

RH10/RH11

MASSBUS DIAGNOSTIC
MD-11-DZRHB-C

EP-DZRHB-C-DL-B

DEC 1976

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RH10/RH11

MASSBUS DIAGNOSTIC
MD-11-DZRHB-C

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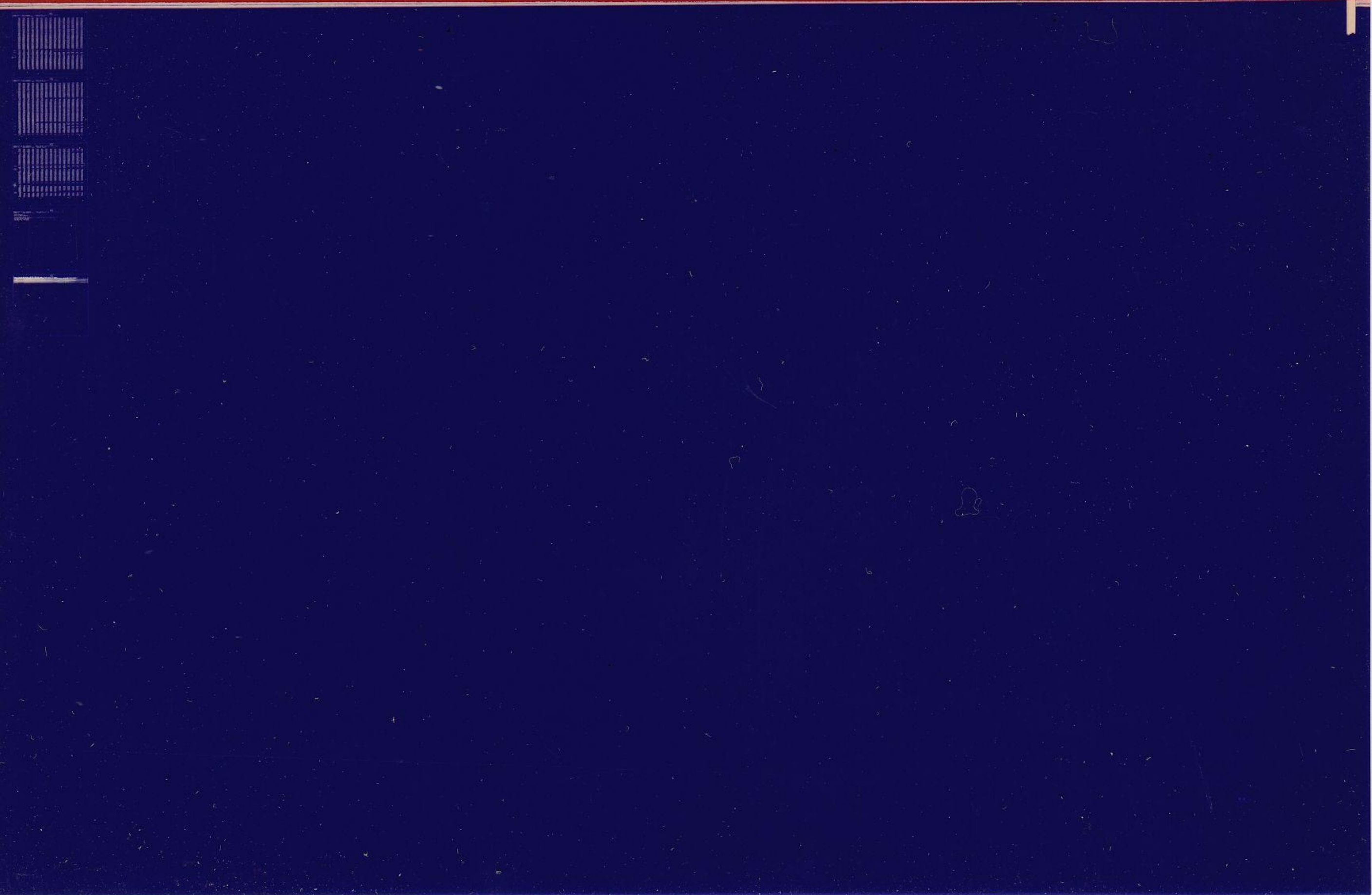
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MASSBUS I/O AND RM11 DIAGNOSTIC
CONTROLLER

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.REM *

IDENTIFICATION

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

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1.0 ABSTRACT

THIS PROGRAM WAS CREATED TO TEST RH11 AND RH70 MASSBUS CONTROLLERS WITH AN RH11-TB (MASSBUS SIMULATOR) ATTACHED TO IT.

TO GET MAXIMUM RESULTS FROM THE TEST ALLOW PASS1 TO BE COMPLETED SO THAT ALL INFORMATION POSSIBLE HAS BEEN REPORTED ABOUT ANY ERROR, THEN LOOP ON DESIRED ERRORS.

IN THE EVENT OF AN ERROR, 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 "WHATBIT". WHYFO TELLS WHAT REGISTER THE ERROR BIT WAS FOUND IN AND WHATBIT TELLS WHAT THE NUMBER OF THE ERROR BITS WHERE.

EXAMPLE:

RHCS1 HAS AN ERROR BIT SET

THESE ARE THE NUMBER OF THE EXTRA BITS
15 14

RHCS2 HAS AN ERROR BIT SET

THESE ARE THE NUMBER OF THE EXTRA BITS
15

END EXAMPLE

THIS PRINTOUT SAYS THAT TRE AND SC IS SET IN RHCS1 AND THAT DATA LATE WAS SET IN RHCS2.

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

2.1 HARDWARE

THIS PROGRAM ASSUMES THE FOLLOWING IS IN PROPER WORKING
CONDITION:

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

2.2 SOFTWARE

AFTER LOADING PROGRAM THE STARTING ADDRESS IS 200
IF THE RH'S ARE JUMPED FOR THE TESTER
SO THAT REGISTER ADDRESSES MAY BE CONFIGURED FOR TESTING
THE RH'S
IF NO CHANGES IN ADDRESS ARE MADE AN ALTERNATE STARTING
ADDRESS OF 204 CAN BE USED BUT THE PROGRAM MUST HAVE BEEN
STARTED AT LEAST ONCE AT ADDRESS 200 OR 210.
STARTING ADDRESS 210 ALLOWS YOU TO SPECIFY THE BASE
ADDRESS, VECTOR ADDRESS, AND HOW MANY REGISTERS YOU
ARE JUMPED FOR (A MAXIMUM OF 36).

3.0 PROGRAM DESCRIPTION

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

3.1 SWITCH OPTIONS

SWITCH
-----USE

15	HALT ON ERROR
14	LOOP ON TEST
13	INHIBIT ERROR TYPEOUTS
11	INHIBIT ITERATIONS
10	BELL ON ERROR
9	LOOP ON ERROR
8	LOOP ON TEST IN SWR(7:0)
1	TO BE USED IF DUAL PORT NOT USED
0	INHIBITS THE PRINTING OF WATBIT

13, 8, AND 0	INHIBIT WATBIT PRINTOUT

3.2 SYSMAC ROUTINES (USED)

EQUATE, CATCH, COMMON TAGS, SWRHI, SWRLD, 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 PROC-

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MASSBUS RH70 AND RH11 DIAGNOSTIC
DZRMBC.P11

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GRAM.

4.0 TEST DESCRIPTIONS

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

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

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

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

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

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

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

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

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

TEST 12 - RHWC BIT TEST. THIS TEST CHECKS THE WORD COUNT REGISTER TO SEE IF ALL BITS CAN BE SET AND CLEARED AND CHECKS THE REGISTER USING ALTERNATE BITS SET (52525) AND USING (125252) TO MAKE SURE IT WORKS WITH ALTERNATE PATTERN.

TEST 13 - RHBAE BIT TEST. THIS TEST TESTS THE RHBAE REGISTER ONLY IF THE RH IS AN RH70. RH11'S DO NOT HAVE AN RHBAE REGISTER.

TEST 14 - RHBA BIT TEST. THIS TEST TESTS THE BUS ADDRESS REGISTER BY FIRST ALTERNATLY SETTING AND CLEARING BITS IN THE BA REGISTER AND THEN BY USING AN

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ALTERNATE BIT PATTERN (52525) AND AN OPPOSITE
BIT PATTERN (125252).

- TEST 15 - RH08 BIT TEST. THIS TEST TESTS THE RH DATA BUF-
FER REGISTER BY FIRST ALTERNATLY SETTING AND RE-
SETTING BITS IN THE RH08 REGISTER AND THEN BY USING
AN ALTERNATE BIT PATTERN (52525) AND AN OPPOSITE
ALTERNATE BIT PATTERN (125252).
- TEST 16 - RHWC OPERATIONAL TEST. THIS TEST CHECKS THAT
WHEN THE WORD COUNT REGISTER IS INCREMENTED IT IS
CARRIED TO THE HIGHEST BIT AND IS RETURNED TO ZERO.
- TEST 17 - RHBA OPERATIONAL TEST. THIS TEST CHECKS THAT
THE BUS ADDRESS REGISTER WILL CARRY THROUGH TO
THE HIGHEST BIT IN THE BUS ADDRESS EXTENSION REG-
ISTER OR BIT A17 IN THE RHCS1 REGISTER AFTER IT IS
INCREMENTED.
- TEST 20 - NEM, TRE, SC BIT TEST. THIS TEST WILL CHECK
THAT NON-EXISTING MEMORY WILL SET THE TRE AND SC
BIT IN RHCS1 REGISTER.
- TEST 21 - WCE, TRE, SC BIT TEST. THIS TEST WILL CHECK
THAT TRE AND SC SET WHEN A WRITE CHECK ERROR OCCURS
(WCE).
- TEST 22 - MDPE, TRE AND SC BIT TEST. THIS TEST CHECKS
THAT MDPE CAN BE SET IN RHCS2, AND THAT MDPE SETS
TRE AND SC IN THE RHCS1 REGISTER.
- TEST 23 - UPE, TRE, SC ERROR TEST (RH11). THIS TEST CHECKS
THE UPE BIT IN RHCS2 TO SEE IF IT SETS AND WHEN IT
IT SETS IS TRE AND SC BITS SET IN RHCS1.
- TEST 24 - UPE, TRE, SC ERROR TEST (RH70). THIS TEST CHECKS
THE UPE BIT IN RHCS2 TO SEE IF IT SETS AND WHEN
IT SETS IS TRE AND SC BITS SET IN RHCS1.
- TEST 25 - NED BIT TEST. THIS TEST WILL CHECK THAT NED
(NON-EXISTANT DRIVE) SETS TRE AND SC BITS IN RHCS1.
- TEST 26 - MXF, TRE AND SC BIT TEST. THIS TEST WILL CHECK
THAT MXF (MISSED TRANSFER ERROR) WILL SET TRE AND
SC BITS.
- TEST 27 - PGE ERROR BIT TEST. THIS TEST FORCES PGE TO
SET IN RHCS2 AND VERIFYS TRE AND SC IS SET IN
RHCS1.
- TEST 30 - MXF, TRE AND SC BIT TEST (RH11 ONLY). THIS TEST
SEES IF MXF CAN BE SET BY A MOVE INSTRUCTION AND
THAT TRE AND SC ARE SET IN RHCS1. MXF CAN BE SET
THIS WAY IN AN RH11 BIT CAN NOT BE SET THIS WAY
IN AN RH70.

