546 012777 000161 136554
6394
6395 044554 005037 003446
6396 044560 032777 000200 136542
6397 044566 001015
6398 044570 005237 003446
6399 044574 001371
6400 044576 005037 003446
6401 044602 032777 000200 136520
6402 044610 001004
6403 044612 005237 003446
6404 044616 001401
6405 044620 000770
6406 044622
6407 044622 032777 000200 136500
6408 044630 001001
6409 044632 104102
6410 044634 104205
6411 044636
6412 044636 017737 136466 003420
6413 044644 017737 136462 003444
6414 044652 017737 136456 003414
6415 044660 005701
6416 044662 001406
6417 044664 005037 003416
6418 044670 005037 003424

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68: JSR R7,CLEER ;CLEAR ERRORS IF ANY
JSR R7,ERRTST
:*****
: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
:*****
:ST76: SCOPE

MOV #7,@RHCS2
CLR @PSW
CLR PASS
BLITZ: CLR LOOCNT ;CLEAR THE LOOP COUNTER
IN: TST R1 ;IS IT AN 11 OR 70
BMI 1$ ;IT IS AN 11
MOV #ZERO,@RHBAE ;IT'S A 70 ZERO THE BAE
1$: MOV #5000,@RHBA ;SET THE BUS ADDRESS
MOV #-4000,@RHWC
MOV #BLKTST,@VECAD ;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 #WRITED,IE,@RHCS1 ;SET INTERRUPT AND TELL IT TO WRITE

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

2$: BIT #RDY,@RHCS1 ;DID READY SET
BNE 25$ ;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 7C
CLR BAE ;CLEAR BAE
CLR CS3 ;CLEAR CS3

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6419 044674 000137 044714      JMP      86$      ;CONTINUE
6420 044700 017737 136454 003416 87$: MOV      @RHBAE,BAE      ;SAVE BUS ADDRESS EXTENSION
6421 044706 017737 136450 003424      MOV      @RHCS3,CS3      ;SAVE RHCS3
6422 044714 017737 136420 003422 86$: MOV      @RHCS2,CS2      ;SAVE CS2
6423 044722 017737 136414 003432      MOV      @RHST,DS1      ;SAVE TESTER STATUS
6424 044730 017737 136410 003436      MOV      @RHER,ER1      ;SAVE ERROR REGISTER
6425 044736 017737 136406 003442      MOV      @RHTDB,TDR      ;SAVE TESTER DATA REG.
6426 044744 017737 136366 003440      MOV      @RHMR2,TC      ;SAVE MR2 TESTER REG.
6427 044752 032777 140000 136362 9$: BIT      #ATA!ERR,@RHST      ;IS ATTN OR ERROR SET
6428 044760 001033      BNE      3$      ;YES THERE WAS A PROBLEM
6429 044762 032777 000200 136340      BIT      #RDY,@RHCS1      ;DID RDY SET
6430 044770 001001      BNE      4$      ;YES IT SET
6431 044772 104102      ERROR    102      ;RDY DID NOT SET
6432 044774 022777 015000 136332 4$: CMP      #5000+<4000*2>,@RHBA      ;DID BA INC PROPERLY
6433 045002 001401      BEQ      5$      ;YES
6434 045004 104203      ERROR    203      ;BA DID NOT INC PROPERLY
6435 045006 023777 014776 136334 5$: CMP      @14776,@RHTDB      ;WAS CORRECT INFO WRITTEN
6436 045014 001401      BEQ      6$      ;YES
6437 045016 104204      ERROR    204      ;CORRECT INFO NOT IN RHTDB
6438 045020 005777 136306      6$: TST      @RHWC      ;IS WC 0
6439 045024 001401      BEQ      7$      ;YES
6440 045026 104206      ERROR    206      ;RHWC IS NOT ZERO
6441 045030 105737 001103      7$: TSTB     $ERFLG      ;WAS THERE ANY ERRORS
6442 045034 001407      BEQ      8$      ;NO
6443 045036 032777 002000 136264      BIT      #PSEL,@RHCS1
6444 045044 001401      BEQ      3$      ;
6445 045046 104207      ERROR    207
6446 045050 104146      3$: ERROR    146      ;OUTPUT THE REGISTERS
6447 045052 104170      ERROR    170
6448 045054 005737 003450      8$: TST      LOOCNT      ;IS IT FIRST PASS IN TEST
6449 045060 001007      BNE      11$      ;NO
6450 045062 005237 003450      INC      LOOCNT      ;MAKE IT SECOND PASS
6451 045066 012777 000017 136242      MOV      #SCLK!7,@RHMR2
6452      ;SET THE SYNC CLOCK BIT AND 441 BLK SIZE
6453 045074 000137 044462      JMP      IN          ;DO THE TEST AGAIN
6454 045100 005037 003450      11$: CLR      LOOCNT      ;CLEAR THE COUNTER
6455 045104 005737 003452      TST      PASS
6456 045110 001004      BNE      BOTTOM
6457 045112 005237 003452      INC      PASS
6458 045116 000137 044456      JMP      BLITZ
6459 045122 004737 007224      BOTTOM: JSR      R7,WHYFO      ;TO SEE WHY IT DIED
6460 045126 004737 006572      JSR      R7,CLEER      ;CLEAR THE REGISTERS
6461 045132 004737 050210      JSR      R7,ERRST      ;UNDERLINE ERROR MESGES
6462      ;IF NEEDED
6463      ;*****
6464      ;*TEST 77      HERE IS WHERE I HANDLE 4 RH'S
6465      ;*THIS IS THE ROUTINE THAT ALLOWS THE
6466      ;*THE DIAGNOSTIC TO TEST FOUR RH'S
6467      ;*****
6468 045136 000004      TST77: SCOPE
6469
6470 045140 005237 003376      ENDPAS: INC      DEVCNT      ;INCREMENT THE DEVICE COUNT
6471 045144 022737 000001 003376      CMP      #1,DEVCNT      ;IS IT DEVICE 2
6472 045152 001552      BEQ      CLEVER      ;YES
6473 045154 022737 000002 003376      CMP      #2,DEVCNT      ;IS IT DEVICE 3
6474 045162 001002      BNE      1$

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

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

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

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

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

6587	046250	000421				BR	66\$	::GET OVER THE ASCIZ
6588						::67\$: .ASCIZ	/ TOTAL ERRORS	SINCE LAST REPORT /
6589	046314					66\$: MOV	\$ERTTL,-(SP)	::SAVE \$ERTTL FOR TYPEOUT
6590	046314	013746	001112					::TOTAL NUMBER OF ERRORS
6591								::GO TYPE--DECIMAL ASCII WITH SIGN
6592	046320	104405				TYPDS		::TYPE CARRIAGE RETURN, LINE FEED
6593	046322	104401	001223			TYPE	,\$CRLF	::CLEAR ERROR TOTAL
6594	046326	005037	001112			CLR	\$ERTTL	::GET MONITOR ADDRESS
6595	046332	013700	000042			\$GET42: MOV	@42,R0	::BRANCH IF NO MONITOR
6596	046336	001405				BEQ	\$DOAGN	::CLEAR THE WORLD
6597	046340	000005				RESET		::GO TO MONITOR
6598	046342	004710				\$ENDAD: JSR	PC,(R0)	::SAVE ROOM
6599	046344	000240				NOP		::FOR
6600	046346	000240				NOP		::ACT11
6601	046350	000240				NOP		
6602	046352					\$DOAGN:		
6603	046352	000137				JMP	@(PC)+	::RETURN
6604	046354	004166				\$RTNAD: .WORD	BEGIN2	
6605	046356	377	377	000		\$ENULL: .BYTE	-1,-1,0	::NULL CHARACTER STRING
6606		046362				.EVEN		
6607								
6608								
6609								
6610								
6611								
6612	046362	032737	020000	177570		WATBIT: BIT	#SW13,@#177570	::SKIP ERROR PRINTOUT ?
6613	046370	001155				BNE	RITURN	::YES
6614								
6615	046372	032737	000400	177570		CHGE2: BIT	#BIT8,@#177570	
6616								
6617	046400	001151				BNE	RITURN	
6618								
6619	046402	032737	000001	177570		CHGE3: BIT	#BIT0,@#177570	
6620								
6621	046410	001145				BNE	RITURN	
6622	046412	005037	003446			CLR	BITCNT	::CLEAR BIT COUNTER
6623	046416	013737	001162	001202		MOV	\$REG0,\$TMP2	::SAVE GOOD DATA IN \$REG0
6624	046424	013737	001200	001204		MOV	\$TMP1,\$TMP3	::SAVE CONTENTS OF BAD DATA
6625	046432	043737	001162	001204		BIC	\$REG0,\$TMP3	::WHERE EXTRA BITS SET ?
6626	046440	005737	001204			TST	\$TMP3	::FIND OUT
6627	046444	001447				BEQ	NEXTST	::NO,FIND OUT WHAT BITS WHERE NOT SET
6628	046446	104401	046454			TYPE	,\$65\$	::TYPE ASCII STRING
6629	046452	000427				BR	64\$	::GET OVER THE ASCII
6630						::65\$: .ASCIZ	<15><12>/THESE ARE THE BIT NO. OF THE EXTRA BITS./<15><12>	
6631	046532					64\$:		
6632	046532	032737	000001	001204		MOAR: BIT	#ONE,\$TMP3	::FIND THE EXTRA
6633	046540	001076				BNE	PRIBIT	::GO TO PRINT BIT NO.
6634	046542	006037	001204			MOOR: ROR	\$TMP3	::SETUP FOR NEXT BIT
6635	046546	022737	000017	003446		CMP	#17,BITCNT	::IS IT BIT 15 LAST TESTED
6636	046554	001403				BEQ	NEXTST	::YES,SEE IF ANY BITS WHERE NOT SET
6637	046556	005237	003446			INC	BITCNT	::NO NOT LAST BIT YET
6638	046562	000763				BR	MOAR	::GO TO TEST NEXT BIT
6639	046564	005037	003446			NEXTST: CLR	BITCNT	::ZERO BIT COUNTER
6640	046570	043737	001200	001202		BIC	\$TMP1,\$TMP2	::FIND WHAT BITS WHERE NOT SET
6641	046576	005737	001202			TST	\$TMP2	::WAS ALL BITS SET THAT SHOULD HAVE BEEN
6642	046602	001446				BEQ	RETURN	::YES,AND TEST FINISHED

6643 046604 104401 046612
6644 046610 000426
6645
6646 046666
6647 046666 032737 000001 001202
6648 046674 001014
6649 046676 006037 001202
6650 046702 022737 000017 003446
6651 046710 001403
6652 046712 005237 003446
6653 046716 000763
6654 046720 104401 001223
6655 046724 000207
6656 046726
6657 046726 013746 003446
6658 046732 104405
6659 046734 000760
6660 046736
6661 046736 013746 003446
6662 046742 104405
6663 046744 000676
6664
6665
6666
6667
6668 046746
6669 046746 104401 046754
6670 046752 000434
6671
6672 047044
6673 047044 104401 047052
6674 047050 000422
6675
6676 047116
6677 047116 012637 001206
6678 047122 162737 000002 001206
6679 047130 013746 001206
6680 047134 104402
6681 047136 104401 047144
6682 047142 000406
6683
6684 047160
6685 047160 012637 001206
6686 047164 013746 001206
6687 047170 104402
6688 047172 013716 001106
6689 047176 000002
6690
6691
6692
6693
6694
6695 047200
6696 047200 104401 047206
6697 047204 000422
6698

```

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

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6699	047252				64\$:	TYPE	67\$	::TYPE ASCII STRING
6700	047252	104401	047260			BR	66\$	::GET OVER THE ASCII
6701	047256	000420			::67\$:	.ASCIIZ	<15><12>/ADDRESS THAT CAUSED TRAP WAS /	
6702					66\$:	MOV	(SP)+,RBUF	::GET PC+2
6703	047320					SUB	#TWO,RBUF	::CORECT PC
6704	047320	012637	004100	004100		MOV	RBUF,-(SP)	::SAVE RBUF FOR TYPEOUT
6705	047324	162737	000002			TYPOC		::GO TYPE--OCTAL ASCII(ALL DIGITS)
6706	047332	013746	004100			TYPE	69\$	::TYPE ASCII STRING
6707	047336	104402				BR	68\$	::GET OVER THE ASCII
6708	047340	104401	047346		::69\$:	.ASCIIZ	<15><12>/PSW WAS /	
6709	047344	000406			68\$:	MOV	(SP)+,RBUF	::GET OLD PSW
6710						MOV	RBUF,-(SP)	::SAVE RBUF FOR TYPEOUT
6711	047362					TYPOC		::GO TYPE--OCTAL ASCII(ALL DIGITS)
6712	047362	012637	004100			TST	R1	::ARE WE ON AN 11/70
6713	047366	013746	004100			BMI	TRAPED	::NO, ITS A 11/05-11/45
6714	047372	104402				TYPE	71\$	::TYPE ASCII STRING
6715	047374	005701				BR	70\$	::GET OVER THE ASCII
6716	047376	00507			::71\$:	.ASCIIZ	<15><12>/HIGH ERROR ADDRESS REG. = /	
6717	047400	104401	047406		70\$:	MOV	HERADD,RBUF	
6718	047404	000417				MOV	RBUF,-(SP)	::SAVE RBUF FOR TYPEOUT
6719						TYPOC		::GO TYPE--OCTAL ASCII(ALL DIGITS)
6720	047444					TYPE	73\$	::TYPE ASCII STRING
6721	047444	013737	177742	004100		BR	72\$	::GET OVER THE ASCII
6722	047452	013746	004100		::73\$:	.ASCIIZ	<15><12>/LOW ERROR ADDRESS REG. = /	
6723	047456	104402			72\$:	MOV	LERADD,RBUF	
6724	047460	104401	047466			MOV	RBUF,-(SP)	::SAVE RBUF FOR TYPEOUT
6725	047464	000416				TYPOC		::GO TYPE--OCTAL ASCII(ALL DIGITS)
6726						TYPE	75\$	::TYPE ASCII STRING
6727	047522					BR	74\$	::GET OVER THE ASCII
6728	047522	013737	177740	004100	::75\$:	.ASCIIZ	<15><12>/MEMORY SYSTEM ERROR REG. = /	
6729	047530	013746	004100		74\$:	MOV	MEMERR,RBUF	
6730	047534	104402				MOV	RBUF,-(SP)	::SAVE RBUF FOR TYPEOUT
6731	047536	104401	047544			TYPOC		::GO TYPE--OCTAL ASCII(ALL DIGITS)
6732	047542	000417				TYPE	77\$	::TYPE ASCII STRING
6733						BR	76\$	::GET OVER THE ASCII
6734	047602				::77\$:	.ASCIIZ	<15><12>/MEMORY SYSTEM ERROR REG. = /	
6735	047602	013737	177744	004100	76\$:	MOV	MEMERR,RBUF	
6736	047610	013746	004100			MOV	RBUF,-(SP)	::SAVE RBUF FOR TYPEOUT
6737	047614	104402				TYPOC		::GO TYPE--OCTAL ASCII(ALL DIGITS)
6738	047616	013716	001106		TRAPED:	MOV	\$LPADR,(SP)	::FAKE RETURN
6739	047622	000002				RTI		::RETURN WHERE LEFT OFF
6740								
6741					::*****			
6742						:THIS IS THE DUAL PORT ROUTINE		
6743					::*****			
6744	047624	012777	002161	133476	DUPORT:	MOV	#WRITE0!PSEL.IE,@RHCS1	
6745	047632	005037	003446			CLR	BITCNT	::CLEAR BIT COUNTER
6746	047636	032777	000200	133464	18\$:	BIT	#RDY,@RHCS1	::IS RDY SET
6747	047644	001015				BNE	BULL	::BIT IS SET
6748	047646	005237	003446			INC	BITCNT	::COUNT UP
6749	047652	001371				BNE	18\$	::NOT FINISHED COUNTING
6750	047654	005037	003446			CLR	BITCNT	::GET READY TO DO IT AGAIN
6751	047660	032777	000200	133442	19\$:	BIT	#RDY,@RHCS1	::IS IT SET YET?
6752	047666	001004				BNE	BULL	::YES
6753	047670	005237	003446			INC	BITCNT	::COUNT UP
6754	047674	001401				BEQ	BULL	::BIT IS NOT GOING TO SET

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

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

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6811 050172 104401 001223
6812 050176 104401
6813 050200 000000
6814 050202 004737 074130
6815 050206 000207

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

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

6822 050210 105737 001103
6823 050214 001446
6824 050216 032737 020000 177570
6825 050224 001042
6826 050226 013737 001102 003454
6827 050234 105037 003455
6828 050240 104401 050246
6829 050244 000406

ERRTST: TSTB SERFLG ;WAS THERE AN ERROR FOUND
BEQ OUTOF ;NO ,GO TO NEXT TEST
BIT #SW13, @177570 ;INHIBIT TYPEOUT ?
BNE OUTOF ;YES
MOV \$TSTNM, TSTNM ;GET TEST NO.
CLRB TSTNM+1 ;CLEAR UPPER BYTE
TYPE ,65\$;:TYPE ASCII STRING
BR 64\$;:GET OVER THE ASCII
;;65\$: .ASCIIZ <15><12>/****TEST /
64\$:

6831 050262
6832 050262 013746 003454
6833 050266 104402
6834 050270 104401 050276
6835 050274 000416

MOV TSTNM, -(SP) ;:SAVE TSTNM FOR TYPEOUT
TYPOC ;:GO TYPE--OCTAL ASCII(ALL DIGITS)
TYPE ,67\$;:TYPE ASCII STRING
BR 66\$;:GET OVER THE ASCII
;;67\$: .ASCIIZ / ERROR MESSAGE(S) ****/<15><12><12><12>
66\$:

6836
6837 050332
6838 050332 000207
6839

OUTOF: RTS R7

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

6845 050334 012716 044636
6846 050340 000002

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

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