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TEST 31 - MCPE AND SC ERROR TEST. THIS TEST CHECKS THAT MCPE CAN BE SET IN RHCS1 AND THAT MCPE SETS SC IN RHCS1.

TEST 32-52 - DOUBLE TESTS. THESE TESTS CHECK DBL IN RHCS3 WITH READ FWD AND REV, WRITE FWD AND REV AND WITH BAI SET IN RHCS2. OPERATION BEING PERFORMED WILL BE PRINTED OUT IN ERROR MESSAGE. RH70 ONLY.

TEST 53 - WCE EW ERROR TEST. THIS TEST CHECKS THAT WCELO WILL SET IN RHCS3 AND THAT WCE SETS IN RHCS1. IT ALSO CHECKS THAT WCEHI DOES NOT SET WITH WCELO IN RHCS3.....RH70 ONLY.

TEST 54 - WCE OW ERROR TEST (WCEHI). THIS TEST CHECKS THAT WCEHI SETS IN RHCS3 AND THAT WCE SETS IN RHCS1. IT ALSO TESTS THAT WCELO DOES NOT SET WITH WCEHI. (RH70 ONLY)

TEST 55 - INTERRUPT ENABLE TEST. THIS TEST VERIFYS THAT IE WILL SET IN RHCS1 AND IT WILL CAUSE AN INTERRUPT WHEN RDY IS SET.

TEST 56-75 - READ AND WRITE OPERATIONAL TESTS. THESE TESTS VERIFY ALL READ AND WRITE CODES WHETHER IT BE A READ REV. OR FWD OR A WRITE REV. OR FWD. DURING THESE TESTS THE TESTER TIMING IS MARGINED AND NO ERRORS SHOULD OCCUR.

TEST 76 - THIS IS THE LARGE TRANSFER TEST. IT TESTS THE RH 70 OR 11 DOING A 671 WORD TRANSFER FOR ERRORS

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

.TITLE MASSBUS RH70 AND RH11 DIAGNOSTIC

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.*MAYNARD, MASS. 01754

.*
.*PROGRAM BY WN D'ENTREMONT

.*THIS PROGRAM WAS ASSEMBLED USING THE PDP-11 MAINDEC SYSMAC

.*PACKAGE (MAINDEC-11-DZQAC-C2), SEPT 14, 1976.

.*
.*SBTTL OPERATIONAL SWITCH SETTINGS

SWITCH	USE
15	HALT ON ERROR
14	LOOP ON TEST
13	INHIBIT ERROR TYPEOUTS
11	INHIBIT ITERATIONS

HO1

MASSBUS RMTD AND RH11 DIAGNOSTIC MACY11 27(732) 01-OCT-76 09:03 PAGE 8
DZRHBC.P11 OPERATIONAL SWITCH SETTINGS

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326          :*          10          BELL ON ERROR
327          :*          9          LOOP ON ERROR
328          :*          8          LOOP ON TEST IN SWR(7:0)
329          .SBTTL BASIC DEFINITIONS
330
331          :*INITIAL ADDRESS OF THE STACK POINTER *** 750 ***
332          000750          STACK= 750
333          .EQUIV EMT.ERROR          ;;BASIC DEFINITION OF ERROR CALL
334          .EQUIV IOT.SCOPE          ;;BASIC DEFINITION OF SCOPE CALL
335
336          :*MISCELLANEOUS DEFINITIONS
337          000011          HT= 11          ;;CODE FOR HORIZONTAL TAB
338          000012          LF= 12          ;;CODE FOR LINE FEED
339          000015          CR= 15          ;;CODE FOR CARRIAGE RETURN
340          000200          CRLF= 200          ;;CODE FOR CARRIAGE RETURN-LINE FEED
341          177776          PS= 177776          ;;PROCESSOR STATUS WORD
342          .EQUIV PS.PSW
343          177774          STKLM= 177774          ;;STACK LIMIT REGISTER
344          177772          PIRQ= 177772          ;;PROGRAM INTERRUPT REQUEST REGISTER
345          177570          DSWR= 177570          ;;HARDWARE SWITCH REGISTER
346          177570          DDISP= 177570          ;;HARDWARE DISPLAY REGISTER
347
348          :*GENERAL PURPOSE REGISTER DEFINITIONS
349          000000          R0= %0          ;;GENERAL REGISTER
350          000001          R1= %1          ;;GENERAL REGISTER
351          000002          R2= %2          ;;GENERAL REGISTER
352          000003          R3= %3          ;;GENERAL REGISTER
353          000004          R4= %4          ;;GENERAL REGISTER
354          000005          R5= %5          ;;GENERAL REGISTER
355          000006          R6= %6          ;;GENERAL REGISTER
356          000007          R7= %7          ;;GENERAL REGISTER
357          000006          SP= %6          ;;STACK POINTER
358          000007          PC= %7          ;;PROGRAM COUNTER
359
360          :*PRIORITY LEVEL DEFINITIONS
361          000000          PR0= 0          ;;PRIORITY LEVEL 0
362          000040          PR1= 40          ;;PRIORITY LEVEL 1
363          000100          PR2= 100          ;;PRIORITY LEVEL 2
364          000140          PR3= 140          ;;PRIORITY LEVEL 3
365          000200          PR4= 200          ;;PRIORITY LEVEL 4
366          000240          PR5= 240          ;;PRIORITY LEVEL 5
367          000300          PR6= 300          ;;PRIORITY LEVEL 6
368          000340          PR7= 340          ;;PRIORITY LEVEL 7
369
370          :*"SWITCH REGISTER" SWITCH DEFINITIONS
371          100000          SW15= 100000
372          040000          SW14= 40000
373          020000          SW13= 20000
374          010000          SW12= 10000
375          004000          SW11= 4000
376          002000          SW10= 2000
377          001000          SW09= 1000
378          000400          SW08= 400
379          000200          SW07= 200
380          000100          SW06= 100
381          000040          SW05= 40

```

MASSBUS RMT0 AND RMT1 DIAGNOSTIC
DZRMBC.P11 BASIC DEFINITIONS

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382 000020
383 000010
384 000004
385 000002
386 000001

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

398 100000
399 040000
400 020000
401 010000
402 004000
403 002000
404 001000
405 000400
406 000200
407 000100
408 000040
409 000020
410 000010
411 000004
412 000002
413 000001

.*DATA BIT DEFINITIONS (BIT00 TO BIT15)

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

426 000004
427 000010
428 000014
429 000014
430 000014
431 000020
432 000024
433 000030
434 000034
435 000060
436 000064

.*BASIC "CPU" TRAP VECTOR ADDRESSES

ERRVEC= 4 :: TIME OUT AND OTHER ERRORS
RESVEC= 10 :: RESERVED AND ILLEGAL INSTRUCTIONS
TBITVEC= 14 :: "T" BIT
TRTVEC= 14 :: TRACE TRAP
BPTVEC= 14 :: BREAKPOINT TRAP (BPT)
IOTVEC= 20 :: INPUT/OUTPUT TRAP (IOT) **SCOPE**
PWRVEC= 24 :: POWER FAIL
EMTVEC= 30 :: EMULATOR TRAP (EMT) **ERROR**
TRAPVEC= 34 :: "TRAP" TRAP
TKVEC= 60 :: TTY KEYBOARD VECTOR
TPVEC= 64 :: TTY PRINTER VECTOR

J01

MASSBUS RH70 AND RH11 DIAGNOSTIC
DZRH8C.P11 BASIC DEFINITIONS

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```

438          000240      PIRQVEC=240      ;;PROGRAM INTERRUPT REQUEST VECTOR
439          .SBTTL TRAP CATCHER
440
441          000000      .=0
442          ;*ALL UNUSED LOCATIONS FROM 4 - 776 CONTAIN A "+2,HALT"
443          ;*SEQUENCE TO CATCH ILLEGAL TRAPS AND INTERRUPTS
444          ;*LOCATION 0 CONTAINS 0 TO CATCH IMPROPERLY LOADED VECTORS
445          000174      .=174
446          000174      000000      DISPREG: .WORD 0      ;;SOFTWARE DISPLAY REGISTER
447          000176      000000      SWREG: .WORD 0      ;;SOFTWARE SWITCH REGISTER
448          .SBTTL STARTING ADDRESS(ES)
449          000200      000137      004176      JMP @#BEGIN1      ;;JUMP TO STARTING ADDRESS OF PROGRAM
450          000204      000204      .=204
451          000204      000137      004144      JMP @#BEGIN
452          000210      000210      .=210
453          000210      000137      004152      JMP @#BEGIN3
454          ;*****
455          .SBTTL MEMORY MANAGEMENT DEFINITIONS
456
457          ;*KT11 VECTOR ADDRESS
458
459          000250      MMVEC= 250
460
461          ;*KT11 STATUS REGISTER ADDRESSES
462
463          177572      SR0= 177572
464          177574      SR1= 177574
465          177576      SR2= 177576
466          172516      SR3= 172516
467
468          ;*KERNEL "I" PAGE DESCRIPTOR REGISTERS
469
470          172300      KIPDR0= 172300
471          172302      KIPDR1= 172302
472          172304      KIPDR2= 172304
473          172306      KIPDR3= 172306
474          172310      KIPDR4= 172310
475          172312      KIPDR5= 172312
476          172314      KIPDR6= 172314
477          172316      KIPDR7= 172316
478
479          ;*KERNEL "I" PAGE ADDRESS REGISTERS
480
481          172340      KIPAR0= 172340
482          172342      KIPAR1= 172342
483          172344      KIPAR2= 172344
484          172346      KIPAR3= 172346
485          172350      KIPAR4= 172350
486          172352      KIPAR5= 172352
487          172354      KIPAR6= 172354
488          172356      KIPAR7= 172356
489
490          ;*****
491          .SBTTL ACT11 HOOKS
492
493          ;*****

```

K01

MASSBUS RH70 AND RH11 DIAGNOSTIC
DZRMBC.P11 ACT11 HOOKS

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494
495 000214
496 000046
497 000046 046262
498 000052
499 000052 000000
500 000214

;HOOKS REQUIRED BY ACT11

\$SVPC=.