```

*****
;;HEADER MESSAGES FOR ERROR PRINT OUTS
*****
HED1:  .ASCIZ/RH ADDRESS DECODE TEST (TEST 1)/

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

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

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

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

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

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

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

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

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

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END OF PASS ROUTINE

SEQ 0132

6903	050760	020124	031061	000051	
6904	050766	044122	040502	020105	HED13: .ASCIZ/RHBAE BIT TEST (TEST 13)/
6905	050774	044502	020124	042524	
6906	051002	052123	024040	042524	
6907	051010	052123	030440	024463	
6908	051016	000			
6909	051017	122	041110	020101	HED14: .ASCIZ/RHBA BIT TEST (TEST 14)/
6910	051024	044502	020124	042524	
6911	051032	052123	024040	042524	
6912	051040	052123	030440	024464	
6913	051046	000			
6914	051047	122	042110	020102	HED15: .ASCIZ/RHDB BIT TEST (TEST 15)/
6915	051054	044502	020124	042524	
6916	051062	052123	024040	042524	
6917	051070	052123	030440	024465	
6918	051076	000			
6919	051077	122	053510	020103	HED16: .ASCIZ/RHWC OPERATIONAL TEST (TEST 16)/
6920	051104	050117	051105	052101	
6921	051112	047511	040516	020114	
6922	051120	042524	052123	024040	
6923	051126	042524	052123	030440	
6924	051134	024466	000		
6925	051137	122	041110	020101	HED17: .ASCIZ/RHBA OPERATIONAL TEST (TEST 17)/
6926	051144	050117	051105	052101	
6927	051152	047511	040516	020114	
6928	051160	042524	052123	024040	
6929	051166	042524	052123	030440	
6930	051174	024467	000		
6931	051177	116	046505	052054	HED20: .ASCIZ/NEM,TRE AND SC BIT TEST (TEST 20)/
6932	051204	042522	040440	042116	
6933	051212	051440	020103	044502	
6934	051220	020124	042524	052123	
6935	051226	024040	042524	052123	
6936	051234	031040	024460	000	
6937	051241	127	042503	052054	HED21: .ASCIZ/WCE,TRE AND SC BIT TEST (TEST 21)/
6938	051246	042522	040440	042116	
6939	051254	051440	020103	044502	
6940	051262	020124	042524	052123	
6941	051270	024040	042524	052123	
6942	051276	031040	024461	000	
6943	051303	115	050104	026105	HED22: .ASCIZ/MDPE,TRE AND SC BIT TEST (TEST 22)/
6944	051310	051124	020105	047101	
6945	051316	020104	041523	041040	
6946	051324	052111	052040	051505	
6947	051332	020124	052050	051505	
6948	051340	020124	031062	000051	
6949	051346	050125	026105	051124	HED23: .ASCIZ/UPE,TRE AND SC BIT TEST (TEST 23) RH11 ONLY/
6950	051354	020105	047101	020104	
6951	051362	041523	041040	052111	
6952	051370	052040	051505	020124	
6953	051376	052050	051505	020124	
6954	051404	031462	020051	044122	
6955	051412	030461	047440	046116	
6956	051420	000131			
6957	051422	050125	026105	051124	HED24: .ASCIZ/UPE,TRE AND SC BIT TEST (TEST 24)/
6958	051430	020105	047101	020104	

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

HED53: .ASCIZ/WCE EW ERROR TEST 'WCELO' (TEST 53)/

HED54: .ASCIZ/WCE OW ERROR TEST 'WCEHI' (TEST 54)/

HED55: .ASCIZ/INTERUPT ENABLE TEST (TEST 55)/

HED56: .ASCIZ/READ OPERATIONAL TEST (NORMAL #1) (TEST 56)/

HED57: .ASCIZ/RH OPERATIONAL WRITE TEST #1 (TEST 57)/

HED60: .ASCIZ/READ OPERATIONAL TEST (NORMAL #2) (TEST 60)/

HED61: .ASCIZ/RH OPERATIONAL READ TEST #1 (TEST 61)/

HED62: .ASCIZ/READ OPERATIONAL TEST (NORMAL #3) (TEST 62)/

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

HED63: .ASCIZ/RH OPERATIONAL WRITE TEST #2 (TEST 53)/

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

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

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

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

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

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

7239	054512	042524	052123	033440
7240	054520	024461	000	
7241	054523	127	044522	042524
7242	054530	047440	042520	040522
7243	054536	044524	047117	046101
7244	054544	052040	051505	020124
7245	054552	047050	051117	040515
7246	054560	020114	031443	024051
7247	054566	042524	052123	033440
7248	054574	024462	000	
7249	054577	122	020110	050117
7250	054604	051105	052101	047511
7251	054612	040516	020114	051127
7252	054620	052111	020105	042524
7253	054626	052123	021440	020064
7254	054634	052050	051505	020124
7255	054642	031467	000051	
7256	054646	051127	052111	020105
7257	054654	050117	051105	052101
7258	054662	047511	040516	020114
7259	054670	042524	052123	024040
7260	054676	047516	046522	046101
7261	054704	021440	024464	052050
7262	054712	051505	020124	032067
7263	054720	000051		
7264	054722	044122	047440	042520
7265	054730	040522	044524	047117
7266	054736	046101	051040	040505
7267	054744	020104	042524	052123
7268	054752	021440	020064	052050
7269	054760	051505	020124	032467
7270	054766	000051		
7271	054770	040514	043522	020105
7272	054776	051124	047101	043123
7273	055004	051105	052040	051505
7274	055012	020124	033466	020067
7275	055020	047527	042122	020123
7276	055026	052050	051505	020124
7277	055034	033067	000051	

HED72: .ASCIZ/WRITE OPERATIONAL TEST (NORMAL #3)(TEST 72)/

HED73: .ASCIZ/RH OPERATIONAL WRITE TEST #4 (TEST 73)/

HED74: .ASCIZ/WRITE OPERATIONAL TEST (NORMAL #4)(TEST 74)/

HED75: .ASCIZ/RH OPERATIONAL READ TEST #4 (TEST 75)/

HED76: .ASCIZ/LARGE TRANSFER TEST 671 WORDS (TEST 76)/

7278

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7280

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7284 055040 047503 051122 041505

7285 055046 020124 044502 020124

7286 055054 044504 020104 047516

7287 055062 020124 042523 020124

7288 055070 047111 051040 053510

7289 055076 000103

7290 055100 047503 051122 041505

7291 055106 020124 044502 020124

7292 055114 044504 020104 047516

7293 055122 020124 042523 020124

7294 055130 047111 051040 041110

7295 055136 000101

7296 055140 047503 051122 041505

7297 055146 020124 044502 020124

7298 055154 044504 020104 047516

7299 055162 020124 042523 020124

7300 055170 047111 041040 051525

7301 055176 040440 042104 042522

7302 055204 051523 051040 043505

7303 055212 000056

7304 055214 047503 051122 041505

7305 055222 020124 044502 020124

7306 055230 044504 020104 047516

7307 055236 020124 042523 020124

7308 055244 047111 051040 042110

7309 055252 000102

7310 055254 047516 026516 054105

7311 055262 051511 040524 052116

7312 055270 046440 046505 051117

7313 055276 020131 044504 020104

7314 055304 047516 020124 042523

7315 055312 020124 047111 051040

7316 055320 041510 031123 000

7317 055325 040 047514 044507

7318 055332 020103 047524 051440

7319 055340 052105 052040 042522

7320 055346 041040 052111 044440

7321 055354 020116 044122 051503

7322 055362 020061 042522 044507

7323 055370 052123 051105 005015

7324 055376 051511 047040 052117

7325 055404 053440 051117 044513

7326 055412 043516 043454 020117

7327 055420 047524 024040 051503

7328 055426 041122 020051 051120

7329 055434 047111 051524 044440

7330 055442 020106 044122 030461

7331 055450 005015

7332 055452 051117 024040 051503

7333 055460 041124 020051 051120

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:ERROR MESSAGES

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.EVEN

EM1: .ASCIZ/CORRECT BIT DID NOT SET IN RHWC/

EM2: .ASCIZ/CORRECT BIT DID NOT SET IN RHBA/

EM3: .ASCIZ/CORRECT BIT DID NOT SET IN BUS ADDRESS REG./

EM4: .ASCIZ/CORRECT BIT DID NOT SET IN RHDB/

EM5: .ASCIZ/NON-EXISTANT MEMORY DID NOT SET IN RHCS2/

EM6: .ASCII/ LOGIC TO SET TRE BIT IN RHCS1 REGISTER/<15><12>

.ASCII/IS NOT WORKING,GO TO (CSRB) PRINTS IF RH11/<15><12>

.ASCIZ/OR (CSTB) PRINTS IF RH70 IN LOCATION B7 ON BOTH PRINTS/

7334	055466	047111	051524	044440
7335	055474	020106	044122	030067
7336	055502	044440	020116	047514
7337	055510	040503	044524	047117
7338	055516	041040	020067	047117
7339	055524	041040	052117	020110
7340	055532	051120	047111	051524
7341	055540	000		
7342	055541	116	046505	041040
7343	055546	052111	042040	042517
7344	055554	020123	047516	020124
7345	055562	042522	042101	040440
7346	055570	020123	042523	020124
7347	055576	047111	051040	041510
7348	055604	031123	000	
7349	055607	116	046505	040440
7350	055614	042116	051440	020103
7351	055622	047516	020124	042523
7352	055630	020124	047111	051040
7353	055636	041510	030523	000
7354	055643	123	020103	044502
7355	055650	020124	042523	020124
7356	055656	054502	040440	052124
7357	055664	020116	051117	046440
7358	055672	050103	020105	051105
7359	055700	047522	000122	
7360	055704	051440	020103	044504
7361	055712	020104	047516	020124
7362	055720	042523	000124	
7363	055724	051124	020105	044502
7364	055732	020124	051511	051440
7365	055740	052105	041040	052125
7366	055746	051440	020103	042522
7367	055754	042101	020123	051501
7368	055762	041440	042514	051101
7369	055770	042105	000	
7370	055773	127	042503	041040
7371	056000	052111	042040	042111
7372	056006	047040	052117	051440
7373	056014	052105	000	
7374	056017	127	042503	041040
7375	056024	052111	042040	042111
7376	056032	047040	052117	051440
7377	056040	052105	000	
7378	056043	124	042522	041040
7379	056050	052111	047040	052117
7380	056056	051440	052105	000
7381	056063	127	042503	040440
7382	056070	042116	052040	042522
7383	056074	040440	042522	051440
7384	056104	052105	041040	052125
7385	056112	051440	020103	044502
7386	056120	020124	047516	020124
7387	056126	042523	000124	
7388	056132	050125	020105	044504
7389	056140	020104	047516	020124

EM7: .ASCIZ/NEM BIT DOES NOT READ AS SET IN RHCS2/

EM10: .ASCIZ/NEM AND SC NOT SET IN RHCS1/

EM11: .ASCIZ/SC BIT SET BY ATTN OR MCPE ERROR/

EM12: .ASCIZ/ SC DID NOT SET/

EM13: .ASCIZ/TRE BIT IS SET BUT SC READS AS CLEARED/

EM14: .ASCIZ/WCE BIT DID NOT SET/

EM15: .ASCIZ/WCE BIT DID NOT SET/

EM16: .ASCIZ/TRE BIT NOT SET/

EM17: .ASCIZ/WCE AND TRE ARE SET BUT SC BIT NOT SET/

EM20: .ASCIZ/JPE DID NOT SET IN RHCS2/

7390	056146	042523	020124	047111	
7391	056154	051040	041510	031123	
7392	056162	000			
7393	056163	124	042522	040440	EM21: .ASCII/TRE AND SC BITS ARE SET/
7394	056170	042116	051440	020103	
7395	056176	044502	051524	040440	
7396	056204	042522	051440	052105	
7397	056212	050125	020105	047101	EM22: .ASCIIZ/UPE AND SC BIT DID NOT SET/
7398	056220	020104	041523	041040	
7399	056226	052111	042040	042111	
7400	056234	047040	052117	051440	
7401	056242	052105	000		
7402	056245	123	020103	044502	EM23: .ASCIIZ/SC BIT, NOT SET/
7403	056252	020124	047516	020124	
7404	056260	042523	000124		
7405	056264	042516	020104	044504	EM24: .ASCIIZ/NED DID NOT SET IN RHCS2/
7406	056272	020104	047516	020124	
7407	056300	042523	020124	047111	
7408	056306	051040	041510	031123	
7409	056314	000			
7410	056315	124	042522	040440	EM25: .ASCIIZ/TRE AND SC SHOULD NOT SET/
7411	056322	042116	051440	020103	
7412	056330	044123	052517	042114	
7413	056336	047040	052117	051440	
7414	056344	052105	000		
7415	056347	124	042522	051440	EM26: .ASCII7/TRE SHOULD NOT BE SET/
7416	056354	047510	046125	020104	
7417	056362	047516	020124	042502	
7418	056370	051440	052105	000	
7419	056375	124	042522	041040	EM27: .ASCIIZ/TRE BIT WAS NOT SET BY NED/
7420	056402	052111	053440	051501	
7421	056410	047040	052117	051440	
7422	056416	052105	041040	020131	
7423	056424	042516	000104		
7424	056430	054115	020106	044502	EM30: .ASCIIZ/MXF BIT DID NOT SET IN RHCS2/
7425	056436	020124	044504	020104	
7426	056444	047516	020124	042523	
7427	056452	020124	047111	051040	
7428	056460	041510	031123	000	
7429	056465	115	043130	041040	EM31: .ASCIIZ/MXF BIT SHOULD BE SET IN RHCS2/
7430	056472	052111	051440	047510	
7431	056500	046125	020104	042502	
7432	056506	051440	052105	044440	
7433	056514	020116	044122	051503	
7434	056522	000062			
7435	056524	054115	020106	047101	EM32: .ASCIIZ/MXF AND SC ARE NOT SET/
7436	056532	020104	041523	040440	
7437	056540	042522	047040	052117	
7438	056546	051440	052105	000	
7439	056553	124	042522	051040	EM33: .ASCIIZ/TRE READS AS CLEARED, MXF AND SC ARE SET/
7440	056560	040505	051504	040440	
7441	056566	020123	046103	040505	
7442	056574	042522	026104	054115	
7443	056602	020106	047101	020104	
7444	056610	041523	040440	042522	
7445	056616	051440	052105	000	

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

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

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

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

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

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

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

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

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

7502	057314	041527	024040	033461
7503	057322	033467	033467	000051
7504	057330	044122	041527	042040
7505	057336	042111	047040	052117
7506	057344	046040	040517	020104
7507	057352	047101	020131	044502
7508	057360	051524	024040	033461
7509	057366	033467	033467	000051
7510	057374	047523	042515	041040
7511	057402	052111	020123	046103
7512	057410	040505	042522	020104
7513	057416	047111	051040	053510
7514	057424	020103	043101	042524
7515	057432	020122	046103	020122
7516	057440	040527	020123	047514
7517	057446	042101	042105	044440
7518	057454	052116	020117	044122
7519	057462	051503	000062	
7520	057466	047516	026516	054105
7521	057474	051511	040524	052116
7522	057502	046440	046505	051117
7523	057510	020131	044502	020124
7524	057516	042523	020124	047111
7525	057524	051040	041510	031123
7526	057532	024040	042516	024515
7527	057540	000		
7528	057541	122	041110	020101
7529	057546	044504	020104	047516
7530	057554	020124	046103	020122
7531	057562	043101	042524	020122
7532	057570	046103	020122	040527
7533	057576	020123	047514	042101
7534	057604	042105	044440	052116
7535	057612	020117	044122	051503
7536	057620	000062		
7537	057622	046101	020114	044502
7538	057630	051524	042040	042111
7539	057636	047040	052117	046040
7540	057644	040517	020104	047111
7541	057652	047524	051040	041110
7542	057660	020101	030450	033467
7543	057666	033467	024466	000
7544	057673	114	040517	044504
7545	057700	043516	052040	042522
7546	057706	040440	052106	051105
7547	057714	044440	051524	051440
7548	057722	052105	042040	042517
7549	057730	020123	047516	020124
7550	057736	046103	040505	020122
7551	057744	051105	047522	000122
7552	057752	043520	020105	044504
7553	057760	020104	047516	020124
7554	057766	042523	020124	047111
7555	057774	051040	041510	031123
7556	060002	000		
7557	060003	124	042510	050040

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

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

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

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

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

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

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

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

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

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

.ASCIZ/FOR SAYS INFO IS PRESENT/

EM53: .ASCIZ/RHCS1/
EM54: .ASCIZ/RHWC/
EM55: .ASCIZ/RHBA/
EM56: .ASCIZ/RHMR2/
EM57: .ASCIZ/RHCS2/
EM60: .ASCIZ/RHST/
EM61: .ASCIZ/RHER/
EM62: .ASCIZ/RHAS/
EM63: .ASCIZ/RHTDB/