.=46

\$ENDAD

.=52

.WORD 0

.=\$SVPC

;SAVE PC

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

::2)SET LOC.52 TO ZERO

::RESTORE PC

.SBTTL COMMON TAGS

```

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

```

.=1100

501			SCMTAG:		;; START OF COMMON TAGS
502			SPASS:	.WORD 0	;; CONTAINS PASS COUNT
503			STSTNM:	.BYTE 0	;; CONTAINS THE TEST NUMBER
504			SERFLG:	.BYTE 0	;; CONTAINS ERROR FLAG
505			SICNT:	.WORD 0	;; CONTAINS SUBTEST ITERATION COUNT
506			SLPADR:	.WORD 0	;; CONTAINS SCOPE LOOP ADDRESS
507	001100	001100	SLPERR:	.WORD 0	;; CONTAINS SCOPE RETURN FOR ERRORS
508	001100	000000	SERTTL:	.WORD 0	;; CONTAINS TOTAL ERRORS DETECTED
509	001100	000000	SITEMB:	.BYTE 0	;; CONTAINS ITEM CONTROL BYTE
510	001102	000	SERMAX:	.BYTE 1	;; CONTAINS MAX. ERRORS PER TEST
511	001103	000	SERRPC:	.WORD 0	;; CONTAINS PC OF LAST ERROR INSTRUCTION
512	001104	000000	SGDADR:	.WORD 0	;; CONTAINS ADDRESS OF 'GOOD' DATA
513	001106	000000	SBDADR:	.WORD 0	;; CONTAINS ADDRESS OF 'BAD' DATA
514	001110	000000	SGDDAT:	.WORD 0	;; CONTAINS 'GOOD' DATA
515	001112	000000	SBDDAT:	.WORD 0	;; CONTAINS 'BAD' DATA
516	001114	000		.WORD 0	;; RESERVED--NOT TO BE USED
517	001115	001	SAUTOB:	.BYTE 0	;; AUTOMATIC MODE INDICATOR
518	001116	000000	SINTAG:	.BYTE 0	;; INTERRUPT MODE INDICATOR
519	001120	000000		.WORD 0	
520	001122	000000	SWR:	.WORD 0	;; ADDRESS OF SWITCH REGISTER
521	001124	000000	DISPLAY:	.WORD 0	;; ADDRESS OF DISPLAY REGISTER
522	001126	000000	STKS:	177560	;; TTY KBD STATUS
523	001130	000000	STKB:	177562	;; TTY KBD BUFFER
524	001132	000000	STPS:	177564	;; TTY PRINTER STATUS REG. ADDRESS
525	001134	000	STPB:	177566	;; TTY PRINTER BUFFER REG. ADDRESS
526	001135	000	SNULL:	.BYTE 0	;; CONTAINS NULL CHARACTER FOR FILLS
527	001136	000000	SFILLS:	.BYTE 2	;; CONTAINS # OF FILLER CHARACTERS REQUIRED
528	001140	177570	SFILLC:	.BYTE 12	;; INSERT FILL CHARS. AFTER A "LINE FEED"
529	001142	177570	STPFLG:	.BYTE 0	;; "TERMINAL AVAILABLE" FLAG (BIT<07>=0=YES)
530	001144	177560	SREGAD:	.WORD 0	;; CONTAINS THE ADDRESS FROM WHICH (\$REG0) WAS OBTAINED
531	001146	177562	SREG0:	.WORD 0	;; CONTAINS ((\$REGAD)+0)
532	001150	177564	SREG1:	.WORD 0	;; CONTAINS ((\$REGAD)+2)
533	001152	177566	SREG2:	.WORD 0	;; CONTAINS ((\$REGAD)+4)
534	001154	000	SREG3:	.WORD 0	;; CONTAINS ((\$REGAD)+6)
535	001155	002	SREG4:	.WORD 0	;; CONTAINS ((\$REGAD)+10)
536	001156	012	SREG5:	.WORD 0	;; CONTAINS ((\$REGAD)+12)
537	001157	000	STMP0:	.WORD 0	;; USER DEFINED
538	001160	000000	STMP1:	.WORD 0	;; USER DEFINED
539			STMP2:	.WORD 0	;; USER DEFINED
540	001162	000000	STMP3:	.WORD 0	;; USER DEFINED
541	001164	000000	STMP4:	.WORD 0	;; USER DEFINED
542	001166	000000	STMP5:	.WORD 0	;; USER DEFINED
543	001170	000000	STIMES:	0	;; MAX. NUMBER OF ITERATIONS
544	001172	000000	SESCAPE:	0	;; ESCAPE ON ERROR ADDRESS
545	001174	000000	SBELL:	.ASCII <207><377><377>	;; CODE FOR BELL
546	001176	000000	SQUES:	.ASCII /?/	;; QUESTION MARK
547	001200	000000	SCRLF:	.ASCII <15>	;; CARRIAGE RETURN
548	001202	000000			
549	001204	000000			
550	001206	000000			
551	001210	000000			
552	001212	000000			
553	001214	000000			
554	001216	177607			
555	001222	077			
556	001223	015			

000377

MO1

MASSBUS RH70 AND RH11 DIAGNOSTIC
DZRHBC.P11 COMMON TAGS

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557 001224 000012
558

SLF: .ASCIZ <12> ;;LINE FEED
;;*****

NO1

MASSBUS RH70 AND RH11 DIAGNOSTIC
DZRHBC.P11 ERROR POINTER TABLE

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001226

001226 054760
001230 067522
001232 071670
001234 072234
001236 055020

001240 067642
001242 071702
001244 072240
001246 055060

001250 067763
001252 071714
001254 072244
001256 055134

001260 070103
001262 071726
001264 072250
001266 055174

001270 070223
001272 071740
001274 072254
001276 055245

001300 070223
001302 071740
001304 072254
001306 055461

.SBTTL ERROR POINTER TABLE

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

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

\$ERRTB:

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

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

C02

MASSBUS AUTO AND BUS DIAGNOSTIC
DATA FILE ERROR POINTER TABLE

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672	001403	070223	DHS		
673	001403	071740	DT5		
674	001404	072254	DFS		
675			17		
676	001406	056003	EM17		
677					:TRE AND THE BUS
678					
679					
680					:WCE AND TRE ARE SET BUT
681					:SC BIT READS AS CLEARED
682					:LOGIC BETWEEN TRE AND SC
683					:DOES NOT SEEM TO BE WORKING
684					:BUT IT WORKED OK ON THE
685					:NON-EXISTENT MEMORY TEST
686					:WHICH PRECEDED THIS TEST
687					
688	001410	070223	DHS		
689	001412	071740	DT5		
690	001414	072254	DFS		
691					
692					
693	001416	056052	20		
694			EM20		
695					:JPE DID NOT SET IN RHCS2
696					
697	001420	070223	DHS		
698	001422	071740	DT5		
699	001424	072254	DFS		
700					
701					
702					
703	001430	070223	DHS		
704	001432	071740	DT5		
705	001434	072254	DFS		
706					
707					
708	001436	056132	21		
709			EM21		
710					:TRE AND SC BITS ARE SET
711					:EITHER UPE HAS AN OPEN GOING
712					:TO BUS OR TRE AND SC WAS
713					:SET BY ANOTHER ERROR
714					
715					
716	001440	070223	DHS		
717	001442	071740	DT5		
718	001444	072254	DFS		
719					
720					
721					
722					
723	001446	056165	23		
724			EM23		
725					:UPE AND TRE ARE SET BUT
726					:SC DID NOT SET, LOGIC TO
727					:SET SC DOES NOT SEEM TO
728					:BE WORKING
729					
730					
731	001450	070223	DHS		
732	001452	071740	DT5		
733	001454	072254	DFS		
734					
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727				
728	001460	070223	DHS	
729	001462	071740	DT5	
730	001464	072254	DFS	
731				
732			: ITEM	25
733	001466	056235	EM25	
734				: TRE AND SC ARE SET
735				: BUT THEY SHOULD HAVE BEEN
736				: SET BY NED WHICH READS
737				: AS CLEARED
738	001470	070223	DHS	
739	001472	071740	DT5	
740	001474	072254	DFS	
741				
742			: ITEM	26
743	001476	056267	EM26	
744				: TRE BIT SET BUT NED
745				: AND SC BITS READ AS
746				: CLEARED. NED SHOULD
747				: HAVE SET CAUSING TRE
748				: TO SET WHICH IN TURN
749				: SET SC. LOGIC NOT WORK
750				: ING CORRECTLY
751	001500	070223	DHS	
752	001502	071740	DT5	
753	001504	072254	DFS	
754				
755			: ITEM	27
756	001506	056315	EM27	
757				: TRE BIT WAS NOT SET
758	001510	070223	DHS	
759	001512	071740	DT5	
760	001514	072254	DFS	
761				
762			: ITEM	30
763	001516	056350	EM30	
764				: MXF BIT DID NOT SET
765				: IN RHCS2
766	001520	070223	DHS	
767	001522	071740	DT5	
768	001524	072254	DFS	
769				
770			: ITEM	31
771	001526	056405	EM31	
772				: MXF BIT SHOULD BE SET
773				: IN RHCS2 BUT IT READS AS
774				: CLEARED. TRE AND SC ARE SET
775				: IN RHCS1.
776	001530	070223	DHS	
777	001532	071740	DT5	
778	001534	072254	DFS	
779				
780			: ITEM	32
781	001536	056444	EM32	
782				: TRE BIT IS SET BUT MXF
				: AND SC READ AS CLEARED