EM64: .ASCIZ/RHDS/
EM65: .ASCIZ/RHMR1/
EM66: .ASCIZ/RHDT/
EM67: .ASCIZ/RHBAE/

EM70: .ASCIZ/RHCS3/

EM71: .ASCIZ/DEVICE NUMBER IN RHMR2 DOES NOT EQUAL A 7AFTER A CLEAR/

EM72: .ASCIZ/RHCS1 HAS AN ERROR BIT SET/<15><12>

EM73: .ASCIZ/ERROR BIT SET IN RHCS2/

EM74: .ASCIZ/ERROR BIT SET IN RHER/

7614	060454	044502	020124	042523
7615	060462	020124	047111	051040
7616	060470	042510	000122	
7617	060474	051105	047522	020122
7618	060502	044502	020124	042523
7619	060510	020124	047111	051040
7620	060516	051510	006524	000012
7621	060524	044122	040502	044440
7622	060532	041516	042522	042515
7623	060540	052116	042105	041040
7624	060546	052125	044440	020124
7625	060554	044504	020104	047516
7626	060562	020124	040503	051122
7627	060570	020131	053117	051105
7628	060576	052040	020117	044122
7629	060604	040502	026105	044122
7630	060612	040502	020105	044123
7631	060620	052517	042114	036440
7632	060626	030064	000	
7633	060631	122	054504	042040
7634	060636	042111	047040	052117
7635	060644	051440	052105	040454
7636	060652	042116	053440	051117
7637	060660	020104	047503	047125
7638	060666	020124	044504	020104
7639	060674	047516	020124	047111
7640	060702	051103	046505	047105
7641	060710	006524	012	
7642	060713	104	044517	043516
7643	060720	040440	053440	044522
7644	060726	042524	047440	042520
7645	060734	040522	044524	047117
7646	060742	000		
7647	060743	122	041110	042501
7648	060750	042040	042111	047040
7649	060756	052117	041440	042514
7650	060764	051101	040440	052106
7651	060772	051105	041440	051114
7652	061000	053440	051501	046040
7653	061006	040517	042504	006504
7654	061014	012		
7655	061015	111	052116	020117
7656	061022	044122	051503	000062
7657	061030	051127	052111	020105
7658	061036	042522	042526	051522
7659	061044	020105	050117	051105
7660	061052	052101	047511	020116
7661	061060	044504	020104	047516
7662	061066	020124	047527	045522
7663	061074	000		
7664				
7665	061075	122	054504	042040
7666	061102	042111	047040	052117
7667	061110	051440	052105	044440
7668	061116	020116	044122	051503
7669	061124	000061		

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

EM76: .ASCIIZ/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>

.ASCIIZ/DOING A WRITE OPERATION/

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

.ASCIIZ/INTO RHCS2/

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

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

7670	061126	052504	044522	043516
7671	061134	040440	053440	044522
7672	061142	042524	047440	042520
7673	061150	040522	044524	047117
7674	061156	051040	054504	042040
7675	061164	042111	047040	052117
7676	061172	051440	052105	005015
7677	061200	047527	042122	041440
7678	061206	052517	052116	042040
7679	061214	042111	047040	052117
7680	061222	044440	041516	042522
7681	061230	042515	052116	041054
7682	061236	052125	044440	043116
7683	061244	051117	040515	044524
7684	061252	047117	005015	
7685	061256	040527	020123	051127
7686	061264	052111	042524	020116
7687	061272	047524	052040	051505
7688	061300	042524	000122	
7689	061304	052504	044522	043516
7690	061312	040440	053440	044522
7691	061320	042524	047440	042520
7692	061326	040522	044524	047117
7693	061334	051040	054504	042040
7694	061342	042111	047040	052117
7695	061350	051440	052105	005015
7696	061356	047527	042122	041440
7697	061364	052517	052116	042040
7698	061372	042111	047040	052117
7699	061400	044440	041516	042522
7700	061406	042515	052116	040454
7701	061414	042116	044440	043116
7702	061422	051117	040515	044524
7703	061430	047117	005015	
7704	061434	040527	020123	047516
7705	061442	020124	051124	047101
7706	061450	043123	051105	042105
7707	061456	052040	020117	044124
7708	061464	020105	042524	052123
7709	061472	051105	000	
7710	061475	102	042501	044440
7711	061502	020123	042515	051523
7712	061510	042105	052440	026120
7713	061516	052111	051440	047510
7714	061524	046125	020104	050505
7715	061532	040525	020114	030064
7716	061540	000054		
7717	061542	040502	020105	044504
7718	061550	020104	047516	020124
7719	061556	047111	051103	046505
7720	061564	047105	000124	
7721	061570	042522	042101	051040
7722	061576	053105	047440	042520
7723	061604	040522	044524	047117
7724	061612	042040	042111	047040
7725	061620	052117	051040	040505

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

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

.ASCIZ/WAS WRITTEN TO TESTER/

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

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

.ASCIZ/WAS NOT TRANSFERED TO THE TESTER/

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

EM106: .ASCIZ/BAE DID NOT INCREMENT/

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

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

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

.ASCIIZ/AFTER A ONE WORD WRITE/

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

EM112: .ASCIIZ/BA DID NOT INCREMENT/

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

.ASCIIZ/A16 AND A17 IN RHCS1/

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

.ASCIIZ/LOADED INTO RHCS2/

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

7782	062322	042507	046040	041517	
7783	062330	020056	051050	052502	
7784	062336	024506	042040	051125	
7785	062344	047111	020107	020101	
7786	062352	042522	042101	051040	
7787	062360	053105	020056	050117	
7788	062366	051105	052101	047511	
7789	062374	000116			
7790	062376	042115	042520	042040	EM116: .ASCIZ/MDPE DID NOT SET IN RHCS2/
7791	062404	042111	047040	052117	
7792	062412	051440	052105	044440	
7793	062420	020116	044122	051503	
7794	062426	000062			
7795	062430	047111	047506	042040	EM117: .ASCII/INFO DID NOT WRITE TO TESTER DOING A/<15><12>
7796	062436	042111	047040	052117	
7797	062444	053440	044522	042524	
7798	062452	052040	020117	042524	
7799	062460	052123	051105	042040	
7800	062466	044517	043516	040440	
7801	062474	005015			
7802	062476	051127	052111	020105	.ASCIZ/WRITE REVERSE OPERATION/
7803	062504	042522	042526	051522	
7804	062512	020105	050117	051105	
7805	062520	052101	047511	000116	
7806	062526	051124	020105	047101	EM120: .ASCIZ/TRE AND SC WHERE NOT SET BY MDPE/
7807	062534	020104	041523	053440	
7808	062542	042510	042522	047040	
7809	062550	052117	051440	052105	
7810	062556	041040	020131	042115	
7811	062564	042520	000		
7812	062567	124	042522	044440	EM121: .ASCIZ/TRE IS SET IN RHCS1,MDPE AND SC/
7813	062574	020123	042523	020124	
7814	062602	047111	051040	041510	
7815	062610	030523	046454	050104	
7816	062616	020105	047101	020104	
7817	062624	041523	000		
7818	062627	123	047510	046125	.ASCIZ/SHOULD ALSO BE SET/
7819	062634	020104	046101	047523	
7820	062642	041040	020105	042523	
7821	062650	000124			
7822	062652	042115	042520	040440	EM122: .ASCIZ/MDPE AND SC SHOULD BE SET/
7823	062660	042116	051440	020103	
7824	062666	044123	052517	042114	
7825	062674	041040	020105	042523	
7826	062702	000124			
7827	062704	051124	020105	047101	EM123: .ASCIZ/TRE AND SC ARE SET, PGE SHOULD ALSO BE SET/
7828	062712	020104	041523	040440	
7829	062720	042522	051440	052105	
7830	062726	020054	043520	020105	
7831	062734	044123	052517	042114	
7832	062742	040440	051514	020117	
7833	062750	042502	051440	052105	
7834	062756	000			
7835	062757	104	046102	042040	EM124: .ASCII/DBL DID NOT SET AFTER A 4 WORD WRITE FROM/<15><12>
7836	062764	042111	047040	052117	
7837	062772	051440	052105	040440	

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

.ASCIZ/AN EVEN ADDRESS/

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

.ASCIZ/AN EVEN ADDRESS/

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

.ASCIZ/AN EVEN ADDRESS/

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

.ASCIZ/FROM AN EVEN ADDRESS/

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

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

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

7894	063462	042111	047040	052117
7895	063470	051440	052105	000
7896	063475	127	042503	046040
7897	063502	020117	044123	052517
7898	063510	042114	047440	046116
7899	063516	020131	042502	051440
7900	063524	052105	044440	020116
7901	063532	044122	051503	020063
7902	063540	052502	006524	012
7903	063545	127	042503	044040
7904	063552	020111	046101	047523
7905	063560	051040	040505	051504
7906	063566	040440	020123	042523
7907	063574	000124		
7908	063576	041527	020105	047514
7909	063604	051440	052105	044440
7910	063612	020116	044122	051503
7911	063620	020063	052502	020124
7912	063626	041527	020105	044504
7913	063634	020104	047516	020124
7914	063642	042523	020124	047111
7915	063650	051040	041510	031123
7916	063656	000		
7917	063657	127	042503	044040
7918	063664	020111	044504	020104
7919	063672	047516	020124	042523
7920	063700	020124	047111	051040
7921	063706	041510	031523	000
7922	063713	127	042503	044040
7923	063720	020111	042523	020124
7924	063726	047111	051040	041510
7925	063734	031523	041040	052125
7926	063742	053440	042503	042040
7927	063750	042111	047040	052117
7928	063756	051440	052105	044440
7929	063764	020116	044122	051503
7930	063772	000062		
7931	063774	041527	020105	044510
7932	064002	051440	047510	046125
7933	064010	020104	047117	054514
7934	064016	041040	020105	042523
7935	064024	020124	047111	051040
7936	064032	041510	031523	041040
7937	064040	052125	005015	
7938	064044	041527	020105	047514
7939	064052	040440	051514	020117
7940	064060	042522	042101	020123
7941	064066	051501	051440	052105
7942	064074	000		
7943	064075	127	044522	042524
7944	064102	047440	042520	040522
7945	064110	044524	047117	042040
7946	064116	042111	047040	052117
7947	064124	044440	041516	042522
7948	064132	042515	052116	053440
7949	064140	051117	020104	047503

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

.ASCIZ/WCE HI ALSO READS AS SET/

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

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

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

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

.ASCIZ/WCE LO ALSO READS AS SET/

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

7950	064146	047125	000124	
7951	064152	052502	020123	042101
7952	064160	051104	051505	020123
7953	064166	044504	020104	047516
7954	064174	020124	047111	051103
7955	064202	046505	047105	020124
7956	064210	043101	042524	020122
7957	064216	020101	051127	052111
7958	064224	000105		
7959	064226	047111	047506	046522
7960	064234	052101	047511	020116
7961	064242	044504	020104	047516
7962	064250	020124	042507	020124
7963	064256	051127	052111	042524
7964	064264	020116	047524	052040
7965	064272	051505	042524	000122
7966	064300	042522	042101	047440
7967	064306	042520	040522	044524
7968	064314	047117	042040	042111
7969	064322	047040	052117	044440
7970	064330	041516	042522	042515
7971	064336	052116	053440	051117
7972	064344	020104	047503	047125
7973	064352	000124		
7974	064354	052502	020123	042101
7975	064362	051104	051505	020123
7976	064370	044504	020104	047516
7977	064376	020124	047111	051103
7978	064404	046505	047105	020124
7979	064412	043101	042524	020122
7980	064420	020101	042522	042101
7981	064426	005015		
7982	064430	050117	051105	052101
7983	064436	047511	000116	
7984	064442	047111	047506	046522
7985	064450	052101	047511	020116
7986	064456	044504	020104	047516
7987	064464	020124	042522	042101
7988	064472	043040	047522	020115
7989	064500	042524	052123	051105
7990	064506	000		
7991	064507	124	044510	020123
7992	064514	051511	052040	042510
7993	064522	041440	047117	042524
7994	064530	052116	020123	043117
7995	064536	052040	042510	051040
7996	064544	020110	042522	044507
7997	064552	052123	051105	000123
7998	064560	046101	020114	044502
7999	064566	051524	042040	042111
8000	064574	047040	052117	043440
8001	064602	052105	052040	040522
8002	064610	051516	042506	042522
8003	064616	020104	052504	044522
8004	064624	043516	040440	005015
8005	064632	042522	042101	047440

EM141: .ASCIZ/BUS ADDRESS DID NOT INCREMENT AFTER A WRITE/

EM142: .ASCIZ/INFORMATION DID NOT GET WRITTEN TO TESTER/

EM143: .ASCIZ/READ OPERATION DID NOT INCREMENT WORD COUNT/

EM144: .ASCII/BUS ADDRESS DID NOT INCREMENT AFTER A READ/<15><12>

.ASCIZ/OPERATION/

EM145: .ASCIZ/INFORMATION DID NOT READ FROM TESTER/

EM146: .ASCIZ/THIS IS THE CONTENTS OF THE RH REGISTERS/

EM147: .ASCII/ALL BITS DID NOT GET TRANSFERED DURING A/<15><12>

.ASCIZ/READ OPERATION/

8006	064640	042520	040522	044524
8007	064646	047117	000	
8008	064651	122	040505	020104
8009	064656	050117	051105	052101
8010	064664	047511	020116	044504
8011	064672	020104	047516	020124
8012	064700	042523	046505	052040
8013	064706	020117	047527	045522
8014	064714	047054	020117	005015
8015	064722	047111	047506	046522
8016	064730	052101	047511	020116
8017	064736	040527	020123	051124
8018	064744	047101	043123	051105
8019	064752	042105	052040	020117
8020	064760	052123	051117	043501
8021	064766	020105	047514	027103
8022	064774	051050	052502	024506
8023	065002	000		
8024	065003	101	046114	041040
8025	065010	052111	020123	044127
8026	065016	051105	020105	047516
8027	065024	020124	051124	047101
8028	065032	043123	051105	042105
8029	065040	052040	020117	042524
8030	065046	052123	051105	005015
8031	065054	052504	044522	043516
8032	065062	040440	053440	044522
8033	065070	042524	047440	042520
8034	065076	040522	044524	047117
8035	065104	000		
8036	065105	127	044522	042524
8037	065112	047440	042520	040522
8038	065120	044524	047117	042040
8039	065126	042111	047040	052117
8040	065134	053440	044522	042524
8041	065142	052040	020117	042524
8042	065150	052123	051105	000
8043	065155	104	046102	051440
8044	065162	052105	047440	020116
8045	065170	020101	020062	047527
8046	065176	042122	052040	040522
8047	065204	051516	042506	020122
8048	065212	044527	044124	041040
8049	065220	044501	005015	
8050	065224	042523	020124	047111
8051	065232	051040	041510	031123
8052	065240	000		
8053	065241	104	046102	051440
8054	065246	052105	044440	020116
8055	065254	044122	051503	020063
8056	065262	047117	040440	030440
8057	065270	053440	051117	020104
8058	065276	042522	042101	043040
8059	065304	047522	006515	000012
8060	065312	047101	042440	042526
8061	065320	020116	042101	051104

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

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

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

.ASCIZ/DURING A WRITE OPERATION/

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

EM153: .ASCII/DBL SET ON A 2 WORD TRANSFER WITH BA1/<15><12>

.ASCIZ/SET IN RHCS2/

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

.ASCIZ/AN EVEN ADDRESS/

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

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

.ASCIZ/IN RHCS2/

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

.ASCIZ/FROM AN ODD ADDRESS/

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

.ASCIZ/ADDRESS/

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

.ASCIZ/FROM AN ODD ADDRESS/

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

.ASCIZ/FROM AN ODD ADDRESS/

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

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

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SEQ 0155

8174	066454	020116	053105	047105	
8175	066462	040440	042104	042522	
8176	066470	051523	000		
8177	066473	124	042522	051040	EM171: .ASCIZ/TRE READS AS SET PGE AND SC SHOULD BE SET/
8178	066500	040505	051504	040440	
8179	066506	020123	042523	020124	
8180	066514	043520	020105	047101	
8181	066522	020104	041523	051440	
8182	066530	047510	046125	020104	
8183	066536	042502	051440	052105	
8184	066544	000			
8185	066545	123	020103	044123	EM172: .ASCIZ/SC SHOULD BE SET/
8186	066552	052517	042114	041040	
8187	066560	020105	042523	000124	
8188	066566	042122	020131	047111	EM173: .ASCIZ/RDY IN RHCS1 DID NOT CAUSE AN INTERRUPT WITH IE SET/
8189	066574	051040	041510	030523	
8190	066602	042040	042111	047040	
8191	066610	052117	041440	052501	
8192	066616	042523	040440	020116	
8193	066624	047111	042524	051122	
8194	066632	050125	020124	044527	
8195	066640	044124	044440	020105	
8196	066646	042523	000124		
8197	066652	042511	053440	046111	EM174: .ASCIZ/IE WILL NOT SET IN RHCS1/
8198	066660	020114	047516	020124	
8199	066666	042523	020124	047111	
8200	066674	051040	041510	030523	
8201	066702	000			
8202	066703	111	020105	040510	EM175: .ASCIZ/IE HAS AN OPEN GOING TO THE BUS/
8203	066710	020123	047101	047440	
8204	066716	042520	020116	047507	
8205	066724	047111	020107	047524	
8206	066732	052040	042510	041040	
8207	066740	051525	000		
8208	066743	122	041510	031523	EM176: .ASCIZ/RHCS3 HAS AN ERROR BIT SET/
8209	066750	044040	051501	040440	
8210	066756	020116	051105	047522	
8211	066764	020122	044502	020124	
8212	066772	042523	000124		
8213	066776	046104	020124	047101	EM177: .ASCIZ/DLT AND TRE ARE SET, SC SHOULD BE SET/
8214	067004	020104	051124	020105	
8215	067012	051101	020105	042523	
8216	067020	026124	041523	051440	
8217	067026	047510	046125	020104	
8218	067034	042502	051440	052105	
8219	067042	000			
8220	067043	110	041111	052131	EM200: .ASCIZ/HIBYTE ,LOBYTE GATE FOR RHWC NOT WORKING PROPERLY/
8221	067050	020105	046054	041117	
8222	067056	052131	020105	040507	
8223	067064	042524	043040	051117	
8224	067072	051040	053510	020103	
8225	067100	047516	020124	047527	
8226	067106	045522	047111	020107	
8227	067114	051120	050117	051105	
8228	067122	054514	000		
8229	067125	110	041111	052131	EM201: .ASCIZ/HIBYTE ,LOBYTE GATE FOR RHDB NOT WORKING PROPERLY/