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MASSBUS RH70 AND RH11 DIAGNOSTIC
DZRMBC.P11 ERROR POINTER TABLE

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783				:MXF AND SC BITS ARE INCORRECT
784	001540	070223	DH5	
785	001542	071740	DT5	
786	001544	072254	DF5	
787				
788				
789	001546	056473	:ITEM 33	:TRE LOGIC ASSOCIATED WITH
790			EM33	:MXF IS NOT WORKING
791				:TRE READS AS CLEARED
792				:OR TRE HAS AN OPEN GOING
793				:TO THE BUS
794				
795	001550	070223	DH5	
796	001552	071740	DT5	
797	001554	072254	DF5	
798				
799				
800	001556	056543	:ITEM 34	:TESTER IS NOT CONNECT
801			EM34	:TO THE MASSBUS DEVICE
802				:CODE SHOULD BE A 40
803	001560	070416	DH34	:PC TEST NO. DEVICE CODE
804				
805	001562	071762	DT34	:SERRPC,\$TSTNM,DT,0
806				
807	001564	072263	DF34	:0,0,0
808				
809				
810	001566	056613	:ITEM 35	:BIT IN RHCS3 WILL NOT ET
811			EM35	
812				
813	001570	071551	DH171	
814	001572	072212	DT171	
815	001574	072260	DF11	
816				
817				
818	001576	056645	:ITEM 36	
819			EM36	
820	001600	070476	DH36	:PC TEST NO. FAILING ADDRESS
821				
822	001602	071776	DT36	:SERRPC,\$TSTNM,RHCS1,0
823				
824	001604	072267	DF36	:0,0,0
825				
826				
827	001606	056703	:ITEM 37	:DLT DID NOT SET IN RHCS2
828			EM37	
829	001610	070473	DH35	
830				
831	001612	071772	DT35	
832				
833	001614	072266	DF35	
834				
835				
836	001616	056734	:ITEM 40	:DLT IS NOT SET IN RHCS2 BUT
837			EM40	:TRE AND SC READ AS SET.TRE
838				:AND SC MUST HAVE BEEN SET BY A DIFFERENT ERROR

839				
840	001620	070473	DH35	
841	001622	071772	DT35	
842	001624	072266	DF35	
843				
844			; ITEM 41	
845	001626	057074	EM41	: OUTPUT READY IN RHCS2
846				: DID NOT SET
847				
848	001630	070557	DH41	: PC TEST NO.
849				
850	001632	072006	DT41	: SERRPC, STSTNM, 0
851				
852	001634	072272	DF41	:
853				
854			; ITEM 42	
855				
856	001636	057177	EM42	: ALL BITS DID NOT LOAD INTO RHWC
857				: (177777)
858				
859	001640	000000	0	
860	001642	000000	0	
861	001644	000000	0	
862				
863			; ITEM 43	
864	001646	057250	EM43	: RHWC DID NOT LOAD ANY BITS (177777)
865	001650	000000	0	
866	001652	000000	0	
867	001654	000000	0	
868				
869			; ITEM 44	: RHWC
870	001656	057314	EM44	: SOME BITS CLEARED AFTER CLEAR
871				: WAS LOADED INTO RHCS2
872				
873	001660	000000	0	
874	001662	000000	0	
875	001664	000000	0	
876				
877			; ITEM 45	
878	001666	057406	EM45	: NON-EXISTANT MEMORY BIT
879				: SET IN RHCS2
880	001670	000000	0	
881	001672	000000	0	
882	001674	000000	0	
883				
884			; ITEM 46	
885	001676	057461	EM46	: RHBA DID NOT CLEAR AFTER CLR
886				: WAS LOADED INTO RHCS2
887	001700	000000	0	
888	001702	000000	0	
889	001704	000000	0	
890				
891			; ITEM 47	
892	001706	057542	EM47	: ALL BITS DID NOT LOAD INTO
893				: RHBA REGISTER (177776)
894	001710	000000	0	

G02

MASSBUS RMTD AND RH1: DIAGNOSTIC
DZRHBC.P11 ERROR POINTER TABLE

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895	001712	000000	0	
896	001714	000000	0	
897				
898			:ITEM	50
899	001716	057613	EM50	:LOADING TRE AFER ITS SET DOES NCT
900				:CLEAR ERRORS
901	001720	000000	0	
902	001722	000000	0	
903	001724	000000	0	
904				
905			:ITEM	51
906	001726	057672	EM51	:PGE DID NOT SET IN RHCS2
907	001730	000000	0	
908	001732	000000	0	
909	001734	000000	0	
910				
911			:ITEM	52
912	001736	057723	EM52	:THE PROM WHILE ACCESSING A
913				:REGISTER WHICH YOUR TESTER
914				:CANNOT SUPPLY INFORMATION FOR
915				:SAYS INFORMATION IS PRESENT
916				
917	001740	070603	DH52	:PC TEST NO. ADDRESS CONT
918				
919	001742	072014	DT52	:SERRPC,STSTNM,BAE,SREGO
920				
921	001744	072274	DF52	:
922				
923			:ITEM	53
924	001746	060076	EM53	:RHCS1
925	001750	000000	0	
926	001752	000000	0	
927	001754	000000	0	
928				
929			:ITEM	54
930	001756	060104	EM54	:RHWC
931	001760	000000	0	
932	001762	000000	0	
933	001764	000000	0	
934				
935			:ITEM	55
936	001766	060111	EM55	:RHBA
937	001770	000000	0	
938	001772	000000	0	
939	001774	000000	0	
940				
941			:ITEM	56
942	001776	060116	EM56	:RHMR2
943	002000	000000	0	
944	002002	000000	0	
945	002004	000000	0	
946				
947			:ITEM	57
948	002006	060124	EM57	:RHCS2
949	002010	000000	0	
950	002012	000000	0	

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MASSBUS RHTO AND RH1: DIAGNOSTIC
DZRHOC.P11 ERROR POINTER TABLE

MACY11 27(732) 01-OCT-76 09:03 PAGE 21

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

MASSBUS RH70 AND RH11 DIAGNOSTIC
DZRHBC.P11 ERROR POINTER TABLE

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

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

K02

MASSBUS RH70 AND RH11 DIAGNOSTIC
DZRHBC.P11 ERROR POINTER TABLE

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

; HAS AN OPEN GOING TO THE BUS

; DBL NOT SET AFTER A 4 WORD WRITE
; FROM AN EVEN ADDRESS; DBL SET AFTER DOING A 1 WORD WRITE
; FROM AN EVEN ADDRESS; DBL SET ON A 3 WORD WRITE
; FROM AN EVEN ADDRESS; DBL DID NOT SET AFTER A 2 WORD
; WRITE FROM AN EVEN ADDRESS

; MCPE SET BUT SC READS AS CLEARED

; MCPE DID NOT SET

; WCE LO (EW) DID NOT SET IN RHCS3

; WCE HI (OW) SET ALONG WITH
; WCE LO IN RHCS3; WCE LO IS SET IN RHCS3 BUT
; WCE IS NOT SET IN RHCS2

1175			
1176	002450	000000	0
1177	002452	000000	0
1178	002454	000000	0
1179			; ITEM 124
1180	002456	062677	EM124
1181			
1182	002460	000000	0
1183	002462	000000	0
1184	002464	000000	0
1185			; ITEM 125
1186	002466	062772	EM125
1187			
1188	002470	000000	0
1189	002472	000000	0
1190	002474	000000	0
1191			; ITEM 126
1192	002476	063066	EM126
1193			
1194	002500	000000	0
1195	002502	000000	0
1196	002504	000000	0
1197			; ITEM 127
1198	002506	063157	EM127
1199			
1200	002510	000000	0
1201	002512	000000	0
1202	002514	000000	0
1203			; ITEM 130
1204	002516	063255	EM130
1205	002520	071256	DH130
1206	002522	072114	DT130
1207	002524	072267	DF36
1208			; ITEM 131
1209	002526	063327	EM131
1210	002530	071256	DH130
1211	002532	072114	DT130
1212	002534	070476	DH36
1213			; ITEM 132
1214	002536	063361	EM132
1215	002540	071304	DH132
1216	002542	072124	DT132
1217	002544	072315	DF132
1218			; ITEM 133
1219	002546	063415	EM133
1220			
1221	002550	071304	DH132
1222	002552	072124	DT132
1223	002554	072315	DF132
1224			; ITEM 134
1225	002556	063516	EM134
1226			
1227	002560	071304	DH132
1228	002562	072124	DT132
1229	002564	072315	DF132
1230			; ITEM 135

M02

MASSBUS RH70 AND RH11 DIAGNOSTIC
DZRHBC.P11 ERROR POINTER TABLE

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1231	002566	063577	EM135		
1232	002570	071304	DH132		
1233	002572	072124	DT132		
1234	002574	072315	DF132		
1235			136		
1236	002576	063633	EM136		
1237	002600	071304	DH132		
1238	002602	072124	DT132		
1239	002604	072315	DF132		
1240			137		
1241	002606	063714	EM137		
1242	002610	071304	DH132		
1243	002612	072124	DT132		
1244	002614	072315	DF132		
1245			140		