30	067132	020105	046054	041117
8231	067140	052131	020105	040507
8232	067146	042524	043040	051117
8233	067154	051040	042110	020102
8234	067162	047516	020124	047527
8235	067170	045522	047111	020107
8236	067176	051120	050117	051105
8237	067204	054514	000	
8238	067207	110	041111	052131
8239	067214	020105	046054	041117
8240	067222	052131	020105	040507
8241	067230	042524	043040	051117
8242	067236	051040	041110	020101
8243	067244	047516	020124	047527
8244	067252	045522	047111	020107
8245	067260	051120	050117	051105
8246	067266	054514	000	
8247	067271	124	042510	041040
8248	067276	051525	040440	042104
8249	067304	042522	051523	044440
8250	067312	020123	047111	047503
8251	067320	051122	041505	020124
8252	067326	052111	051440	047510
8253	067334	046125	020104	042502
8254	067342	030440	030065	030060
8255	067350	000		
8256	067351	124	051505	042524
8257	067356	020122	040504	040524
8258	067364	041040	043125	042506
8259	067372	020122	047504	051505
8260	067400	047040	052117	041440
8261	067406	047117	040524	047111
8262	067414	052040	042510	041440
8263	067422	051117	042522	052103
8264	067430	044440	043116	000117
8265	067436	044122	042040	042111
8266	067444	047040	052117	044440
8267	067452	052116	051105	050125
8268	067460	020124	047514	045517
8269	067466	040440	020124	051503
8270	067474	020061	047524	051440
8271	067502	042505	044440	020106
8272	067510	042511	044440	020123
8273	067516	042523	000124	
8274	067522	044122	041527	051440
8275	067530	047510	046125	020104
8276	067536	042502	055040	051105
8277	067544	000117		
8278				
8279	067546	051124	047101	043123
8280	067554	051105	053440	051501
8281	067562	042040	047117	020105
8282	067570	047117	050040	051117
8283	067576	020124	000102	
8284	067602	041520	020040	020040
8285	067610	020040	042524	052123

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

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

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

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

EM206: .ASCIZ/RHWC SHOULD BE ZERO/

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

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

8286	067616	020040	020040	044122
8287	067624	041527	020040	020040
8288	067632	047503	052116	047105
8289	067640	051524	051040	053510
8290	067646	006503	012	
8291	067651	040	020040	020040
8292	067656	020040	047040	027117
8293	067664	020040	020040	020040
8294	067672	020040	020040	020040
8295	067700	051440	047510	046125
8296	067706	020104	040510	042526
8297	067714	041040	042505	000116
8298	067722	041520	020040	020040
8299	067730	020040	042524	052123
8300	067736	020040	020040	044122
8301	067744	040502	020105	020040
8302	067752	047503	052116	047105
8303	067760	051524	051040	041110
8304	067766	042501	005015	
8305	067772	020040	020040	020040
8306	070000	020040	047516	020056
8307	070006	020040	020040	020040
8308	070014	020040	020040	020040
8309	070022	044123	052517	042114
8310	070030	044040	053101	020105
8311	070036	042502	047105	000
8312	070043	120	020103	020040
8313	070050	020040	052040	051505
8314	070056	020124	020040	051040
8315	070064	041110	020101	020040
8316	070072	041440	047117	042524
8317	070100	052116	020123	044122
8318	070106	040502	005015	
8319	070112	020040	020040	020040
8320	070120	020040	047516	020056
8321	070126	020040	020040	020040
8322	070134	020040	020040	020040
8323	070142	044123	052517	042114
8324	070150	044040	053101	020105
8325	070156	042502	047105	000
8326	070163	120	020103	020040
8327	070170	020040	052040	051505
8328	070176	020124	020040	051040
8329	070204	042110	020102	020040
8330	070212	041440	047117	042524
8331	070220	052116	020123	044122
8332	070226	041104	005015	
8333	070232	020040	020040	020040
8334	070240	020040	047516	020056
8335	070246	020040	020040	020040
8336	070254	020040	020040	020040
8337	070262	044123	052517	042114
8338	070270	044040	053101	020105
8339	070276	042502	047105	000
8340	070303	120	020103	020040
8341	070310	020040	052040	051505

.ASCIIZ/

NO.

SHOULD HAVE BEEN/

DH2:

.ASCII/PC

TEST

RHBAE

CONTENTS RHBAE/<15><12>

.ASCIIZ/

NO.

SHOULD HAVE BEEN/

DH3:

.ASCII/PC

TEST

RHBA

CONTENTS RHBA/<15><12>

.ASCIIZ/

NO.

SHOULD HAVE BEEN/

DH4:

.ASCII/PC

TEST

RHDB

CONTENTS RHDB/<15><12>

.ASCIIZ/

NO.

SHOULD HAVE BEEN/

DH5:

.ASCII/PC

TEST

RHCS2

TRE AND SC/<15><12>

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

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

8454	071456	047516	020056	053105
8455	071464	047105	042101	020040
8456	071472	044122	042124	000102
8457	071500	041520	020040	020040
8458	071506	052040	051505	020124
8459	071514	047516	020056	044122
8460	071522	051503	020061	020040
8461	071530	044122	051503	020062
8462	071536	020040	044122	041527
8463	071544	000		
8464	071545	120	020103	020040
8465	071552	020040	042524	052123
8466	071560	047040	027117	051040
8467	071566	052502	020106	020040
8468	071574	051040	052110	041104
8469	071602	000		
8470	071603	122	041110	042501
8471	071610	020040	051040	041110
8472	071616	020101	020040	051040
8473	071624	041510	031523	000
8474	071631	120	020103	020040
8475	071636	020040	042524	052123
8476	071644	047040	027117	051040
8477	071652	041510	031523	000
8478	071657	120	020103	020040
8479	071664	020040	052040	051505
8480	071672	020124	020040	042040
8481	071700	053105	041511	020105
8482	071706	051040	041510	031123
8483	071714	005015		
8484	071716	020040	020040	020040
8485	071724	020040	047516	020056
8486	071732	020040	020040	052516
8487	071740	041115	051105	020040
8488	071746	000		
8489		071750		
8490	071750	001116	003454	003444
8491	071756	001162	000000	
8492	071762	001116	003454	003416
8493	071770	001162	000000	
8494	071774	001116	003454	003414
8495	072002	001162	000000	
8496	072006	001116	003454	003426
8497	072014	001162	000000	
8498	072020	001116	003454	003422
8499	072026	001162	000000	
8500	072032	001116	003454	003422
8501	072040	000000		
8502	072042	001116	003454	003434
8503	072050	000000		
8504	072052	001116	000000	
8505	072056	001116	003454	003330
8506	072064	000000		
8507	072066	001116	003454	000000
8508	072074	001116	003454	003416
8509	072102	001162	003412	000000

DH146: .ASCIZ/PC TEST NO. RHCS1 RHCS2 RHWC/

DH147: .ASCIZ/PC TEST NO. RBUF RHTDB/

DH170: .ASCIZ/RHBAE RHBA RHCS3/

DH171: .ASCIZ/PC TEST NO. RHCS3/

DH172: .ASCII/PC TEST DEVICE RHCS2/<15><12>

.ASCIZ/ NO. NUMBER /

.EVEN

DT1: .WORD \$ERRPC,TSTNM,WC,\$REGO,0

DT2: .WORD \$ERRPC,TSTNM,BAE,\$REGO,0

DT3: .WORD \$ERRPC,TSTNM,BA,\$REGO,0

DT4: .WORD \$ERRPC,TSTNM,DB,\$REGO,0

DT5: .WORD \$ERRPC,TSTNM,CS2,\$REGO,0

DT11: .WORD \$ERRPC,TSTNM,CS2,0

DT34: .WORD \$ERRPC,TSTNM,DT,0

DT35: .WORD \$ERRPC,0

DT36: .WORD \$ERRPC,TSTNM,RHCS1,0

DT41: .WORD \$ERRPC,TSTNM,0

DT52: .WORD \$ERRPC,TSTNM,BAE,\$REGO,AS,0

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

MASSBUS RH7C AND RH11 DIAGNOSTIC
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END OF PASS ROUTINE

SEQ 0162

8566
8567 072412 000000
8568 072414 050342
8569 072416 050402
8570 072420 050427
8571 072422 050466
8572 072424 050525
P573 072426 050556
8574 072430 050610
8575 072432 050641
8576 072434 050705
8577 072436 050736
8578 072440 050766
8579 072442 051017
8580 072444 051047
8581 072446 051077
8582 072450 051137
8583 072452 051177
8584 072454 051241
8585 072456 051303
8586 072460 051346
8587 072462 051422
8588 072464 051464
8589 072466 051526
8590 072470 051570
8591 072472 051632
8592 072474 051674
8593 072476 051741
8594 072500 052021
8595 072502 052076
8596 072504 052153
8597 072506 052231
8598 072510 052305
8599 072512 052377
8600 072514 052464
8601 072516 052530
8602 072520 052601
8603 072522 052657
8604 072524 052746
8605 072526 053011
8606 072530 053076
8607 072532 053155
8608 072534 053242
8609 072536 053321
8610 072540 053400
8611 072542 053444
8612 072544 053510
8613 072546 053547
8614 072550 053623
8615 072552 053672
8616 072554 053745
8617 072556 054013
8618 072560 054066
8619 072562 054135
8620 072564 054210
8621 072566 054256

HEADER: 0
HED1
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END OF PASS ROUTINE

SFO 0163

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

HED67
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072610
072610 032777 040000 106322
072616 001111

072620 000416

072622 013746 000004
072626 012737 072646 000004
072634 005737 177060
072640 012637 000004
072644 000463
072646 022626
072650 012637 000004
072654 000423
072656
072656 032777 000400 106254
072664 001404
072666 127737 106246 001102
072674 001462
072676 105737 001103
072702 001421
072704 123737 001115 001103
072712 101015
072714 032777 001000 106216
072722 001404
072724 013737 001110 001106
072732 000443
072734 105037 001103
072740 005037 001212
072744 000415
072746 032777 004000 106164
072754 001011
072756 005737 001100
072762 001406
072764 005237 001104
072770 023737 001212 001104
072776 002021
073000 012737 000001 001104
073006 013737 073056 001212
073014 105237 001102
073020 011637 001106
073024 011637 001110

.SBITL SCOPE HANDLER ROUTINE

```

*****
*THIS ROUTINE CONTROLS THE LOOPING OF SUBTESTS. IT WILL INCREMENT
*AND LOAD THE TEST NUMBER($TSTNM) INTO THE DISPLAY REG.(DISPLAY<7:0>)
*AND LOAD THE ERROR FLAG ($ERFLG) INTO DISPLAY<15:08>
*THE SWITCH OPTIONS PROVIDED BY THIS ROUTINE ARE:
*SW14=1      LOOP ON TEST
*SW11=1      INHIBIT ITERATIONS
*SW09=1      LOOP ON ERROR
*SW08=1      LOOP ON TEST IN SWR<7:0>
*CALL
*          SCOPE          ;;SCOPE=IOT

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

```

```

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

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073236 105737 001157
073242 100002
073244 000000
073246 000407
073250 010046
073252 017600 000002
073256 112046
073260 001005
073262 005726
073264 012600
073266 062716 000002
073272 000002
073274 122716 000011
073300 001430
073302 122716 000200
073306 001006
073310 005726
073312 104401
073314 001223
073316 105037 073452
073322 000755
073324 004737 073406
073330 123726 001156
073334 001350
073336 013746 001154
073342 105366 000001
073346 002770
073350 004737 073406
073354 105337 073452
073360 000770
073362 112716 000040
073366 004737 073406
073372 132737 000007 073452
073400 001372
073402 005726

.SBTTL TYPE ROUTINE

*ROUTINE TO TYPE ASCIZ MESSAGE. MESSAGE MUST TERMINATE WITH A 0 BYTE.
*THE ROUTINE WILL INSERT A NUMBER OF NULL CHARACTERS AFTER A LINE FEED.
*NOTE1: \$NULL CONTAINS THE CHARACTER TO BE USED AS THE FILLER CHARACTER.
*NOTE2: \$FILLS CONTAINS THE NUMBER OF FILLER CHARACTERS REQUIRED.
*NOTE3: \$FILLC CONTAINS THE CHARACTER TO FILL AFTER.
*

*CALL:
*1) USING A TRAP INSTRUCTION
* TYPE ,MESADR ;;MESADR IS FIRST ADDRESS OF AN ASCIZ STRING
*OR
* TYPE
* MESADR
*

\$TYPE: TSTB \$TPFLC ;;IS THERE A TERMINAL?
BPL 1\$;;BR IF YES
HALT ;;HALT HERE IF NO TERMINAL
BR 3\$;;LEAVE
1\$: MOV R0,-(SP) ;;SAVE R0
MOV @2(SP),R0 ;;GET ADDRESS OF ASCIZ STRING
2\$: MOVB (R0)+,-(SP) ;;PUSH CHARACTER TO BE TYPED ONTO STACK
BNE 4\$;;BR IF IT ISN'T THE TERMINATOR
TST (SP)+ ;;IF TERMINATOR POP IT OFF THE STACK
60\$: MOV (SP)+,R0 ;;RESTORE R0
3\$: ADD #2,(SP) ;;ADJUST RETURN PC
RTI ;;RETURN
4\$: CMPB #HT,(SP) ;;BRANCH IF <HT>
BEQ 8\$
CMPB #CRLF,(SP) ;;BRANCH IF NOT <CRLF>
BNE 5\$
TST (SP)+ ;;POP <CR><LF> EQUIV
TYPE ;;TYPE A CR AND LF
\$CRLF
CLRB \$CHARCNT ;;CLEAR CHARACTER COUNT
BR 2\$;;GET NEXT CHARACTER
5\$: JSR PC,\$TYPEC ;;GO TYPE THIS CHARACTER
6\$: CMPB \$FILLC,(SP)+ ;;IS IT TIME FOR FILLER CHARS.?
BNE 2\$;;IF NO GO GET NEXT CHAR.
MOV \$NULL,-(SP) ;;GET # OF FILLER CHARS. NEEDED
AND THE NULL CHAR.
7\$: DECB 1(SP) ;;DOES A NULL NEED TO BE TYPED?
BLT 6\$;;BR IF NO--GO POP THE NULL OFF OF STACK
JSR PC,\$TYPEC ;;GO TYPE A NULL
DECB \$CHARCNT ;;DO NOT COUNT AS A COUNT
BR 7\$;;LOOP

;HORIZONTAL TAB PROCESSOR

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

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TYPE ROUTINE

SEQ 0167

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

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8830 073456 017646 000000
8831 073462 116637 000001 073701
8832 073470 112637 073703
8833 073474 062716 000002
8834 073500 000406
8835 073502 112737 000001 073701
8836 073510 112737 000006 073703
8837 073516 112737 000005 073700
8838 073524 010346
8839 073526 010446
8840 073530 010546
8841 073532 113704 073703
8842 073536 005404
8843 073540 062704 000006
8844 073544 110437 073702
8845 073550 113704 073701
8846 073554 016605 000012
8847 073560 005003
8848 073562 006105
8849 073564 000404
8850 073566 006105
8851 073570 006105
8852 073572 006105
8853 073574 010503
8854 073576 006103
8855 073600 105337 073702
8856 073604 100016
8857 073606 042703 177770
8858 073612 001002
8859 073614 005704
8860 073616 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
        MOVB     1(SP), $OFILL      ;;LOAD ZERO FILL SWITCH
        MOVB     (SP)+, $OMODE+1    ;;NUMBER OF DIGITS TO TYPE
        ADD      #2, (SP)          ;;ADJUST RETURN ADDRESS
        BR       $TYPON
$TYPOC: MOVB     #1, $OFILL      ;;SET THE ZERO FILL SWITCH
        MOVB     #6, $OMODE+1      ;;SET FOR SIX(6) DIGITS
        MOVB     #5, $OCNT         ;;SET THE ITERATION COUNT
        MOV      R3,-(SP)          ;;SAVE R3
        MOV      R4,-(SP)          ;;SAVE R4
        MOV      R5,-(SP)          ;;SAVE R5
        MOVB     $OMODE+1, R4      ;;GET THE NUMBER OF DIGITS TO TYPE
        NEG      R4
        ADD      #6, R4            ;;SUBTRACT IT FOR MAX. ALLOWED
        MOVB     R4, $OMODE        ;;SAVE IT FOR USE
        MOVB     $OFILL, R4        ;;GET THE ZERO FILL SWITCH
        MOV      12(SP), R5        ;;PICKUP THE INPUT NUMBER
        CLR      R3                ;;CLEAR THE OUTPUT WORD
        ROL      R5                ;;ROTATE MSB INTO 'C'
        BR       3$                ;;GO DO MSB
        ROL      R5                ;;FORM THIS DIGIT
        ROL      R5
        ROL      R5
        MOV      R5, R3
        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
1$:
2$:
3$:
4$:
5$:

```

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BINARY TO OCTAL (ASCII) AND TYPE