;ITEM
 ;ITEM
 ;ITEM
 ;ITEM

;WCE HI DID NOT SET IN RHCS3
 ;WCE HI SET BUT WCE DID NOT SET IN RHCS2
 ;WCE LO SET WITH WCE HI IN RHCS3

N02

MASSBUS RMTD AND RH1: DIAGNOSTIC
CZRMBC.P11 ERROR POINTER TABLE

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

1302	002744	072304		DF76	
1303			: ITEM	153	
1304	002746	065075		EM153	: DBL SET ON A 2 WORD TRANSFER
1305					: WITH BAI SET
1306	002750	000000		0	
1307	002752	000000		0	
1308	002754	000000		0	
1309			: ITEM	154	
1310	002756	065161		EM154	: DBL SET ON A 1 WORD READ FROM
1311					: AN EVEN ADDRESS
1312	002760	000000		0	
1313	002762	000000		0	
1314	002764	000000		0	
1315			: ITEM	155	
1316	002766	065252		EM155	: DBL SET ON A 2 WORD WRITE REV
1317					: WITH BAI SET
1318	002770	000000		0	
1319	002772	000000		0	
1320	002774	000000		0	
1321			: ITEM	156	
1322	002776	065340		EM156	: DBL SET ON A 2 WORD WRITE FROM
1323					: FROM AN ODD ADDRESS
1324	003000	000000		0	
1325	003002	000000		0	
1326	003004	000000		0	
1327			: ITEM	157	
1328	003006	065431		EM157	: DBL DID NOT SET ON A 2 WORD
1329					: WRITE REV FROM AN EVEN ADDRESS
1330	003010	000000		0	
1331	003012	000000		0	
1332	003014	000000		0	
1333			: ITEM	160	
1334	003016	065525		EM160	: DBL SET ON A 2 WORD WRITE REV
1335					: FROM AN ODD ADDRESS
1336	003020	000000		0	
1337	003022	000000		0	
1338	003024	000000		0	
1339			: ITEM	161	
1340	003026	065614		EM161	: DBL SET ON A 3 WORD WRITE REV
1341					: FROM AN ODD ADDRESS
1342	003030	000000		0	
1343	003032	000000		0	
1344	003034	000000		0	
1345			: ITEM	162	
1346	003036	065703		EM162	: DBL DID NOT SET ON A 2 WORD
1347	003040	000000		0	
1348	003042	000000		0	
1349	003044	000000		0	
1350			: ITEM	163	
1351	003046	065772		EM163	: DBL SET ON A 2 WORD READ
1352					: FROM AN ODD ADDRESS
1353	003050	000000		0	
1354	003052	000000		0	
1355	003054	000000		0	
1356			: ITEM	164	
1357	003056	066050		EM164	: DBL SET ON A 2 WORD READ REV

1358				:FROM AN ODD ADDRESS
1359	003060	000000	0	
1360	003062	000000	0	
1361	003064	000000	0	
1362			165	
1363	003066	066137	EM165	:DBL DID NOT SET ON A 2 WORD :READ REV FROM AN EVEN ADDRESS
1364			0	
1365	003070	000000	0	
1366	003072	000000	0	
1367	003074	000000	0	
1368			166	
1369	003076	066235	EM166	:DBL SET ON A 3 WORD READ FROM :AN EVEN ADDRESS
1370			0	
1371	003100	000000	0	
1372	003102	000000	0	
1373	003104	000000	0	
1374			167	
1375	003106	066314	EM167	:DBL DID NOT SET ON A 3 WORD :READ REV FROM AN EVEN ADDRESS
1376			0	
1377	003110	000000	0	
1378	003112	000000	0	
1379	003114	000000	0	
1380			170	
1381	003116	000000	0	
1382	003120	071523	DM170	
1383	003122	072252	DT170	
1384	003124	072323	DF170	
1385			171	
1386	003126	066413	EM171	:TRE READS AS SET PGE AND SC :READ AS CLEARED PGE AND SC :SHOULD ALSO BE SET
1387			0	
1388	003130	000000	0	
1389	003132	000000	0	
1390	003134	000000	0	
1391			172	
1392	003136	066465	EM172	:PGE AND TRE READ AS SET SC :READS AS CLEARED
1393			0	
1394	003140	000000	0	
1395	003142	000000	0	
1396	003144	000000	0	
1397			173	
1398	003146	066506	EM173	:READY DID NOT CAUSE AN INTRUPT :WITH IE SET IN RHCS1
1400			0	
1401	003150	000000	0	
1402	003152	000000	0	
1403	003154	000000	0	
1404			174	
1405	003156	066572	EM174	:IE WILL NOT SET IN RHCS1
1406	003160	000000	0	
1407	003162	000000	0	
1408	003164	000000	0	
1409			175	
1410	003166	066623	EM175	:IE HAS AN OPEN GOING TO THE BUS
1411	003170	000000	0	
1412	003172	000000	0	
1413	003174	000000	0	

D03

MASSBUS RMTD AND RMTI DIAGNOSTIC
 CCRHBC.P11 ERROR POINTER TABLE

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1414			:ITEM	176	
1415	003176	066663		EM176	;TRE IS SET DLT AND SC SHOULD ALSO BE SET
1416	003200	071220		DM121	
1417	003202	072102		DT121	
1418	003204	072304		DF76	
1419			:ITEM	177	
1420	003206	066716		EM177	;DLT AND TRE ARE SET ,SC READS AS CLEARED
1421	003210	071220		DM121	
1422	003212	072102		DT121	
1423	003214	072304		DF76	
1424			:ITEM	200	
1425	003216	066763		EM200	;HIBITE LOBYTE GATE FOR WC NG
1426	003220	070557		DM41	
1427	003222	072006		DT41	
1428	003224	072272		DF41	
1429			:ITEM	201	
1430	003226	067045		EM201	;HIBYTE LOBYTE GATE FOR DB NG
1431	003230	070557		DM41	
1432	003232	072006		DT41	
1433	003234	072272		DF41	
1434			:ITEM	202	
1435	003236	067127		EM202	;HIBYTE LOBYTE GATE FOR BA IS NG
1436	003240	070557		DM41	
1437	003242	072006		DT41	
1438	003244	072272		DF41	
1439			:ITEM	203	
1440	003246	067211		EM203	;RHBA HAS WRONG ADDRESS
1441	003250	070557		DM41	
1442	003252	072006		DT41	
1443	003254	072272		DF41	
1444			:ITEM	204	
1445	003256	067271		EM204	;TESTER DATA BUFFER HAS WRONG INFO
1446	003260	070557		DM41	
1447	003262	072006		DT41	
1448	003264	072272		DF41	
1449			:ITEM	205	
1450	003266	067356		EM205	;RH DID NOT INTERRUPT
1451	003270	070557		DM41	
1452	003272	072006		DT41	
1453	003274	072272		DF41	
1454			:ITEM	206	
1455	003276	067442		EM206	;RHWC SHOULD BE ZERO
1456	003300	070557		DM41	
1457	003302	072006		DT41	
1458	003304	072272		DF41	
1459			:ITEM	207	
1460	003306	067466		EM207	;TRANSFER WAS DONE ON PORT B
1461	003310	000000		0	
1462	003312	000000		0	
1463	003314	000000		0	
1464					
1465					
1466					
1467					
1468	003316	000774			
1469					

;RH REGISTERS

RHVEC:774

;RH VECTOR ADDRESS

;*****

;WORD COUNT REGISTER (RHWG)
;EACH BIT IS CALLED BY BIT NUMBER

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

;CONTROL AND STATUS REGISTER 2 (RHCS2)

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

;CONTROL AND STATUS REGISTER 3 (RHCS3)

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

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

;CONTROL AND STATUS 1 REGISTER. (#00)

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

F03

MASSBUS RMTD AND RH11 DIAGNOSTIC
ERRRBC.F11 ERROR POINTER TABLE

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1526	002000	PSEL=	2000	:PORT SELECT (BIT #10)
1527	004000	DVA=	4000	:DEVICE AVAILABLE (BIT #11)
1528	020000	MCPE=	20000	:MASSBUSS PARITY ERROR (BIT #13)
1529	040000	TRE=	40000	:TRANSFER ERROR (BIT #14)
1530	000100	TREB=	100	:TRE BIT FOR A BYTE OPERATION
1531	100000	SC=	100000	:SPECIAL CONDITION (BIT #15)
1532		:STATUS REGISTER (RHST) #01)		
1533				
1534				
1535	000200	DRY=	200	:DRIVE READY (BIT #7)
1536	000400	DPR=	400	:DRIVE PRESENT (BIT #8)
1537	010000	MOL=	10000	:MEDIUM ON-LINE (BIT #12)
1538	020000	PIP=	20000	:POSITIONING OPERATION IN PROGRESS (BIT #13)
1539	040000	ERR=	40000	:COMPOSIT ERROR. (BIT #14)
1540	100000	ATA=	100000	:ATTENTION ACTIVE (BIT #15)
1541		:ERROR REGISTER #01 (RHER) (#02)		
1542	000001	ILF=	1	:ILLEGAL FUNCTION (BIT #0)
1543	000004	RMR=	4	:REGISTER MODIFICATION REFUSED (BIT #2)
1544	000010	CPE=	10	:CONTROL PARITY ERROR (BIT #3)
1545	000020	DPE=	20	:DATA PARITY ERROR (BIT #4)
1546	000040	RMBEX=	40	:MASSBUS EXCEPTION WHEN SET CAUSES AN ABORT OF A DATA T
1547	000100	RFAIL=	100	:MASSBUS POWER FAIL (BIT #6)
1548	010000	DTE=	10000	:DRIVE TIMING ERROR (BIT #12)
1549	020000	OPI=	20000	:OPERATION INCOMPLETE (BIT #13)

```

:552
:553
:554      000001
:555      000002
:556      000004
:557      000010
:558      000020
:559      000040
:560      000100
:561      000200
:562      000400
:563      001000
:564      002000
:565      004000
:566      010000
:567
:568
:569
:570      000001
:571      000002
:572      000004
:573      000010
:574      000020
:575      000040
:576      000100
:577      000200
:578
:579
:580
:581      000001
:582      000002
:583      000004
:584      000010
:585
:586      000020
:587      000040
:588      000100
:589      000200
:590
:591
:592
:593      003320      160100
:594      003322      160200
:595      003324      160300
:596      003326      160400
:597      003330      000000
:598      003332      000000
:599      003334      000000
:600      003336      000000
:601      003340      000000
:602      003342      000000
:603      003344      000000
:604      003346      000000
:605      003350      000000
:606      003352      000000
:607      003354      000000

;DIAGNOSTIC REGISTER (RHMP1) (#03)
DMO=      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
OPCA=    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 RCT
BMD18= 10000     ;19 BIT MODE (BIT #12)

;ATTENTION SUMMARY PSEUDO-REGISTER (RHAS) (#04)
ATO=      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)
DMO=      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
RHWC:     0          ;WORD COUNT
RHBA:     0          ;BUS ADDRESS
RHMP2:     0          ;TRANSFER CONTROL REGISTER
RHCS2:     0          ;CONTROL AND STATUS 2
RHST:     0          ;TESTER STATUS
RHER:     0          ;ERROR REGISTER
RHAS:     0          ;ATTENTION SUMMARY REG
RHTOB:     0          ;TESTER DATA REGISTER
RHDB:     0          ;DATA BUFFER
RHMP1:     0          ;DIAGNOSTIC (MAINTENCE) REGISTER

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H03

MACSBL5 RH70 AND RH1: DIAGNOSTIC
 C2RH8C.P11 ERROR POINTER TABLE

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