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SEQ 0169

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

```

8882      .SBTTL  CONVERT BINARY TO DECIMAL AND TYPE ROUTINE
8883
8884      ;*****
8885      ;*THIS ROUTINE IS USED TO CHANGE A 16-BIT BINARY NUMBER TO A 5-DIGIT
8886      ;*SIGNED DECIMAL (ASCII) NUMBER AND TYPE IT.  DEPENDING ON WHETHER THE
8887      ;*NUMBER IS POSITIVE OR NEGATIVE A SPACE OR A MINUS SIGN WILL BE TYPED
8888      ;*BEFORE THE FIRST DIGIT OF THE NUMBER.  LEADING ZEROS WILL ALWAYS BE
8889      ;*REPLACED WITH SPACES.
8890      ;*CALL:
8891      ;*      MOV      NUM,-(SP)      ;;PUT THE BINARY NUMBER ON THE STACK
8892      ;*      TYPDS      ;;GO TO THE ROUTINE
8893
8894      $TYPDS:
8895      MOV      R0,-(SP)      ;;PUSH R0 ON STACK
8896      MOV      R1,-(SP)      ;;PUSH R1 ON STACK
8897      MOV      R2,-(SP)      ;;PUSH R2 ON STACK
8898      MOV      R3,-(SP)      ;;PUSH R3 ON STACK
8899      MOV      R5,-(SP)      ;;PUSH R5 ON STACK
8900      MOV      #20200,-(SP)    ;;SET BLANK SWITCH AND SIGN
8901      MOV      20(SP),R5      ;;GET THE INPUT NUMBER
8902      BPL      1$           ;;BR IF INPUT IS POS.
8903      NEG      R5           ;;MAKE THE BINARY NUMBER POS.
8904      MOVB     #'-,1(SP)      ;;MAKE THE ASCII NUMBER NEG.
8905      CLR      R0           ;;ZERO THE CONSTANTS INDEX
8906      MOV      #5DBLK,R3      ;;SETUP THE OUTPUT POINTER
8907      MOVB     #'',(R3)+      ;;SET THE FIRST CHARACTER TO A BLANK
8908      CLR      R2           ;;CLEAR THE BCD NUMBER
8909      MOV      $DTBL(R0),R1    ;;GET THE CONSTANT
8910      3$:      SUB      R1,R5  ;;FORM THIS BCD DIGIT
8911      BLT      4$           ;;BR IF DONE
8912      INC      R2           ;;INCREASE THE BCD DIGIT BY 1
8913      BR      3$
8914      4$:      ADD      R1,R5  ;;ADD BACK THE CONSTANT
8915      TST      R2           ;;CHECK IF BCD DIGIT=0
8916      BNE      5$           ;;FALL THROUGH IF 0
8917      TSTB     (SP)         ;;STILL DOING LEADING 0'S?
8918      BMI      7$           ;;BR IF YES
8919      ASLB     (SP)         ;;MSD?
8920      BCC      6$           ;;BR IF NO
8921      MOVB     1(SP),-1(R3)   ;;YES--SET THE SIGN
8922      6$:      BIS      #'0,R2  ;;MAKE THE BCD DIGIT ASCII
8923      7$:      BIS      #' ,R2  ;;MAKE IT A SPACE IF NOT ALREADY A DIGIT
8924      MOVB     R2,(R3)+      ;;PUT THIS CHARACTER IN THE OUTPUT BUFFER
8925      TST      (R0)+        ;;JUST INCREMENTING
8926      CMP      R0,#10       ;;CHECK THE TABLE INDEX
8927      BLT      2$           ;;GO DO THE NEXT DIGIT
8928      BGT      8$           ;;GO TO EXIT
8929      MOV      R5,R2        ;;GET THE LSD
8930      BR      6$           ;;GO CHANGE TO ASCII
8931      8$:      TSTB     (SP)+  ;;WAS THE LSD THE FIRST NON-ZERO?
8932      BPL      9$           ;;BR IF NO
8933      MOVB     -1(SP),-2(R3)  ;;YES--SET THE SIGN FOR TYPING
8934      9$:      CLRB     (R3)   ;;SET THE TERMINATOR
8935      MOV      (SP)+,R5      ;;POP STACK INTO R5
8936      MOV      (SP)+,R3      ;;POP STACK INTO R3
8937      MOV      (SP)+,R2      ;;POP STACK INTO R2

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CONVERT BINARY TO DECIMAL AND TYPE ROUTINE

SEQ 0171

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

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

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.SBTTL ERROR MESSAGE TYPEOUT ROUTINE

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;*****
;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.

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```

$ERRTYP:
        TYPE      , $CRLF      ;:'CARRIAGE RETURN' & 'LINE FEED'
        MOV       R0,-(SP)     ;:SAVE R0
        CLR       R0          ;:PICKUP THE ITEM INDEX
        BISB      @#$ITEMB,R0
        BNE       1$          ;:IF ITEM NUMBER IS ZERO, JUST
                                ;:TYPE THE PC OF THE ERROR
                                ;:SAVE $ERRPC FOR TYPEOUT
                                ;:ERROR ADDRESS
                                ;:GO TYPE--OCTAL ASCII(ALL DIGITS)
                                ;:GET OUT
                                ;:ADJUST THE INDEX SO THAT IT WILL
                                ;:WORK FOR THE ERROR TABLE

        MOV       $ERRPC,-(SP)

        TYP0C
        BR        6$
1$:      DEC       R0
        ASL       R0
        ASL       R0
        ASL       R0
        ADD       # $ERRTB,R0 ;:FORM TABLE POINTER
        MOV       (R0)+,2$     ;:PICKUP 'ERROR MESSAGE' POINTER
        BEQ       3$          ;:SKIP TYPEOUT IF NO POINTER
                                ;:TYPE THE 'ERROR MESSAGE'
                                ;:'ERROR MESSAGE' POINTER GOES HERE
2$:      .WORD     0
        TYPE      , $CRLF      ;:'CARRIAGE RETURN' & 'LINE FEED'
3$:      MOV       (R0)+,4$     ;:PICKUP 'DATA HEADER' POINTER
        BEQ       5$          ;:SKIP TYPEOUT IF 0
                                ;:TYPE THE 'DATA HEADER'
                                ;:'DATA HEADER' POINTER GOES HERE
4$:      .WORD     0
        TYPE      , $CRLF      ;:'CARRIAGE RETURN' & 'LINE FEED'
5$:      MOV       (R0),R0      ;:PICKUP 'DATA TABLE' POINTER
        BNE       7$          ;:GO TYPE THE DATA
6$:      MOV       (SP)+,R0     ;:RESTORE R0
        TYPE      , $CRLF      ;:'CARRIAGE RETURN' & 'LINE FEED'
        RTS       PC          ;:RETURN
7$:      MOV       @ (R0)+,-(SP) ;:SAVE @ (R0)+ FOR TYPEOUT
                                ;:GO TYPE--OCTAL ASCII(ALL DIGITS)
                                ;:IS THERE ANOTHER NUMBER?
        TYP0C
        TST       (R0
        BEQ       6$          ;:BR IF NO
        TYPE      , 8$        ;:TYPE TWO(2) SPACES
        BR        7$          ;:LOOP
8$:      .ASCIIZ   / /
        .EVEN

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8996      .SBTTL  ERROR HANDLER ROUTINE
8997
8998      ;*****
8999      ;*THIS ROUTINE WILL INCREMENT THE ERROR FLAG AND THE ERROR COUNT,
9000      ;*SAVE THE ERROR ITEM NUMBER AND THE ADDRESS OF THE ERROR CALL
9001      ;*AND GO TO TSTNMB ON ERROR
9002      ;*THE SWITCH OPTIONS PROVIDED BY THIS ROUTINE ARE:
9003      ;*SW15=1      HALT ON ERROR
9004      ;*SW13=1      INHIBIT ERROR TYPEOUTS
9005      ;*SW10=1      BELL ON ERROR
9006      ;*SW09=1      LOOP ON ERROR
9007      ;*CALL
9008      ;*      ERROR  N      ;;ERROR-EMT AND N=ERROR ITEM NUMBER
9009
9010      074264      $ERROR:
9011      074264      105237 001103      7$:      INCB      $ERFLG      ;;SET THE ERROR FLAG
9012      074270      001775      BEQ      7$      ;;DON'T LET THE FLAG GO TO ZERO
9013      074272      013777 001102 104642      MOV      $TSTNM,@DISPLAY ;;DISPLAY TEST NUMBER AND ERROR FLAG
9014      074300      032777 002000 104632      BIT      #BIT10,@SWR      ;;BELL ON ERROR?
9015      074306      001402      BEQ      1$      ;;NO - SKIP
9016      074310      104401 001216      TYPE      ,SBELL      ;;RING BELL
9017      074314      005237 001112      1$:      INC      $ERTTL      ;;COUNT THE NUMBER OF ERRORS
9018      074320      011637 001116      MOV      (SP), $ERRPC      ;;GET ADDRESS OF ERROR INSTRUCTION
9019      074324      162737 000002 001116      SUB      #2, $ERRPC
9020      074332      117737 104560 001114      MOVB      @ $ERRPC, $ITFMB      ;;STRIP AND SAVE THE ERROR ITEM CODE
9021      074340      032777 020000 104572      BIT      #BIT13,@SWR      ;;SKIP TYPEOUT IF SET
9022      074346      001004      BNE      20$      ;;SKIP TYPEOUTS
9023      074350      004737 050104      JSR      PC, TSTNMB      ;;GO TO USER ERROR ROUTINE
9024      074354      104401 001223      TYPE      , $CRLF
9025      074360      20$:
9026      074360      005777 104554      2$:      TST      @SWR      ;;HALT ON ERROR
9027      074364      100001      BPL      3$      ;;SKIP IF CONTINUE
9028      074366      000000      HALT      ;;HALT ON ERROR!
9029      074370      032777 001000 104542      3$:      BIT      #BIT09,@SWR      ;;LOOP ON ERROR SWITCH SET?
9030      074376      001402      BEQ      4$      ;;BR IF NO
9031      074400      013716 001110      MOV      $LPERR, (SP)      ;;FUDGE RETURN FOR LOOPING
9032      074404      005737 001214      4$:      TST      $ESCAPE      ;;CHECK FOR AN ESCAPE ADDRESS
9033      074410      001402      BEQ      5$      ;;BR IF NONE
9034      074412      013716 001214      MOV      $ESCAPE, (SP)      ;;FUDGE RETURN ADDRESS FOR ESCAPE
9035      074416      5$:
9036      074416      000002      RTI      ;;RETURN

```

.SBITL TTY INPUT ROUTINE

```

:*****
:ENABL  LSB

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.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
          MCVB     @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
          CMV      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      #177,R3           ;;GET ADDRESS
2$:      CMP      #177,R3           ;;BUFFER FULL?
        BLOS      4$               ;;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$:      TYPE      ,R3              ;;TYPE A '?'
        BR        1$               ;;CLEAR THE BUFFER AND LOOP
3$:      MOVB      (R3),R3          ;;ECHO THE CHARACTER
        TYPE      ,R3

```

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TTY INPUT ROUTINE

SEQ 0175

```
9093 074604 122723 000015      CMPB    #15,(R3)+      ;;CHECK FOR RETURN
9094 074610 001356      BNE     2$          ;;LOOP IF NOT RETURN
9095 074612 105063 177777      CLRB    -1(R3)       ;;CLEAR RETURN (THE 15)
9096 074616 104401 001224      TYPE     ,SLF         ;;TYPE A LINE FEED
9097 074622 012603      MOV     (SP)+,R3      ;;RESTORE R3
9098 074624 011646      MOV     (SP),-(SP)    ;;ADJUST THE STACK AND PUT ADDRESS OF THE
9099 074626 016665 000004 000002 MOV     4(SP),2(SP)    ;; FIRST ASCII CHARACTER ON IT
9100 074634 012766 074646 000004 MOV     #TTYIN,4(SP)
9101 074642 000002      RTI              ;;RETURN
9102 074644 000          9$: .BYTE    0      ;;STORAGE FOR ASCII CHAR. TO TYPE
9103 074645 000          .BYTE    0      ;;TERMINATOR
9104 074646 000010      $TTYIN: .BLKB   8.    ;;RESERVE 8 BYTES FOR TTY INPUT
9105 074656 052536 005015 000      $CNTLU: .ASCIZ  /^U/<15><12>  ;;CONTROL 'U'
9106 074663 136 006507 000012      $CNTLG: .ASCIZ  /^G/<15><12>  ;;CONTROL 'G'
9107 074670 005015 053523 020122 $MSWR:  .ASCIZ  <15><12>/SWR = /
9108 074676 020075 000
9109 074701 040 047040 053505 $MNEW:  .ASCIZ  / NEW - /
9110 074706 036440 000040
```

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9121 074712 011646
9122 074714 016666 000004 000002
9123 074722 010046
9124 074724 010146
9125 074726 010246
9126 074730 104407
9127 074732 012600
9128 074734 005001
9129 074736 005002
9130 074740 112046
9131 074742 001412
9132 074744 006301
9133 074746 006102
9134 074750 006301
9135 074752 006102
9136 074754 006301
9137 074756 006102
9138 074760 042716 177770
9139 074764 062601
9140 074766 000764
9141 074770 005726
9142 074772 010166 000012
9143 074776 010237 075012
9144 075002 012602
9145 075004 012601
9146 075006 012600
9147 075010 000002
9148 075012 000000

.SBTTL READ AN OCTAL NUMBER FROM THE TTY

: THIS ROUTINE WILL READ AN OCTAL (ASCII) NUMBER FROM THE TTY AND
: CHANGE IT TO BINARY.
: CALL:
: * RDOCT : READ AN OCTAL NUMBER
: * RETURN HERE : LOW ORDER BITS ARE ON TOP OF THE STACK
: * : HIGH ORDER BITS ARE IN \$HI OCT
\$RDOCT: MOV (SP),-(SP) : PROVIDE SPACE FOR THE
MOV 4(SP),2(SP) : INPUT NUMBER
MOV R0,-(SP) : PUSH R0 ON STACK
MOV R1,-(SP) : PUSH R1 ON STACK
MOV R2,-(SP) : PUSH R2 ON STACK
1\$: RDLIN : READ AN ASCII LINE
MOV (SP)+,R0 : GET ADDRESS OF 1ST CHARACTER
CLR R1 : CLEAR DATA WORD
CLR R2
2\$: MOVB (R0)+,-(SP) : PICKUP THIS CHARACTER
BEQ 3\$: IF ZERO GET OUT
ASL R1 : *2
ROL R2 : *4
ASL R1 : *8
ROL R2
BIC #^C7,(SP) : STRIP THE ASCII JUNK
ADD (SP)+,R1 : ADD IN THIS DIGIT
BR 2\$: LOOP
3\$: TST (SP)+ : CLEAN TERMINATOR FROM STACK
MOV R1,12(SP) : SAVE THE RESULT
MOV R2,\$HI OCT
MOV (SP)+,R2 : POP STACK INTO R2
MOV (SP)+,R1 : POP STACK INTO R1
MOV (SP)+,R0 : POP STACK INTO R0
RTI : RETURN
\$HI OCT: .WORD 0 : HIGH ORDER BITS GO HERE

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075014 010046
075016 016600 000002
075022 005740
075024 111000
075026 006300
075030 016000 075050
075034 000200

075036 011646
075040 016666 000004 000002
075046 000002

075050 075036
075052 073236
075054 073502
075056 073456
075060 073516
075062 073704

075064 074420
075066 074540
075070 074712
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

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CROSS REFERENCE TABLE -- USER SYMBOLS

AB	=	052525	1685#	2533	2674	2806	3180	5454	5736	6018	6300				
ABLE		013434	2754	2759	2761	2763#									
ADDERR		006336	2023	2029	2033	2036#									
ADD1		003320	1624#	1891											
ADD2		003322	1625#	1893	1894										
ADD3		003324	1626#	1896	1897										
ADD4		003326	1627#	1899	1900										
AD1ERR		005066	1869	1891#											
AD2ERR		005166	1892	1903#											
AD3ERR		005206	1895	1907#											
AD4ERR		005226	1898	1911#											
AHEAD		046052	6542	6545#											
ALRIGHT		012240	2590	2592#											
APE	=	100000	1542#	2104	3126	3268	3373	3570	3675						
AROUND		004546	1835	1844#											
AS		003412	1666#	2404*	8508										
ATA	-	100000	1571#	2128	6427										
ATO	=	000001	1601#												
AT1	-	000002	1602#												
AT2	-	000004	1603#												
AT3	=	000010	1604#												
AT4		000020	1605#												
AT5	=	000040	1606#												
AT6	-	000100	1607#												
AT7	-	000200	1608#												
A16	=	000400	1555#	2982	3040	3076	3091	3233	3338	3428	3535	3640	3743	3844	3945
			6767												
A17	=	001000	1556#	3015	3076	3091	3233	3338	3428	3535	3640	3743	3844	3945	6767
BA		003414	1667#	2206*	2255*	2295*	2342*	2480*	2515*	2542*	2566*	2615*	2649*	2652	2655*
			2677*	2680	2683*	2700*	2703	2707*	2766*	2822*	2861*	2916*	3000*	3095*	3237*
			3342*	3432*	3539*	3644*	3747*	3848*	3949*	4045*	4110*	4159*	4209*	4259*	4314*
			4367*	4420*	4473*	4526*	4579*	4632*	4685*	4738*	4791*	4844*	4897*	4950*	5008*
			5043*	5105*	5145*	5210*	5269*	5345*	5410*	5486*	5551*	5627*	5692*	5768*	5833*
			5909*	5974*	6050*	6115*	6191*	6256*	6332*	6414*	8494	8512	8514	8516	8522
			8531												
BAE		003416	1668#	2209*	2212*	2258*	2261*	2298*	2301*	2345*	2348*	2402*	2483*	2486*	2518*
			2521*	2545*	2548*	2569*	2572*	2608*	2611	2618*	2621*	2658*	2661*	2686*	2689*
			2710*	2713*	2769*	2772*	2825*	2828*	2864*	2867*	2919*	2922*	3003*	3006*	3098*
			3101*	3240*	3243*	3345*	3348*	3435*	3438*	3542*	3545*	3647*	3650*	3750*	3753*
			3851*	3854*	3952*	3955*	4048*	4051*	4113*	4116*	4162*	4165*	4212*	4215*	4262*
			4265*	4317*											

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CROSS REFERENCE TABLE -- USER SYMBOLS

SEQ 0179

BEGIN2	004166
BEGIN3	004152
BEHIND	046026
BITCNT	003446

1788#	6604											
484	1784#											
6540#	6544											
1737#	2328*	2331*	2333*	2336*	2359*	2362*	2364*	2367*	2372*	2375*	2752*	2755*
2757*	2760*	2808*	2811*	2813*	2816*	2846*	2849*	2851*	2854*	2902*	2905*	2907*
2910*	2986*	2989*	2991*	2994*	3077*	3080*	3082*	3085*	3182*	3185*	3187*	3190*
3195*	3196*	3199*	3202*	3204*	3207*	3219*	3222*	3224*	3227*	3325*	3328*	3330*
3333*	3522*	3525*	3527*	3530*	3627*	3630*	3632*	3635*	3730*	3733*	3735*	3738*
3831*	3834*	3836*	3839*	3932*	3935*	3937*	3940*	4031*	4034*	4036*	4039*	4096*
4099*	4101*	4104*	4145*	4148*	4150*	4153*	4195*	4198*	4200*	4203*	4245*	4248*
4250*	4253*	4300*	4303*	4305*	4308*	4353*	4356*	4358*	4361*	4406*	4409*	4411*
4414*	4459*	4462*	4464*	4467*	4512*	4515*	4517*	4520*	4565*	4568*	4570*	4573*
4618*	4621*	4623*	4626*	4671*	4674*	4676*	4679*	4724*	4727*	4729*	4732*	4777*
4780*	4782*	4785*	4830*	4833*	4835*	4838*	4883*	4886*	4888*	4891*	4936*	4939*
4941*	4944*	4994*	4997*	4999*	5002*	5029*	5032*	5034*	5037*	5091*	5094*	5096*
5099*	5123*	5124*	5131*	5134*	5136*	5139*	5196*	5199*	5201*	5204*	5255*	5258*
5260*	5263*	5322*	5323*	5324	5331*	5334*	5336*	5339*	5396*	5399*	5401*	5404*
5463*	5464*	5465	5472*	5475*	5477*	5480*	5537*	5540*	5542*	5545*	5604*	5605*
5606	5613*	5616*	5618*	5621*	5678*	5681*	5683*	5686*	5745*	5746*	5747	5754*
5757*	5759*	5762*	5819*	5822*	5824*	5827*	5886*	5887*	5888	5895*	5898*	5900*
5903*	5960*	5963*	5965*	5968*	6027*	6028*	6029	6036*	6039*	6041*	6044*	6101*
6104*	6106*	6109*	6168*	6169*	6170	6177*	6180*	6182*	6185*	6242*	6245*	6247*
6250*	6309*	6310*	6311	6318*	6321*	6323*	6326*	6395*	6398*	6400*	6403*	6622*
6635	6637*	6639*	6650	6652*	6657	6661	6745*	6748*	6750*	6753*		

```

BIT0    = 000001
BIT00   = 000001
BIT01   = 000002
BIT02   = 000004
BIT03   = 000010
BIT04   = 000020
BIT05   = 000040
BIT06   = 000100
BIT07   = 000200
BIT08   = 000400
BIT09   = 001000
BIT1    = 000002
BIT10   = 002000
BIT11   = 004000
BIT12   = 010000
BIT13   = 020000
BIT14   = 040000
BIT15   = 100000
BIT2    = 000004
BIT3    = 000010
BIT4    = 000020
BIT5    = 000040
BIT6    = 000100
BIT7    = 000200
BIT8    = 000400
BIT9    = 001000
BLIP    = 044546
BLITZ   = 044456
BLKTST  = 050334
BL0     = 000040
BL1     = 000100
BL2     = 000200

```

455#	6619	
445#	455	
444#	454	
443#	453	
442#	452	
441#	451	
440#	450	
439#	449	
438#	448	
437#	447	8659
436#	446	8667
454#	6389	
435#	9014	
434#	8674	
433#		
432#	9021	
431#	8645	
430#		
453#		
452#		
451#		
450#		
449#		
448#		
447#	6615	
446#		
6386	6388	6393#
6377#	6458	
6383	6845#	
1618#		
1619#		
1620#		

8659
8667 9029

6393#

SEQ 0180

BMD18 =	010000	1597#												
BOTTOM	045122	6390	6456	6459#										
BPTVEC=	000014	462#												
BULL	047700	6747	6752	6754	6756#									
BUSH	034106	5163	5168#											
CHARLE	022164	3732	3737	3739	3741#									
CHGE1	032606	4990#												
CHGE2	046372	6615#												
CHGE3	046402	6619#												
CLEER	006572	2088#	2239	2279	2319	2382	2450	2496	2594	2633	2734	2883	2962	3056
		3164	3306	3411	3501	3608	3713	3816	3917	4018	4079	4131	4180	4230
		4280	4335	4388	4441	4494	4547	4600	4653	4706	4759	4812	4865	4918
		4971	5072	5174	5235	5301	5376	5442	5517	5583	5658	5724	5799	5865
		5940	6006	6081	6147	6222	6288	6363	6460					
		6472	6505#											
CLEVER	045500	1518#	2088	2184	2203	2252	2292	2371	2458	6772	6787			
CLR =	000040	6493	6504	6515	6526	6537	6538#							
CORREG	046014	1576#	2135	3128	3881									
CPE =	000010	370#	8795	8805										
CR =	000015	371#	8766	8805										
CRLF =	000200	1669#	2204*	2253*	2293*	2340*	2407*	2408	2410	2412*	2478*	2513*	2540*	2564*
CS1	003420	2613*	2653*	2681*	2705*	2764*	2820*	2859*	2914*	2998*	3093*	3235*	3340*	3430*
		3537*	3642*	3745*	3846*	3947*	4043*	4108*	4157*	4207*	4257*	4312*	4365*	4418*
		4471*	4524*	4577*	4630*	4683*	4736*	4789*	4842*	4895*	4948*	5006*	5041*	5103*
		5143*	5208*	5267*	5343*	5408*	5484*	5549*	5625*	5690*	5766*	5831*	5907*	5972*
		6048*	6113*	6189*	6254*	6330*	6412*	8516	8518	8520	8527			
CS2	003422	1670#	2214*	2263*	2303*	2350*	2488*	2523*	2550*	2574*	2623*	2663*	2691*	2715*
		2774*	2830*	2869*	2924*	3008*	3089*	3103*	3231*	3245*	3324*	3350*	3440*	3547*
		3652*	3755*	3856*	3957*	4053*	4118*	4167*	4217*	4267*	4322*	4375*	4428*	4481*
		4534*	4587*	4640*	4693*	4746*	4799*	4852*	4905*	4958*	5016*	5051*	5113*	5153*
		5218*	5277*	5353*	5418*	5494*	5559*	5635*	5700*	5776*	5841*	5917*	5982*	6058*
		6123*	6199*	6264*	6340*	6422*	8498	8500	8518	8522	8527	8535		
CS3	003424	1671#	2210*	2213*	2259*	2262*	2299*	2302*	2346*	2349*	2465*	2466	2474*	2484*
		2487*	2519*	2522*	2546*	2549*	2570*	2573*	2619*	2622*	2659*	2662*	2687*	2690*
		2711*	2714*	2770*	2773*	2826*	2829*	2865*	2868*	2920*	2923*	3004*	3007*	3099*
		3102*	3241*	3244*	3346*	3349*	3436*	3439*	3543*	3546*	3648*	3651*	3751*	3754*

SEQ 0181

[illegible]

SEQ 0182

DLT	=	100000	1528#	2120	3125	3267	3372	3462	3569	3674	3777	3878	3979	4067	6787
DMD	=	000001	1585#	5314	5321	5326	5327	5328	5329	5455	5462	5467	5468	5469	5470
			5596	5603	5608	5609	5610	5611	5737	5744	5749	5750	5751	5752	5878
			5885	5890	5891	5892	5893	6019	6026	6031	6032	6033	6034	6160	6167
			6172	6173	6174	6175	6301	6308	6313	6314	6315	6316			
DNO	=	000001	1612#												
DN1	=	000002	1613#												
DN2	=	000004	1614#												
DOCC	=	000400	1593#												
DOIT	=	007576	2221	2233	2239#										
DPCA	=	000040	1590#												
DPE	=	000020	1577#	2135	3128	3780	3881								
DPEHI	=	040000	1541#	2104	3126	3268	3373	3675							
DPELO	=	020000	1540#	2104	3126	3268	3373	3570	3675						
DPR	=	000400	1567#	6782											
DR	=	003430	1673#												
DRCLR	=	000011	1726#												
DRY	=	000200	1566#	6782											
DSWR	=	177570	376#	559	1822										
DS1	=	003432	1674#	2215*	2264*	2304*	2351*	2489*	2524*	2551*	2575*	2624*	2664*	2692*	2716*
			2775*	2831*	2870*	2925*	3009*	3104*	3246*	3351*	3441*	3548*	3653*	3756*	3857*
			3958*	4054*	4119*	4168*	4218*	4268*	4323*	4376*	4429*	4482*	4535*	4588*	4641*
			4694*	4747*	4800*	4853*	4906*	4959*	5017*	5052*	5114*	5154*	5219*	5278*	5354*
			5419*	5495*	5560*	5636*	5701*	5777*	5842*	5918*	5983*	6059*	6124*	6200*	6265*
			6341*	6423*											
			1675#	8502											
DT	=	003434	1580#	2135	3128	3780	3881								
DTE	=	010000	1592#												
DTRM	=	000200	610	1092	1115	8490#									
DT1	=	071750	1130	1135	8514#										
DT105	=	072132	660	1190	8500#										
DT11	=	072032	1151	1156	1162	8516#									
DT111	=	072146	1196	1201	1448	1453	8518#								
DT121	=	072162	1237	1242	8520#										
DT130	=	072174	1247	1253	1259	1264	1269	1274	8522#						
DT132	=	072204	1289	1304	8525#										
DT142	=	072222	1310	8527#											
DT146	=	072234	1184	1316	1321	1326	1332	8529#							
DT147	=	072250	1414	8531#											
DT170	=	072262	845	8533#											
DT171	=	072272	1044	8535#											
DT172	=	072302	617	1098	1103	8492#									
DT2	=	071762	623	8494#											
DT3	=	071774	836	8502#											
DT34	=	072042	862	872	8504#										
DT35	=	072052	853	8505#											
DT36	=	072056	629	8496#											
DT4	=	072006	881	1458	1463	1468	1473	1478	1483	1488	8507#				
DT41	=	072066	635	642	647	653	667	677	685	694	705	717	724	734	743
DT5	=	072020	753	760	770	783	790	798	808	816	827	8498#			
			950	8508#											
DT52	=	072074	1054	1064	1072	1080	8510#								
DT71	=	072110	1086	8512#											
DT76	=	072120	6391	6744#											
DUPORT	=	047624	1558#	3091	3233	3338	3428	3535	3640	3743	3844	3945	6767		
DVA	=	004000	3524	3529	3531	3533#									
DYNO	=	020650													

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SEQ 0183

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

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SEQ 0184

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

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SEQ 0185

EM53	060156	955	7577#											
EM54	060164	961	7578#											
EM55	060171	967	7579#											
EM56	060176	973	7580#											
EM57	060204	979	7581#											
EM6	055325	638	7317#											
EM60	060212	985	7582#											
EM61	060217	991	7583#											
EM62	060224	997	7584#											
EM63	060231	1003	7585#											
EM64	060237	1009	7587#											
EM65	060244	1015	7588#											
EM66	060252	1021	7589#											
EM67	060257	1027	7590#											
EM7	055541	645	7342#											
EM70	060265	1033	7592#											
EM71	060273	1039	7594#											
EM72	060362	1049	7604#											
EM73	060417	1059	7609#											
EM74	060446	1068	7613#											
EM75	060474	1076	7617#											
EM76	060524	1083	7621#											
EM77	060631	1089	7633#											
ENDPAS	045140	6470#												
ENPS	004000	1596#												
ERPIP	025474	4227	4230#											
ERR	040000	1570#	2128	6427										
ERRIP	025456	4223	4226#											
ERRTST	050210	2071	2177	2190	2240	2280	2320	2383	2449	2495	2592	2634	2735	2884
		2963	3057	3165	3307	3412	3502	3609	3714	3817	3918	4019	4080	4132
		4181	4231	4281	4336	4389	4442	4495	4548	4601	4654	4707	4760	4813
		4866	4919	4972	5073	5175	5236	5302	5377	5443	5518	5584	5659	5725
		5800	5866	5941	6007	6082	6148	6223	6289	6364	6461	6822#		
ERRVER=	000004	458#	1820	1821*	1832*	1859*	1860*	1892*	1895*	1898*	1901*	1904*	1908*	1912*
		2022	2023*	2037*	2040*	2043	2044*	2047*	2055	2056*	2061*	2070*	8650	8651*
		8653*	8656*											
ERR1	006546	2068	2071#											
ERR10	013246	2702	2722#											
ERR11	014424	2879	2883#											
ERR2	007232	2141	2163	2177#										
ERR29	025752	4277	4280#											
ERR3	011116	2395	2399	2411	2449#									
ERR30	024446	4071	4076	4079#										
ERR4	007274	2188	2190#											
ERR5	011404	2476	2495#											
ERR6	012152	2560	2580#											
ERR7	012464	2630	2633#											
ERTIP	034062	5159	5162#											
ER1	003436	1676#	2216*	2265*	2305*	2352*	2490*	2525*	2552*	2576*	2625*	2665*	2693*	2717*
		2776*	2832*	2871*	2926*	3010*	3105*	3247*	3352*	3442*	3549*	3654*	3757*	3858*
		3959*	4055*	4120*	4169*	4219*	4269*	4324*	4377*	4430*	4483*	4536*	4589*	4642*
		4695*	4748*	4801*	4854*	4907*	4960*	5018*	5053*	5115*	5155*	5220*	5279*	5355*
		5420*	5496*	5561*	5637*	5702*	5778*	5843*	5919*	5984*	6060*	6125*	6201*	6266*
		6342*	6424*											
ER1R	025216	4177	4180#											
EVENAD	004000	1752#	3825	4092	4143	4193	4243	4296	4349	4402	4508	4667	4773	4879

SEQ 0186

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SEQ 0187

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

8805

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CROSS REFERENCE TABLE -- USER SYMBOLS

SEQ 0188

[illegible]

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SEQ 0189

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

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		5813*	5851	5953	5954*	5992	6094	6095*	6133	6235	6236*	6274	6704*	6705*
RBUF1	004102	6706	6712*	6713	6721*	6722	6728*	6729	6735*	6736	8510	8529	8535	
RBUF2	004104	1756#												
RBUF3	004106	1757#												
RBUF4	004110	1758#												
RBUF5	004112	1759#												
RBUF6	004114	1760#												
RBUF7	004116	1761#												
RDCHR	= 104406	1762#												
RDLIN	= 104407	9085	9187#											
RDOCT	= 104410	9126	9188#											
RDY	= 000200	1875	1881	1887	1926	1947	1968	1989	9189#					
		1554#	2753	2758	2779	2903	2908	2929	2987	2992	3078	3083	3091	3108
		3183	3188	3200	3205	3211	3220	3225	3233	3250	3326	3331	3338	3355
		3428	3445	3523	3528	3535	3552	3628	3633	3640	3657	3731	3736	3743
		3760	3832	3837	3844	3861	3945	3962	4032	4037	4058	4097	4102	4123
		4146	4151	4172	4196	4201	4222	4246	4251	4272	4301	4306	4327	4354
		4359	4380	4407	4412	4433	4460	4465	4486	4513	4518	4539	4566	4571
		4592	4619	4624	4645	4672	4677	4698	4725	4730	4751	4778	4783	4804
		4831	4836	4857	4884	4889	4910	4937	4942	4963	4995	5000	5021	5030
		5035	5056	5092	5097	5118	5132	5137	5158	5197	5202	5223	5256	5261
		5283	5332	5337	5359	5397	5402	5424	5473	5478	5500	5538	5543	5565
		5614	5619	5641	5679	5684	5706	5755	5760	5782	5820	5825	5847	5896
		5901	5923	5961	5966	5988	6037	6042	6064	6102	6107	6129	6173	6183
		6205	6243	6248	6270	6319	6324	6346	6396	6401	6407	6429	6746	6751
		6757	6767											
RDYSET	013566	2780	2783#											
READY	034172	5186	5188#											
READ0	= 000071	1706#	3076	3322	4299	4670	4723	4882	5254	5461				
READ1	= 000072	1707#												
READ2	= 000073	1708#	5395	5743										
READ3	= 000074	1709#												
READ4	= 000075	1710#	5536	6025										
READ5	= 000076	1711#												
READ6	= 000077	1712#	3091	3233	3338	3428	3535	3640	3743	3844	3945	4776	4829	4935
		5677	6307	6767										
REGEN	003404	1658#	1791*	1888*	1889*	2016	6546							
RESTAR	006054	1902	1906	1910	1914	1956	1977	1996	2000#					
RESTAT	045374	1953	1974	1995	6480	6494#	6506	6517	6528					
RESVEC	= 000010	459#												
RETAIN	003410	1660#	1937*	1958*	1979*	1998*	2001*	2039	6492*	6503*	6508*	6519*	6530*	
RETURN	046720	6642	6651	6654#										
RFAIL	= 000100	1579#	2135	3128	3780	3881								
RHAS	003346	1635#	2404											
RHBA	003334	1630#	2206	2249*	2250	2255	2268	2271	2276	2295	2342	2480	2515	2542
		2566	2615	2648*	2649	2650	2655	2676*	2677	2678	2683	2699*	2700	2701
		2707	2722	2723*	2725	2729*	2731	2766	2822	2861	2900*	2916	2978*	3000
		3027	3045	3067*	3070*	3095	3179*	3216*	3237	3321*	3342	3432	3520*	3539
		3625*	3644	3727*	3747	3825*	3848	3949	4045	4092*	4110	4143*	4159	4193*
		4209	4243*	4259	4296*	4314	4349*	4367	4402*	4420	4455*	4473	4508*	4526
		4561*	4579	4614*	4632	4667*	4685	4720*	4738	4773*	4791	4826*	4844	4879*
		4897	4932*	4950	4988*	5008	5026*	5043	5088*	5105	5128*	5145	5184*	5210
		5248*	5269	5319*	5345	5365	5389*	5410	5460*	5486	5506	5530*	5551	5601*
		5627	5647	5671*	5692	5742*	5768	5788	5812*	5833	5883*	5909	5929	5953*
		5974	6024*	6050	6070	6094*	6115	6165*	6191	6211	6235*	6256	6306*	6332
		6352	6381*	6414	6432									