```

1664
1665      000051
1666      000052
1667      000053
1668      000054
1669      000055
1670      000056
1671      000057
1672
1673
1674
1675      000071
1676      000072
1677      000073
1678      000074
1679      000075
1680      000076
1681      000077
1682
1683
1684
1685      000061
1686      000062
1687      000063
1688      000064
1689      000065
1690      000066
1691      000067
1692
1693
1694
1695      000011
1696
1697
1698
1699      000031
1700
1701
1702
1703
1704
1705
1706      003446 000000
1707      003450 000000
1708      003452 000000
1709
1710
1711
1712
1713
1714      003454 000000
1715      003456 000000
1716      003460 000000
1717
1718
1719

```

```

;*****
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      ;CLEAR ALL ERROR BITS IN THE DRIVE
;AND SETS THE DRIVE READY BIT
;*****

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

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

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

```

J03

MASSBUS RH70 AND RH1: DIAGNOSTIC
DZRHBC.P11 ERROR POINTER TABLE

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1720
1721 004000 000000
1722 004002 000000
1723
1724 004100 000000
1725 004102 000000
1726 004104 000000
1727 004106 000000
1728 004110 000000
1729 004112 000000
1730 004114 000000
1731 004116 000000
1732
1733
1734
1735
1736
1737 004120 177777
1738 004122 000000
1739
1740 004124 000000
1741 004126 000000
1742 004130 000000
1743 004132 000000
1744 004134 000000
1745 004136 000000
1746 004140 000000
1747 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
SCS1: 0
SCS2: 0
SCS3: 0
\$ST: 0
\$ER: 0
\$RHBA: 0
\$RHDB: 0
\$RHWC: 0

K03

MASSBUS RMTD AND RH11 DIAGNOSTIC
DZRMBC.P11 ERROR POINTER TABLE

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```

1748
1749
1750 004144 005000
1751 004146 005100
1752 004150 000421
1753 004152 005000
1754 004154 005037 001174
1755 004160 005137 001174
1756 004164 000413
1757 004166 005000
1758 004170 005100
1759 004172 000137 004560
1760 004176 012737 000074 003404
1761 004204 012737 000774 003406
1762 004212 005000
1763
1764
1765 004214
1766
1767
1768 004214 012706 001100
1769 004220 005026
1770 004222 022706 001140
1771 004226 001374
1772 004230 012706 000750
1773
1774 004234 012737 072530 000020
1775 004242 012737 000340 000022
1776 004250 012737 074204 000030
1777 004256 012737 000340 000032
1778 004264 012737 074734 000034
1779 004272 012737 000340 000036
1780 004300 012737 073000 000024
1781 004306 012737 000340 000026
1782 004314 005037 001212
1783 004320 005037 001214
1784 004324 012737 000001 001115
1785 004332 012737 004332 001106
1786 004340 012737 004340 001110
1787
1788
1789 004346 013746 000004
1790 004352 012737 004406 000004
1791 004360 012737 177570 001140
1792 004366 012737 177570 001142
1793 004374 022777 177777 174536
1794 004402 001012
1795
1796 004404 000403
1797 004406 012716 004414
1798 004412 000002
1799 004414 012737 000176 001140
1800 004422 012737 000174 001142
1801 004430 012637 000004
1802
1803 004434 005700

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

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

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1804 004436 100450 BMI AROUND ;YES, SKIP TYPING
1805 004440 104401 004446 TYPE 68$ ;TYPE ASCIZ STRING
1806 004444 000427 BR 67$ ;GET OVER THE ASCIZ
1807 ;:68$: .ASCIZ <15><12>/RH 11 AND 70 I O AND CONTROLLER DIAGNOSTIC/
1808 004524 ;:67$: TYPE 70$ ;TYPE ASCIZ STRING
1809 004524 104401 004532 BR 69$ ;GET OVER THE ASCIZ
1810 004530 000413 ;:70$: .ASCIZ <15><12>/MAINDEC-11-DZRHBC-C /
1811 ;:69$:
1812 004560 AROUND:
1813 004560
1814
1815 ;*****
1816 ;*TEST 1 THIS IS THE RH ADDRESS DECODE TEST
1817 ;*THIS PROGRAM WILL ALLOW THE OPERATOR TO SAY
1818 ;*WHICH RH IS ON THE BUS AND WHAT ITS BASE
1819 ;*ADDRESS IS. THE RH IS THEN TESTED FOR A
1820 ;*RESPONSE AND CHECKED FOR A TESTER BEING
1821 ;*CONNECTED.
1822 ;*****
1823 004560 000304 ;:65$: SCOPE
1824 004562 012737 000001 001212 MOV #1, $TIMES ;DO 1 ITERATION
1825 004570 012737 047120 000114 MOV #PARITY, 2#114
1826 004576 012706 000750 MOV #STACK, SP
1827 004602 012737 000340 000116 MOV #340, 2#116
1828 004610 012737 046666 000004 MOV #TIEOUT, 2#ERRVEC ;SET UP TIMEOUT
1829 004616 012737 000340 000006 MOV #340, 2#ERRVEC+2 ;SETUP PRIORITY
1830 004624 005700 TST RC ;SKIP TYPOUT ?
1831 004626 001403 BEQ SKIPIN ;NO
1832 004630 005000 CLR R0 ;CLEAR SKIP FLAG
1833 004632 000137 006562 JMP 2#TST2 ;GET OUT OF TEST
1834 004636 005001 SKIPIN: CLR R1 ;GET R1 READY
1835 004640 005737 001174 TST $REG5 ;IS IT AN ALTERNATE START
1836 004644 001402 BEQ SLEUTH ;NO
1837 004646 000137 004656 JMP KONG ;YES DO ALTERNATE SETUP
1838 004652 000137 005100 SLEUTH: JMP ADIERR ;DO REGULAR SETUP
1839 004656 005037 001174 KONG: CLR $REG5 ;RESET ALT. START FLAG
1840 004662 104401 004670 TYPE 65$ ;TYPE ASCIZ STRING
1841 004666 000416 BR 64$ ;GET OVER THE ASCIZ
1842 ;:65$: .ASCIZ <15><12>/TYPE BASE ADDRESS FOR RH /
1843 004724 ;:64$:
1844 004724 104410 RDOCT
1845 004726 012637 003366 MOV (SP)+, DEVIC1 ;GET BASE ADDRESS
1846 004732 104401 004740 TYPE 67$ ;TYPE ASCIZ STRING
1847 004736 000415 BR 66$ ;GET OVER THE ASCIZ
1848 ;:67$: .ASCIZ <15><12>/TYPE RH VECTOR ADDRESS /
1849 004772 ;:66$:
1850 004772 104410 RDOCT
1851 004774 012637 003406 MOV (SP)+, VECADD ;GET VECTOR ADDRESS
1852 005000 104401 005006 TYPE 69$ ;TYPE ASCIZ STRING
1853 005004 000426 BR 68$ ;GET OVER THE ASCIZ
1854 ;:69$: .ASCIZ <15><12>/HOW MANY REGISTERS ARE YOU JUMPERED FOR /
1855 005062 ;:68$:
1856 005062 104410 RDOCT
1857 005064 012637 003404 MOV (SP)+, REGEND ;GET NUMBER OF REG
1858 005070 006137 003404 ROL REGEND ;MULT BY 2
1859 005074 000137 005414 JMP G11 ;GO CREATE ADDRESSES

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M03

MASSBUS RH70 AND RH11 DIAGNOSTIC MACY11 27(732) 01-OCT-76 09:03 PAGE 39
 DZRHBC.P11 T1 THIS IS THE RH ADDRESS DECODE TEST

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1860 005100 013737 003320 003366 AD1ERR: MOV ADD1,DEVIC1 ;SETUP DEVICE 1
1861 005106 012737 005200 000004 MOV #AD2ERR,ERRVEC ;FOR TIMEOUT
1862 005114 005777 176202 TST #ADD2 ;IS THERE A DEVICE
1863 005120 013737 003322 003370 MOV ADD2,DEVIC2 ;YES
1864 005126 012737 005220 000004 MOV #AD3ERR,ERRVEC ;FOR TIMEOUT
1865 005134 005777 176164 TST #ADD3 ;IS THERE A DEVICE
1866 005140 013737 003324 003372 MOV ADD3,DEVIC3 ;YES
1867 005146 012737 005240 000004 MOV #AD4ERR,ERRVEC ;FOR TIMEOUT
1868 005154 005777 176146 TST #ADD4 ;IS THERE A DEVICE
1869 005160 013737 003326 003374 MOV ADD4,DEVIC4 ;YES
1870 005166 012737 046666 000004 MOV #TIEOUT,ERRVEC ;REPLACE TIMEOUT
1871 005174 000137 006066 JMP RESTAR ;TEST DEVICES
1872 005200 005037 003370 AD2ERR: CLR DEVIC2 ;NO DEVICE 2
1873 005204 012737 046666 000004 MOV #TIEOUT,ERRVEC ;REPLACE TIMEOUT
1874 005212 022626 CMP (SP)+,(SP)+ ;CORRECT STACK
1875 005214 000137 006066 JMP RESTAR ;TEST DEVICES