MASSBUS RH70 AND RH11 DIAGNOSTIC
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CROSS REFERENCE TABLE -- USER SYMBOLS

SEQ 0191

RHBAE	003360	1640#	2012	2017*	2212	2261	2289*	2290	2301	2308	2311	2316	2348	2394
		2398	2486	2521	2548	2572	2607*	2608	2609	2621	2661	2689	2713	2772
		2828	2867	2899*	2922	2977*	3006	3018	3020	3022	3073*	3101	3178*	3243
		3320*	3348	3438	3519*	3545	3623*	3650	3753	3828*	3854	3955	4051	4093*
		4116	4165	4215	4265	4297*	4320	4350*	4373	4403*	4426	4456*	4479	4509*
		4532	4562*	4585	4615*	4638	4668*	4691	4721*	4744	4774*	4797	4827*	4850
		4880*	4903	4933*	4956	4987*	5014	5049	5111	5151	5187*	5216	5253*	5275
		5318*	5351	5394*	5416	5459*	5492	5535*	5557	5600*	5633	5676*	5698	5741*
		5774	5817*	5839	5882*	5915	5958*	5980	6023*	6056	6099*	6121	6164*	6197
		6240*	6262	6305*	6338	6380*	6420	6541	6547*					
RHCS1	003330	1628#	2009	2020	2025	2110	2113	2148	2204	2253	2293	2340	2407	2478
		2513	2540	2564	2613	2653	2681	2705	2753	2758	2764	2779	2820	2859
		2901*	2903	2908	2914	2929	2982*	2984*	2987	2992	2998	3015	3040	3076*
		3078	3083	3090	3093	3108	3181*	3183	3188	3200	3205	3211	3218*	3220
		3225	3232	3235	3250	3322*	3326	3331	3337	3340	3355	3427	3430	3445
		3521*	3523	3528	3534	3537	3552	3626*	3628	3633	3639	3642	3657	3729*
		3731	3736	3742	3745	3760	3829*	3830*	3832	3837	3843	3846	3861	3944
		3947	3962	4032	4037	4043	4058	4062	4064	4095*	4097	4102	4108	4123
		4144*	4146	4151	4157	4172	4194*	4196	4201	4207	4222	4244*	4246	4251
		4257	4272	4299*	4301	4306	4312	4327	4352*	4354	4359	4365	4380	4405*
		4407	4412	4418	4433	4458*	4460	4465	4471	4486	4511*	4513	4518	4524
		4539	4564*	4566	4571	4577	4592	4617*	4619	4624	4630	4645	4670*	4672
		4677	4683	4698	4723*	4725	4730	4736	4751	4776*	4778	4783	4789	4804
		4829*	4831	4836	4842	4857	4882*	4884	4889	4895	4910	4935*	4937	4942
		4948	4963	4993*	4995	5000	5006	5021	5028*	5030	5035	5041	5056	5090*
		5092	5097	5103	5118	5130*	5132	5137	5143	5158	5191*	5192	5197	5202*
		5208	5223	5254*	5256	5261	5267	5283	5320*	5332	5337	5343	5359	5395*
		5397	5402	5408	5424	5461*	5473	5478	5484	5500	5536*	5538	5543	5549
		5565	5602*	5614	5619	5625	5641	5677*	5679	5684	5690	5706	5743*	5755
		5760	5766	5782	5818*	5820	5825	5831	5847	5884*	5896	5901	5907	5923
		5959*	5961	5966	5971	5988	6025*	6037	6042	6048	6064	6100*	6102	6107
		6113	6129	6166*	6178	6183	6189	6205	6241*	6243	6248	6254	6270	6307*
		6319	6324	6330	6346	6393*	6396	6401	6407	6412	6429	6443	6539	6550
		6744*	6746	6751	6757	6766	8505							
RHCS1B	003364	1642#	2020*	2021*	3160*	3302*	3407*	3497*	3604*	3709*	3812*	3913*	4014*	6550*
		6551*												
RHCS2	003340	1632#	2024*	2088*	2089*	2117	2120	2143	2153	2184*	2185*	2203*	2214	2252*
		2263	2292*	2303	2329	2334	2350	2355	2360	2365	2371*	2373	2377	2458*
		2459*	2488	2523	2550	2574	2623	2663	2691	2715	2774	2783	2809	2814
		2830	2835	2847	2852	2869	2874	2896*	2924	3008	3075*	3089	3103	3112
		3161	3175*	3194*	3198*	3231	3245	3254	3303	3316*	3323*	3324	3350	3359
		3408	3422*	3426*	3440	3449	3498	3513*	3547	3556	3605	3620*	3652	3661
		3710	3725*	3755	3764	3813	3824*	3856	3865	3914	3930*	3931*	3933	3938
		3957	3966	4015	4027*	4053	4094*	4118	4167	4217	4267	4298*	4322	4351*
		4375	4404*	4428	4457*	4481	4510*	4534	4563*	4587	4616*	4640	4669*	4693
		4722*	4746	4775*	4799	4828*	4852	4881*	4905	4934*	4958	4986*	5016	5051
		5069	5086*	5113	5122*	5126*	5153	5171	5183*	5218	5246*	5277	5312*	5353
		5387*	5418	5453*	5494	5528*	5559	5594*	5635	5669*	5700	5735*	5776	5810*
		5841	5876*	5917	5951*	5982	6017*	6058	6092*	6123	6158*	6199	6233*	6264
		6299*	6340	6374*	6422	6771	6786							
RHCS3	003362	1641#	2019*	2045*	2057*	2101	2104	2170	2213	2262	2302	2349	2464*	2465
		2467	2473*	2474	2475	2487	2522	2549	2573	2622	2662	2690	2714	2773
		2829	2868	2923	3007	3067	3102	3244	3349	3439	3517*	3546	3651	3754
		3855	3956	4052	4117	4127	4166	4176	4216	4226	4266	4276	4321	4331
		4374	4384	4427	4437	4480	4490	4533	4543	4586	4596	4639	4649	4692
		4702	4745	4755	4798	4808	4851	4861	4904	4914	4957	4967	5015	5050

SEQ 0192

		5060	5066	5112	5152	5162	5158	5217	5276	5352	5417	5493	5558	5634
RHDB	003352	5699	5775	5840	5916	5981	6057	6122	6198	6263	6339	6421	6549*	6791
RHDT	003356	1637#	2327*	2358	2751*	2785	2787	2807*	2838	2840	2845*	2877		
RHER	003344	1639#	2026	2186	2392	2410								
		1634#	2132	2135	2158	2216	2265	2305	2352	2490	2525	2552	2576	2625
		2665	2693	2717	2776	2832	2871	2926	3010	3105	3247	3352	3442	3549
		3654	3757	3858	3959	4055	4120	4169	4219	4269	4324	4377	4430	4483
		4536	4589	4642	4695	4748	4801	4854	4907	4960	5018	5053	5115	5155
		5220	5279	5355	5420	5496	5561	5637	5702	5778	5843	5919	5984	6060
		6125	6201	6266	6342	6424	6776							
RHMR1	003354	1638#	4028*	5314*	5321*	5326*	5327*	5328*	5329*	5330*	5455*	5462*	5467*	5468*
		5469*	5470*	5471*	5596*	5603*	5608*	5609*	5610*	5611*	5612*	5737*	5744*	5749*
		5750*	5751*	5752*	5753*	5878*	5885*	5890*	5891*	5892*	5893*	5894*	6019*	6026*
		6031*	6032*	6033*	6034*	6035*	6160*	6167*	6172*	6173*	6174*	6175*	6176*	6301*
		6308*	6313*	6314*	6315*	6316*	6317*							
RHMR2	003336	1631#	2030	2090	2218	2267	2307	2354	2492	2527	2554	2578	2627	2667
		2695	2719	2778	2834	2873	2928	3012	3107	3249	3354	3444	3551	3656
		3759	3860	3961	4057	4122	4171	4221	4271	4326	4379	4432	4485	4538
		4591	4644	4697	4750	4803	4856	4909	4962	5020	5055	5117	5157	5222
		5281	5357	5422	5498	5563	5639	5704	5780	5845	5921	5986	6062	6127
		6203	6268	6344	6426	6451*								
RHNINT	044636	6392	6411#	6845										
RHST	003342	1633#	2125	2128	2165	2215	2264	2304	2351	2489	2524	2551	2575	2624
		2664	2692	2716	2775	2831	2870	2925	3009	3104	3246	3351	3441	3548
		3653	3756	3857	3958	4054	4119	4168	4218	4268	4323	4376	4429	4482
		4535	4588	4641	4694	4747	4800	4853	4906	4959	5017	5052	5114	5154
		5219	5278	5354	5419	5495	5560	5636	5701	5777	5842	5918	5983	6059
		6124	6200	6265	6341	6423	6427	6781						
RHTDB	003350	1636#	2217	2266	2306	2353	2491	2526	2553	2577	2626	2666	2694	2718
		2777	2833	2872	2927	2940	2945	3011	3106	3248	3353	3443	3550	3655
		3728*	3758	3859	3960	4029*	4030*	4056	4121	4170	4220	4270	4325	4378
		4431	4484	4537	4590	4643	4696	4749	4802	4855	4908	4961	5019	5054
		5116	5156	5221	5250*	5280	5282	5287	5356	5358	5368	5391*	5421	5423
		5428	5454*	5497	5499	5509	5532*	5562	5564	5569	5638	5640	5650	5673*
		5703	5705	5710	5736*	5779	5781	5791	5814*	5844	5846	5851	5853	5920
		5922	5932	5955*	5985	5987	5992	5994	6018*	6061	6063	6073	6096*	6126
		6128	6133	6135	6202	6204	6214	6237*	6267	6269	6274	6276	6300*	6343
		6345	6355	6425	6435									
RHTEST	006352	2035	2040#											
RHVEC	003316	1499#												
RHWC	003332	1629#	2200*	2201	2205	2219	2222	2225	2231	2235	2254	2294	2341	2479
		2508*	2509	2514	2534*	2535	2536	2541	2557*	2558	2559	2565	2580	2581*
		2583	2587*	2589	2593*	2614	2654	2682	2706	2765	2821	2860	2895*	2915
		2931	2933	2935	2979*	2999	3074*	3094	3174*	3215*	3236	3317*	3341	3431
		3518*	3538	3624*	3643	3726*	3746	3847	3948	4044	4091*	4109	4142*	4158
		4192*	4208	4242*	4258	4295*	4313	4348*	4366	4401*	4419	4454*	4472	4507*
		4525	4560*	4578	4613*	4631	4666*	4684	4719*	4737	4772*	4790	4825*	4843
		4878*	4896	4931*	4949	4992*	5007	5027*	5042	5087*	5104	5129*	5144	5190*
		5209	5247*	5268	5315*	5344	5362	5388*	5409	5456*	5485	5503	5529*	5550
		5597*	5626	5644	5670*	5691	5738*	5767	5785	5811*	5832	5879*	5908	5926
		5952*	5973	6020*	6049	6067	6093*	6114	6161*	6190	6208	6234*	6255	6302*
		6331	6349	6382*	6413	6438								
RHWCA	011606	2530	2533#											
RHWCT	011424	2508#	2532											
RH11	006540	2044	2054	2059	2069#									
RH11BA	006406	2048#												

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SEQ 0193

RH70BA	006502	2062#												
RH70TT	006450	2042	2055#											
RITEON	033302	5061	5066#											
RITURN	046724	6613	6617	6621	6655#									
RMBEX =	000040	1578#	2135	3128	3780	3881								
RMR =	000004	1575#	2135	3128	3780	3881								
ROTEEN	045604	6475	6516#											
SA200	005274	1919	1921#											
SC =	100000	1562#	2113	3114	3118	3122	3135	3256	3260	3264	3277	3361	3365	3369
		3382	3451	3455	3459	3472	3558	3562	3566	3579	3663	3667	3671	3684
		3766	3770	3774	3787	3867	3871	3875	3888	3968	3972	3976	3989	4064
		1615#	6451											
SCLK =	000010	1730#												
SEARCH=	000031	1862	1865#											
SKIPIN	004624	1867	1869#											
SLEUTH	004640	1594#	5596	5603	5608	5609	5610	5611	5737	5744	5749	5750	5751	5752
SLKM =	001000	5878	5885	5890	5891	5892	5893	6019	6026	6031	6032	6033	6034	
SNAFOO	010566	2374	2377#											
SPLIT	034466	5226	5228	5230	5233	5235#								
SRO -	177572	494#												
SR1 -	177574	495#												
SR2 -	177576	496#												
SR3 =	172516	497#												
STACK =	000750	363#	1803	1857										
START	004214	1783	1787	1796#										
STKLMT=	177774	374#												
SUPER	033256	5057	5060#											
SWR	001140	559#	1801	1822*	1824	1830*	8645	8659	8661	8667	8674	8704	8717*	9014
		9021	9026	9029										
SWREG	000176	478#	1830											
SW0 =	000001	427#												
SW00 =	000001	417#	427											
SW01 =	000002	416#	426											
SW02 =	000004	415#	425											
SW03 =	000010	414#	424											
SW04 =	000020	413#	423											
SW05 =	000040	412#	422											
SW06 =	000100	411#	421											
SW07 =	000200	410#	420											
SW08 =	000400	409#	419											
SW09 =	001000	408#	418											
SW1 =	000002	426#												
SW10 =	002000	407#												
SW11 =	004000	406#												
SW12 =	010000	405#												
SW13 =	020000	404#	2415	6612	6802	6824								
SW14 =	040000	403#	3156	3298	3403	3493	3600	3705	3808	3909	4010			
SW15 =	100000	402#												
SW2 =	000004	425#												
SW3 =	000010	424#												
SW4 =	000020	423#												
SW5 =	000040	422#												
SW6 =	000100	421#												
SW7 =	000200	420#												
SW8 =	000400	419#	3156	3298	3403	3493	3600	3705	3808	3909	4010			
SW9 =	001000	418#	3156	3298	3403	3493	3600	3705	3808	3909	4010			

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SEQ 0194

TBI VE - 000014
TC 003440

TDR 003442

```
THREE      025324
TIEOUT     046746
TKVEC =    000060
TOIT       010020
TPVEC =    000064
TRAPED     047616
TRAPVE=    000034
TRE        =    040000
```

```
TREB    = 000100
TRTVEC = 000014
TSTADD  006252
TSTIE   034306
TSTNM   003454
```

TSTNMA	050202
TSTNMB	050104
TST1	004546
TST10	010614
TST11	011126
TST12	011414
TST13	012256
TST14	012474
TST15	013344
TST16	014434
TST17	015020
TST2	006552
TST20	015466
TST21	016260
TST22	017254
TST23	020040
TST24	020524
TST25	021306
TST26	022056
TST27	022622
TST3	007236
TST30	023372
TST31	024124
TST32	024456
TST33	024750
TST34	025226

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[illegible]