1876 005220 005037 003372 AD3ERR: CLR DEVIC3 ;NO DEVICE 3
1877 005224 012737 046666 000004 MOV #TIEOUT,ERRVEC ;REPLACE TIMEOUT
1878 005232 022626 CMP (SP)+,(SP)+ ;CORRECT STACK
1879 005234 000137 006066 JMP RESTAR ;TEST DEVICES
1880 005240 005037 003374 AD4ERR: CLR DEVIC4 ;NO DEVICE 4
1881 005244 012737 046666 000004 MOV #TIEOUT,ERRVEC ;REPLACE TIMEOUT
1882 005252 022626 CMP (SP)+,(SP)+ ;CORRECT STACK
1883 005254 000137 006066 JMP RESTAR ;TEST DEVICES
1884 005260 005737 000042 GIG0: TST #42 ;IS THERE A MONITOR
1885 005264 001402 BEQ GIG1 ;NO
1886 005266 000137 046072 JMP SEOP ;YES EXIT
1887 005272 022737 160100 003366 GIG1: CMP #160100,DEVIC1 ;ARE WE HERE AFTER 210
1888 005300 001402 BEQ SA200 ;NO 200
1889 005302 000137 004656 JMP KONG ;GET NEW ADDRESS FOR 210
1890 005306 SA200:
1891 005306 104401 005314 TYPE ,65$ ;,TYPE ASCIZ STRING
1892 005312 000420 BR ,64$ ;,GET OVER THE ASCIZ
1893 ;,65$: .ASCIZ <15><12>/TYPE BASE ADDRESS FOR RH #1 /
1894 ;,64$:
1895 005354 RDOCT
1896 005354 104410 MOV (SP)+,DEVIC1 ;GET BASE ADDRESS FOR RH1
1897 005362 105737 001103 TSTB $ERFLG ;ARE WE HERE BECAUSE OF AN ADDRESS ERROR
1898 005366 001405 BEQ G01 ;NO,GET READY FOR NEXT ADDRESS
1899 005370 005737 003366 TST DEVIC1 ;IS IT A ZERO
1900 005374 001007 BNE G11 ;NO
1901 005376 000137 005272 JMP GIG1 ;NEED FIRST ADDRESS
1902 005402 005737 003366 G01: TST DEVIC1 ;DID HE CORRECT WITH A 0
1903 005406 001012 BNE GIG01 ;GET BASE FOR RH # 2
1904 005410 000137 005272 JMP GIG1 ;NEED ADDRESS
1905 005414 013737 003366 003400 G11: MOV DEVIC1,DEVICES ;GET READY TO CREATE REG. ADDRESS
1906 005422 012777 005260 175760 MOV #GIG0,ARETAIN ;SAVE RETURN ADDRESS
1907 005430 000137 006160 JMP GIG04 ;CONSTRUCT REGISTER ADDRESSES
1908 005434 005737 000042 GIG01: TST #42 ;IS THER A MONITOR
1909 005440 001402 BEQ GIG2 ;NO
1910 005442 000137 046072 JMP SEOP ;EXIT
1911 005446 GIG2:
1912 005446 104401 005454 TYPE ,65$ ;,TYPE ASCIZ STRING
1913 005452 000420 BR ,64$ ;,GET OVER THE ASCIZ
1914 ;,65$: .ASCIZ <15><12>/TYPE BASE ADDRESS FOR RH #2 /
1915 ;,64$:
1915 005514

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N03

MASSBUS RH70 AND RH1: DIAGNOSTIC MACY11 27(732) 01-OCT-76 09:03 PAGE 40
CZRHBC.P11 T1 THIS IS THE RH ADDRESS DECODE TEST

1916	005514	104410		RDOCT		:GET VALUE
1917	005516	012637	003370	MOV	(SP)+,DEVIC2	:SAVE ADDRESS
1918	005522	105737	001103	TSTB	\$ERFLG	:ARE WE HERE BECAUSE OF ERROR
1919	005526	001405		BEQ	G02	:NO
1920	005530	005737	003370	TST	DEVIC2	:IS IT 0
1921	005534	001307		BNE	G12	:NO
1922	005536	000137	045316	JMP	RESTAT	:SET UP FOR RH #1
1923	005542	005737	003370	TST	DEVIC2	:IS IT 0
1924	005546	001012		BNE	GIG02	:NO,GET NEXT ADDRESS
1925	005550	000137	006066	JMP	RESTAR	:CREATE ADDRESS FOR RH#1
1926	005554	013737	003370	MOV	DEVIC2,DEVIC5	:GET READY TO CREATE
1927	005562	012777	005434	MOV	#GIG01,ARETAIN	:SAVE RETURN ADDRESS
1928	005570	000137	006160	JMP	GIG04	:CREATE REG. ADDRESSES
1929	005574	005737	000042	TST	#42	:IS THERE A MONITOR
1930	005600	001402		BEQ	GIG3	:NO
1931	005602	000137	046072	JMP	\$EOP	:EXIT
1932	005606			GIG3:		
1933	005606	104401	005614	TYPE	.65\$	::TYPE ASCIZ STRING
1934	005612	000420		BR	.64\$	::GET OVER THE ASCIZ
1935				::65\$:	.ASCIZ	<15><12>/TYPE BASE ADDRESS FOR RH #3 /
1936	005654			64\$:		
1937	005654	104410		RDOCT		
1938	005656	012637	003372	MOV	(SP)+,DEVIC3	:SAVE ADDRESS
1939	005662	105737	001103	TSTB	\$ERFLG	:ARE WE HERE DO TO ERROR
1940	005666	001405		BEQ	G03	:NO
1941	005670	005737	003372	TST	DEVIC3	:IS IT 0
1942	005674	001007		BNE	G13	:NO
1943	005676	000137	045316	JMP	RESTAT	:RESTART PASS
1944	005702	005737	003372	TST	DEVIC3	:IS IT 0
1945	005706	001012		BNE	GIG03	:GET NEXT ADDRESS
1946	005710	000137	006066	JMP	RESTAR	:CREATE RH#1 ADDRESSES
1947	005714	013737	003372	MOV	DEVIC3,DEVIC5	:SETUP TO CREATE ADDRESS
1948	005722	012777	005574	MOV	#GIG02,ARETAIN	:SAVE RETURN ADDRESS
1949	005730	000137	006160	JMP	GIG04	:CREATE ADDRESSES
1950	005734	005737	000042	TST	#42	:IS THERE A MONITOR
1951	005740	001402		BEQ	GIG4	:NO
1952	005742	000137	046072	JMP	\$EOP	:EXIT
1953	005746			GIG4:		
1954	005746	104401	005754	TYPE	.65\$	::TYPE ASCIZ STRING
1955	005752	000420		BR	.64\$	::GET OVER THE ASCIZ
1956				::65\$:	.ASCIZ	<15><12>/TYPE BASE ADDRESS FOR RH #4 /
1957	006014			64\$:		
1958	006014	104410		RDOCT		
1959	006016	012637	003374	MOV	(SP)+,DEVIC4	:SAVE ADDRESS
1960	006022	105737	001103	TSTB	\$ERFLG	:ARE WE HERE BECAUSE OF ERROR
1961	006026	001405		BEQ	G04	:NO
1962	006030	005737	003374	TST	DEVIC4	:IS IT 0
1963	006034	001004		BNE	G14	:NO
1964	006036	000137	045316	JMP	RESTAT	:RESTART PASS
1965	006042	000137	006066	JMP	RESTAR	:GO SET UP REG. ADDRESSES
1966	006046	013737	003374	MOV	DEVIC4,DEVIC5	:GET READY TO CREATE REG. ADDRESSES
1967	006054	012777	005734	MOV	#GIG03,ARETAIN	:STORE RETURN ADDRESS
1968	006062	000137	006160	JMP	GIG04	:GO CREATE ADDRESSES
1969	006066	013737	003366	MOV	DEVIC1,DEVIC5	:GET READY TO CREATE REG. ADDRESSES
1970	006074	012777	005260	MOV	#GIG0,ARETAIN	:SAVE RETURN ADDRESS
1971	006102	104401	006110	TYPE	.65\$	::TYPE ASCIZ STRING

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1972 006106 000421      BR 645      ::GET OVER THE ASCIZ
1973      ::655: .ASCIZ (15)(12) TESTING RH #1 AT BASE ADDRESS
1974      645:
1975 006152 013746 003366      MOV DEVIC1,-(SP)      ::SAVE DEVIC1 FOR TYPEOUT
1976 006156 104402      TYP0C      ::GO TYPE--OCTAL ASCII(ALL DIGITS)
1977 006160 013737 003400 003402 GIG04: MOV DEVIC5,0#OFF11      :SETUP FOR ADDRESSES
1978 006166 012702 003330      MOV 0#RHCS1,R2      :SET UP WHERE TO PUT THEM
1979 006172 013722 003402      MOV 0#OFF11,(R2)+      :SETUP ADDRESS
1980 006176 062737 000002 003402      ADD 0#TWO,0#OFF11      :SETUP NEXT ADDRESS
1981 006204 022702 003360      CMP 0#RHBAE,R2      :ARE ALL ADDRESSES SET UP
1982 006210 001401      BEQ 35      :IS INFORMATION CORRECT?
1983 006212 000767      BR 45      :NO SETUP NEW ADDRESS
1984 006214 013737 003400 003402 35: MOV DEVIC5,0#OFF11
1985 006222 063737 003404 003402      ADD REGEN0,0#OFF11
1986 006230 013737 003402 003360      MOV 0#OFF11,RHBAE      :WITH CORRECT ADDRESS
1987 006236 062737 000002 003402      ADD 0#2,0#OFF11      :SETUP RHCS3 ADDRESS
1988 006244 013737 003402 003362      MOV 0#OFF11,RHCS3      :WITH CORRECT ADDRESS
1989 006252 013737 003330 003364      MOV RHCS1,RHCS1B      :SETUP RHCS1B WITH
1990 006260 005237 003364      INC RHCS1B      :HIGH BYTE ADDRESS OF RHCS1
1991 006264 013746 000004      TSTADD: MOV 0#ERRVEC,-(SP)      :SAVE T1OUT VALUE
1992 006270 012737 006350 000004      MOV 0#ADDERR,0#ERRVEC      :SETUP NEW T1OUT VALUE
1993 006276 012777 000007 175034      MOV 0#7,0#RHCS2      :SETUP UNIT NO.
1994 006304 005777 175020      TST 0#RHCS1      :WILL RH RESPOND
1995 006310 022777 000040 175040      CMP 0#40,0#RHDT      :IS A TESTER THERE
1996 006316 001403      BEQ 15      :YES CONTINUE
1997 006320 104034      ERROR 34      :TESTER IS NOT CONNECTED