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SEQ 0196

US2 = 000002	1514#	6772												
US4 = 000004	1515#	6772												
VECADD 003406	1659#	1792*	1882*	5188*	6383*									
VOUS 033030	5022	5025#												
WATBIT 046362	2145	2150	2155	2160	2167	2172	2228	2238	2273	2313	2494	2512	2539	
	2562	2612	2669	2697	2721	2792	2843	2882	6612#					
WATFIV 010246	2309	2314	2318#											
WATFOR 010036	2289#													
WC 003444	1679#	2205*	2225*	2227	2231*	2235*	2236	2254*	2294*	2341*	2479*	2511	2514*	
	2535*	2538	2541*	2558*	2561	2565*	2614*	2654*	2682*	2706*	2765*	2821*	2860*	
	2915*	2999*	3094*	3236*	3341*	3431*	3538*	3643*	3746*	3847*	3948*	4044*	4109*	
	4158*	4208*	4258*	4313*	4366*	4419*	4472*	4525*	4578*	4631*	4684*	4737*	4790*	
	4843*	4896*	4949*	5007*	5042*	5104*	5144*	5209*	5268*	5344*	5409*	5485*	5550*	
	5626*	5691*	5767*	5832*	5908*	5973*	6049*	6114*	6190*	6255*	6331*	6413*	8490	
	8514	8516	8527											
WCE = 040000	1527#	2120	3125	3254	3303	3372	3462	3569	3674	3777	3878	3979	4067	
	5069	5171	6787											
WCEERR 033730	5133	5138	5140	5142#										
WCEHI = 010000	1539#	2104	3126	3373	3570	3675	5066	5162						
WCELO = 004000	1538#	2104	3126	3373	3570	3675	5060	5168						
WCEOWT 033454	5093	5098	5100	5102#										
WCERR1 007462	2202	2222#												
WCERR2 007546	2220	2234#												
WCETRE 016610	3221	3226	3228	3230#										
WCETST 016400	3184	3189	3191	3193#										
WCTST 016474	3201	3206	3208	3210#										
WHYFO 007224	2175#	2381	2782	2939	2961	3025	3030	3033	3111	3130	3140	3144	3149	
	3153	3214	3253	3272	3282	3286	3291	3295	3358	3377	3387	3391	3396	
	3400	3448	3467	3477	3481	3486	3490	3555	3574	3584	3588	3593	3597	
	3660	3679	3689	3693	3698	3702	3763	3782	3792	3796	3801	3805	3864	
	3883	3893	3897	3902	3906	3965	3984	3994	3998	4003	4007	4061	4069	
	4078	4126	4130	4175	4179	4225	4229	4275	4279	4330	4334	4383	4387	
	4436	4440	4489	4493	4542	4546	4595	4599	4648	4652	4701	4705	4754	
	4758	4807	4811	4860	4864	4913	4917	4966	4970	5024	5059	5063	5121	
	5161	5165	5286	5296	5371	5427	5437	5512	5568	5578	5653	5709	5719	
	5794	5850	5860	5935	5991	6001	6076	6132	6142	6217	6273	6283	6358	
	6459													
WRCHO = 000051	1696#	3218	5028	5130										
WRCH1 = 000052	1697#													
WRCH2 = 000053	1698#													
WRCH3 = 000054	1699#													
WRCH4 = 000055	1700#													
WRCH5 = 000056	1701#													
WRCH6 = 000057	1702#													
WRITE0= 000061	1716#	2901	2982	2984	3181	3521	3626	3729	3829	3830	4095	4144	4194	
	4244	4352	4458	4993	5090	5191	5320	5818	6393	6744				
WRITE1= 000062	1717#													
WRITE2= 000063	1718#	5602	5959											
WRITE3= 000064	1719#													
WRITE4= 000065	1720#	5884	6100											
WRITE5= 000066	1721#													
WRITE6= 000067	1722#	4405	4511	4564	4617	6166	6241							
ZERO = 000000	1687#	2581	2587	2593	2723	2729	2899	3178	3320	3519	3620	3623	3673	
	3728	3828	4093	4297	4350	4403	4456	4509	4562	4615	4668	4721	4774	
	4827	4880	4933	4987	5187	5249	5253	5318	5330	5390	5394	5459	471	
	5531	5535	5600	5612	5672	5676	5741	5753	5814	5817	5882	5894	5955	

SEQ 0197

		5958	6023	6035	6096	6099	6164	6176	6237	6240	6305	6317	6380	6777
\$AUTOS	001134	556#												
\$BDADR	001122	551#												
\$BDDAT	001126	553#												
\$BELL	001216	585#	9016	9037										
\$CHARC	073452	8771*	8781*	8788	8797*	8802#								
\$CKSWR=	***** U	9187												
\$CMTAG	001100	539#	1798	1799	1807	1813	1814							
\$CM1 =	000006	571#	572#	573#	574#	575#	576#	577#						
\$CM2 =	000014	571#	572#	573#	574#	575#	576#	577#						
\$CM3 =	000006	569#	571											
\$CM4 =	000006	577#	578#	579#	580#	581#	582#	583#						
\$CNTLG	074663	9106#												
\$CNTLU	074656	9105#												
\$CRLF	001223	587#	6593	6654	6811	8770	8805	8957	8976	8981	8985	9024	9037	9105
\$CS1	004124	1771#	2110	3124*	3266*	3371*	3461*	3568*	3673*	3776*	3877*	3978*	4066*	
\$CS2	004126	1772#	2117	3125*	3267*	3372*	3462*	3569*	3674*	3777*	3878*	3979*	4067*	
\$CS3	004130	1773#	2101	3126*	3268*	3373*	3463*	3570*	3675*	3778*	3879*	3980*		
\$DBLK	074120	8906	8940	8948#										
\$DOAGN	046352	6575	6596	6602#										
\$DTBL	074110	8909	8944#											
\$ENDAD	046342	528	6598#											
\$ENDCT	046206	577#												
\$ENULL	046356	6605#												
\$EOP	046152	1917	1941	1962	1983	6556	6567#							
\$EOPCT	046200	6574#	6578											
\$ER	004134	1775#	2132	3128*	3270*	3375*	3465*	3572*	3677*	3780*	3881*	3982*		
\$ERFLG	001103	542#	1928	1949	1970	1991	3158	3300	3405	3495	3602	3707	3810	3911
		4012	5064	5166	5227	5232	5297	5372	5438	5513	5579	5654	5720	5795
		5861	5936	6002	6077	6143	6218	6284	6359	6441	6804	6822	8635	8663
		8665	8671*	8692	9011*	9037								
\$ERMAX	001115	548#	1815*	8665	8687*	8692								
\$ERRCR	074264	1807	9010#											
\$ERRPC	001116	549#	8490	8492	8494	8496	8498	8500	8502	8504	8505	8507	8508	8510
		8512	8514	8516	8518	8520	8522	8525	8527	8529	8533	8535	8963	9018*
		9019*	9020	9037										
\$ERRTB	001226	604#	8971											
\$ERRTY	074130	6814	8956#											
\$ERTTL	001112	546#	6590	6594*	9017*	9037								
\$ESCAP	001214	584#	1814*	8686*	9032	9034	9037							
\$FILLC	001156	567#	8774	8805										
\$FILLS	001155	566#	8805											
\$GDADR	001120	550#												
\$GDDAT	001124	552#												
\$GET42	046332	6595#												
\$GTSWR=	***** U	9186												
\$HD =	000000	349												
\$HIOCT	075012	9143*	9148#											
\$ICNT	001104	543#	8678*	8679	8681*	8691								
\$ILLUP	073220	8696	8712	8729#										
\$INTAG	001135	557#												
\$ITEMB	001114	547#	8960	9020*	9037									
\$LF	001224	588#	8805	9037	9096	9105								
\$LPADR	001106	544#	1816*	6688	6738	8669*	8684*	8689	8691					
\$LPERR	001110	545#	1817*	8669	8685*	8691	9031							
\$MAIL -	***** U	1834	8684	8758	9026									

\$MNEW	074701	9109#												
\$MSWR	074670	9107#												
\$MXCNT	073056	8682	8691#											
\$NULL	001154	565#	8776	8805										
\$NWTST=	000001	1846#	1848	2072#	2074	2178#	2180	2193#	2195	2241#	2243	2281#	2283	2321#
		2323	2384#	2386	2452#	2454	2498#	2500	2597#	2599	2637#	2639	2738#	2740
		2888#	2890	2965#	2967	3059#	3061	3168#	3170	3309#	3311	3414#	3416	3505#
		3507	3613#	3615	3717#	3719	3818#	3820	3919#	3921	4021#	4023	4082#	4084
		4133#	4135	4182#	4184	4232#	4234	4284#	4286	4337#	4339	4390#	4392	4443#
		4445	4496#	4498	4549#	4551	4602#	4604	4655#	4657	4708#	4710	4761#	4763
		4814#	4816	4867#	4869	4920#	4922	4973#	4975	5075#	5077	5177#	5179	5237#
		5239	5303#	5305	5378#	5380	5444#	5446	5519#	5521	5585#	5587	5660#	5662
		5726#	5728	5801#	5803	5867#	5869	5942#	5944	6008#	6010	6083#	6085	6149#
		6151	6224#	6226	6290#	6292	6365#	6367	6463#	6465				
\$OCNT	073700	8837*	8866*	8879#										
\$OMODE	073702	8832*	8836*	8841	8844*	8855*	8881#							
\$OVER	073042	8646	8662	8670	8680	8688#								
\$PASS	001100	540#	6571*	6572*	6583	6605	8676	8692						
\$POWER	073226	8727	8732#											
\$PWRDN	073060	1811	8696#	8724										
\$PWRMG	073214	8727#												
\$PWRUP	073132	8706	8712#											
\$QUES	001222	586#	8805	9037	9089	9105								
\$RDCHR	074420	9053#	9187											
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\$RDLIN	074540	9081#	9188											
\$RDOCT	074712	9121#	9189											
\$RDSZ =	000010	9074#												
\$REGAD	001160	569#												
\$REGO	001162	571#	2224*	2230*	2234*	2270*	2275*	2310*	2315*	2403*	2408	2463*	2464	2467
		2469*	2472*	2473	2475	2507*	2508	2509	2529	2531*	2533*	2534	2536	2556*
		2557	2559	2606*	2607	2609	2629	2631*	2647*	2648	2650	2670	2672*	2674*
		2675*	2676	2678	2698*	2699	2701	2750*	2751	2788	2793	2800*	2806*	2807
		2838	2844*	2845	2878	2937*	2942*	2950*	3090*	3091*	3114	3116	3118	3122
		3133	3135	3232*	3233*	3256	3258	3260	3264	3275	3277	3337*	3338*	3361
		3363	3365	3369	3380	3382	3427*	3428*	3451	3453	3455	3459	3470	3472
		3520	3534*	3535*	3558	3560	3562	3566	3577	3579	3639*	3640*	3663	3665
		3667	3671	3682	3684	3742*	3743*	3766	3768	3770	3774	3785	3787	3843*
		3844*	3867	3869	3871	3875	3886	3888	3944*	3945*	3968	3970	3972	3976
		3987	3989	4029	4030	5282*	5358*	5423*	5499*	5564*	5640*	5705*	5781*	5846*
		5922*	5987*	6063*	6128*	6204*	6269*	6345*	6623	6625	6765*	6770*	6775*	6780*
		6785*	6790*	8490	8492	8494	8496	8498	8509	8525	8529			
\$REG1	001164	572#												
\$REG2	001166	573#												
\$REG3	001170	574#												
\$REG4	001172	575#	2186*	2187	3179	3180*	3216	3217*	3625					
\$REG5	001174	576#	1785*	1786*	1866	1870*								
\$RHRA	004136	1776#	2722*	2724*	2728*	2730*								
\$RHD8	004140	1777#												
\$RHWC	004142	1778#	2580*	2582*	2586*	2588*								
\$RTNAD	046354	6604#												
\$R2A =	***** U	9190												
\$SAVRE	***** U	9190												
\$SAVR6	073224	8705*	8713	8714*	8715*	8731#								
\$SCOPE	072610	1805	8644#											
\$SETUP=	000017	1797#	1804	1805	1807	1809	1811	1813	1814	1816	6569	8645	9011	9029

SEQ 0199

[illegible]

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CROSS REFERENCE TABLE -- USER SYMBOLS

```

$XTSTR 072620
$$GET4= 000000
$CFILL 073701
$4OCAT= ***** J
.      = 075072

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6597#												
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8645	9023											
472#	476#	481#	483#	526	527#	529#	531#	538#	589	1751#	1754#	1802
1816	1817	1839#	1843#	1886#	1925#	1946#	1967#	1988#	2005#	2175	2420#	6500#
6512#	6523#	6534#	6582#	6605	6606#	6631#	6646#	6720#	6837#	8489#	8691	8692
8708	8730	8805	8948#	8995#	9037	9040	9104#	9105	9111			

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COMMENT	1#	470#													
DBLST	4082#	4089	4293	4346	4399	4452	4505	4558	4611	4664	4717	4770	4823	4876	4929
ENDCOM	1#	470#													
ERROR	364#	2028	2032	2038	2144	2149	2154	2159	2166	2171	2189	2226	2232	2237	2272
	2277	2312	2317	2357	2379	2405	2422	2424	2426	2428	2430	2432	2434	2436	2438
	2440	2442	2444	2446	2448	2493	2528	2555	2579	2585	2591	2628	2668	2696	2720
	2727	2733	2781	2786	2791	2837	2842	2876	2881	2938	2943	2947	2951	2957	3024
	3029	3032	3035	3038	3042	3047	3051	3054	3110	3120	3137	3139	3143	3148	3152
	3155	3163	3213	3252	3262	3279	3281	3285	3290	3294	3297	3305	3357	3367	3384
	3386	3390	3395	3399	3402	3410	3447	3457	3474	3476	3480	3485	3489	3492	3500
	3554	3564	3581	3583	3587	3592	3596	3599	3607	3659	3669	3686	3688	3692	3697
	3701	3704	3712	3762	3772	3789	3791	3795	3800	3804	3807	3815	3863	3873	3890
	3892	3896	3901	3905	3908	3916	3964	3974	3991	3993	3997	4002	4006	4009	4017
	4060	4072	4077	4125	4129	4174	4178	4224	4228	4274	4278	4329	4333	4382	4386
	4435	4439	4488	4492	4541	4545	4594	4598	4647	4651	4700	4704	4753	4757	4806
	4810	4859	4863	4912	4916	4965	4969	5023	5058	5062	5068	5071	5120	5160	5164
	5170	5173	5194	5225	5229	5234	5285	5291	5294	5299	5300	5361	5364	5367	5370
	5374	5375	5426	5432	5435	5440	5441	5502	5505	5508	5511	5515	5516	5567	5573
	5576	5581	5582	5643	5646	5649	5652	5656	5657	5708	5714	5717	5722	5723	5784
	5787	5790	5793	5797	5798	5849	5855	5858	5863	5864	5925	5928	5931	5934	5938
	5939	5990	5996	5999	6004	6005	6066	6069	6072	6075	6079	6080	6131	6137	6140
	6145	6146	6207	6210	6213	6216	6220	6221	6272	6278	6281	6286	6287	6348	6351
	6354	6357	6361	6362	6409	6410	6431	6434	6437	6440	6445	6446	6447	6759	
ESCAPE	1#	470#													
GETPRI	1#	470#													
GETSWR	1#	470#													
MSG	1845#	1848	2072#	2074	2178#	2180	2192#	2195	2241#	2243	2281#	2283	2321#	2323	2384#
	2386	2451#	2454	2497#	2500	2596#	2599	2636#	2639	2737#	2740	2888#	2890	2965#	2967
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	3919#	3921	4021#	4023	4082#	4084	4133#	4135	4182#	4184	4232#	4234	4283#	4286	4339
	4392	4445	4498	4551	4604	4657	4710	4763	4816	4869	4922	4973#	4975	5075#	5077
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	6085	6151	6226	6292	6365#	6367	6463#	6465							
MULT	1#	470#													
NEWST	1#	470#	1846	2072	2178	2193	2241	2281	2321	2384	2452	2498	2597	2637	2738
	2888	2965	3059	3168	3309	3414	3505	3613	3717	3818	3919	4021	4082	4133	4182
	4232	4284	4337	4390	4443	4496	4549	4602	4655	4708	4761	4814	4867	4920	4973
	5075	5177	5237	5303	5378	5444	5519	5585	5660	5726	5801	5867	5942	6008	6083
	6149	6224	6290	6365	6463										
POP	1#	470#	8717	8718	8935	9144									
PUSH	1#	470#	8698	8704	8894	9123									
REGCLR	1782#	2249	2289												
REPORT	1#	470#													
REWR	1782#	5246	5387	5528	5669	5810	5951	6092	6233						
SAVE	1782#	2204	2253	2293	2340	2477	2513	2540	2563	2613	2653	2681	2704	2764	2820
	2858	2914	2998	3093	3235	3340	3430	3537	3642	3745	3846	3947	4043	4108	4157
	4207	4257	4312	4365	4418	4471	4524	4577	4630	4683	4736	4789	4842	4895	4948
	5006	5041	5103	5143	5208	5267	5343	5408	5484	5549	5625	5690	5766	5831	5907
	5972	6048	6113	6189	6254	6330	6411								
SCOPE	365#	1854	2079	2183	2198	2248	2326	2389	2457	2506	2603	2645	2746	2894	
	2972	3064	3173	3315	3420	3511	3618	3723	3823	3926	4026	4088	4139	4189	4239
	4292	4345	4398	4451	4504	4557	4610	4663	4716	4769	4822	4875	4928	4981	5082
	5182	5245	5311	5386	5452	5527	5593	5668	5734	5809	5875	5950	6016	6091	6157
	6232	6298	6371	6468	6568										
SETPRI	1#	470#													

[illegible]

MASSBUS RH70 AND RH11 DIAGNOSTIC
CZRHBE.P11 07-JUN-79 13:44

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CROSS REFERENCE TABLE -- MACRO NAMES

SEQ 0203

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.SAPTH	1#		
.SAPTY	1#		
.SASTA	1#		
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.SCMTA	1#	338#	532
.SDB2D	1#		
.SDB2O	1#		
.SDIV	1#		
.SEOP	1#	338#	6558
.SERRO	1#	338#	8996
.SERRT	1#	338#	8949
.SMULT	1#		
.SPOWE	1#	338#	8692
.SRAND	1#		
.SRDDE	1#		
.SRDOC	1#	338#	9111
.SREAD	1#	338#	9037
.SR2AZ	1#		
.SSAVE	1#		
.SSB2D	1#		
.SSB2O	1#		
.SSCOP	1#	338#	8630
.SSIZE	1#		
.SSUPR	1#		
.STRAP	1#	338#	9149
.STYPB	1#		
.STYPD	1#	338#	9882
.STYPE	1#	338#	8735
.STYPO	1#	338#	8805
.S4OCA	1#		
.1170	1#		

. ABS. 075072 000

ERRORS DETECTED: 0

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