1998 006322 000137 006352      JMP ADDERR+2      :BAD ADDRESS
1999 006326 122777 000007 175002 15: CMPB 0#7,0#RHMR2      :IS THERE ALSO A 7 FOR UNIT NO.
2000 006334 001403      BEQ 25      :YES CONTINUE
2001 006336 104071      ERROR 71      :BAD ADDRESS
2002 006340 000137 006352      JMP ADDERR+2
2003 006344 005726 25: TST (SP)+      :CORRECT STACK
2004 006346 000406      BR RHTEST      :YES AN RH IS THERE
2005 006350 022626      ADDERR: CMP (SP)+,(SP)+      :CORRECT STACK
2006 006352 012637 000004      MOV (SP)+,0#ERRVEC      :REPLACE OLD T1OUT VALUE
2007 006356 104036      ERROR 36      :RH DID NOT RESPOND
2008 006360 000177 175024      JMP 0#RETAIN      :GET CORRECT BASE ADDRESS
2009 006364 012637 000004      RHTEST: MOV (SP)+,0#ERRVEC      :REPLACE T1OUT VALUE
2010 006370 005701      TST R1      :IS IT A 70
2011 006372 001433      BEQ RH70TT      :YES, LETS MAKE SURE
2012 006374 013746 000004      MOV 0#ERRVEC,-(SP)      :SAVE TIME OUT VALUE
2013 006400 012737 006550 000004      MOV 0#RH11,0#ERRVEC      :CHECK FOR AN RH11
2014 006406 012777 000117 174746      MOV 0#IPCK0!IPCK1!IPCK2!IPCK3!IE3,0#RHCS3
2015      :SET ALL BITS IN RHCS3
2016 006414 012637 000004      RH11BA: MOV (SP)+,0#ERRVEC      :REPLACE TIMEOUT
2017 006420      TYPE 655      ::TYPE ASCIZ STRING
2018 006422 104401 006426      BR 645      ::GET OVER THE ASCIZ
2019 006424 000413      ::655: .ASCIZ (15)(12) TESTING FOR AN RH70/
2020      645:
2021 006454      CLR R1      :SET UP RH70 FLAG
2022 006454 000001      JMP RH11+2      :EXIT
2023 006456 000137 006552      RH70TT: MOV 0#ERRVEC,-(SP)      :SAVE LOCATION 4
2024 006462 013746 000004      MOV 0#FAKE70,0#ERRVEC      :REPLACE ADDRESS
2025 006466 012737 006506 000004      MOV 0#IPCK0!IPCK1!IPCK2!IPCK3!IE3,0#RHCS3
2026 006474 012777 000117 174660      MOV      :SET ALL BITS

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MASSBUS RMTD AND RH11 DIAGNOSTIC MAC111 27.732) 01-OCT-76 09:03 PAGE 42
 C2RMBC.P11 THIS IS THE RH ADDRESS DECODE TEST

2028	006502	000137	006552			JMP	RH11+2	:	EXIT TEST
2029	006506	022626				FAKE70: CMP	(SP)+, (SP)+	:	CORRECT STACK
2030	006510	012637	000004			MOV	(SP)+, 2*ERRVEC	:	CORRECT TIMEOUT
2031	006514	005001				RH70BA: CLR	R1	:	GET FLAG READY
2032	006516	005101				COM	R1	:	SET FOR RH11
2033	006520	104401	006526			TYPE	655	:	TYPE ASCII STRING
2034	006524	000411				BR	645	:	GET OVER THE ASCII
2035						655:	ASCII (15)(12)/TESTING AN RH11/		
2036	006550					645:			
2037	006550	022626				RH11: CMP	(SP)+, (SP)+	:	CORRECT STACK POINTER
2038	006552	012637	000004			MOV	(SP)+, 2*ERRVEC	:	REPLACE TIMEOUT VALUE
2039	006556	004737	050130			ERR1: JSR	R7, ERR1ST		
2040						*****			
2041						TEST 2	CLEAR TEST		
2042							*THIS TEST CHECKS THAT ALL		
2043							*ERROR BITS ARE CLEARED AFTER		
2044							*THE CLEAR BIT WAS LOADED INTO		
2045							*RHCS2 REGISTER.....		
2046						*****			
2047	006562	000004				TEST2: SCOPE			
2048	006564	012737	000001	001212		MOV	#1, STIMES	:	DO 1 ITERATION
2049	006572	005037	001210			CLR	STIMPS	:	GET READY TO
2050	006576	005137	001210			COM	STIMPS	:	SET UP FOR JSR ROUTINE
2051						*****			
2052							*THIS TEST IS ALSO ENTERED AT THE LABEL CLEAR		
2053							*AT THE END OF ALL THE ERROR BIT TESTS TO SEE		
2054							*THAT A CLEAR WILL CLEAR THE ERROR BIT SET		
2055						*****			
2056	006602	012777	000040	174530		CLEAR: MOV	#CLR, 2RHCS2	:	TELL IT TO CLEAR
2057	006610	012777	000007	174522		MOV	#7, 2RHCS2	:	SETJP UNIT NO.
2058	006616	122777	000007	174512		CMPB	#7, 2RHMR2	:	HAS DEVICE BEEN SET TO 7
2059	006624	001107				BNE	15	:	NO, FIND WHAT BIT WAS NOT SET
2060						*****			
2061							*THE TEST IS ENTERED HERE IF THE ERROR BIT BEING		
2062							*FORCED SET DID NOT SET TO SEE IF ANY OTHER ERROR		
2063							*BIT DID SET.....		
2064						*****			
2065	006626	005701				125: TST	R1	:	IS IT AN 11 OR A 70
2066	006630	100417				BMI	155	:	IT'S A 70
2067	006632	005737	004122			TST	BEFORE	:	ARE WE HERE FOR SHORTS
2068	006636	001406				BEQ	145	:	NO
2069	006640	033777	004130	174514		BIT	\$CS3, 2RHCS3	:	ANY EXTRA ERROR BITS
2070	006646	001410				BEQ	155	:	NO
2071	006650	000137	007204			JMP	135	:	WE FOUND AN ERROR
2072	006654	032777	174000	174500		145: BIT	#WCELO!WCEHI!DPELO!DPEHI	:	ARE 2RHCS3
2073							TEST ERROR BITS		
2074	006662	001412				BEQ	55	:	NO ERROR BITS SET
2075	006664	000137	007204			JMP	135	:	GO REPORT ERROR BITS
2076	006670	005737	004122			155: TST	BEFORE	:	ARE WE HERE FOR SHORTS
2077	006674	001405				BEQ	55	:	NO
2078	006676	033777	004124	174424		BIT	\$CS1, 2RHCS1	:	YES SEE IF THERE ARE ANY
2079	006704	001070				BNE	25	:	NONE FOUND
2080	006706	000404				BR	165	:	GO CHECK THE NEXT ONE
2081	006710	032777	160000	174412		55: BIT	#TRE!SC!MCPE, 2RHCS1	:	ANY ERROR BITS SET IN CS1
2082	006716	001063				BNE	25	:	YES, FIND THEM
2083	006720	005737	004122			165: TST	BEFORE	:	ARE WE HERE FOR SHORTS

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MASSBUS RMTD AND RMTI DIAGNOSTIC
DZRMBC.P11 T2 CLEAR TEST

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2084	006724	001405				BEG	65	:NO
2085	006726	033777	004126	174404		BIT	\$CS2,DRHCS2	:ANY SHORTS
2086	006734	001065				BNE	35	:YES
2087	006736	000404				BR	175	:NO, CONTINUE
2088	006740	032777	177400	174372	65:	BIT	#MPE!MXF!PGE!NEM!NED!UPE!	:WCE!DLT,DRHCS2
2089								:ARE ANY ERROR BITS SET IN CS2
2090	006746	001060				BNE	35	:YES, FIND THEM
2091	006750	005737	004122		175:	TST	BEFORE	:ARE WE HERE FOR SHORTS
2092	006754	001405				BEG	75	:NO
2093	006756	033777	004132	174356		BIT	\$ST,DRHST	:ANY SHORTS ?
2094	006764	001076				BNE	95	:YES
2095	006766	000404				BR	185	:CONTINUE
2096	006770	032777	140000	174344	75:	BIT	#ERR!ATA,DRHST	:ARE ANY ERROR BITS SET IN ER!
2097	006776	001071				BNE	95	:YES, GO FIND THEM
2098	007000	005737	004122		185:	TST	BEFORE	:ARE WE HERE FOR SHORTS
2099	007004	001405				BEG	85	:NO
2100	007006	033777	004134	174330		BIT	\$ER,DRHER	:YES, SEE IF THER ARE ANY
2101	007014	001046				BNE	45	:WE FOUND SOME
2102	007016	000404				BR	195	:CONTINUE
2103	007020	032777	030175	174316	85:	BIT	#ILF!RMR!CPE!DPE!RMBEX!R	:AIL!DTE!OPI,DRHER
2104								:ANY ERRORS IN RHER REG.
2105	007026	001041				BNE	45	:YES, GO FIND THEM
2106	007030	005737	001210		195:	TST	\$TMP5	:IS IT BEING USED AS A SUBROUTINE
2107	007034	001501				BEG	LEAVE	:YES
2108	007036	005037	001210			CLR	\$TMP5	:SETUP SUB ROUTINE FLAG
2109	007042	000477				BR	ERR2	:WAS THERE ANY ERRORS
2110	007044	004737	047754		15:	JSR	R7,FOUND	:DEVICE NO. ERROR
2111	007050	017737	174264	004100		MOV	DRHCS2,RBUF	:GET CONTENTS
2112	007056	104071				ERROR	71	:DEVICE NO. NOT =7
2113	007060	004737	046302			JSR	R7,WATBIT	:FIND BIT NOT SET
2114	007064	000660				BR	125	:TEST REST OF ERROR BITS
2115	007066	004737	047634		25:	JSR	R7,FINDIT	:RHCS1 IN ERROR
2116	007072	017737	174232	004100		MOV	DRHCS1,RBUF	:GET CONTENTS
2117	007100	104072				ERROR	72	:ERROR BIT SET IN CS1
2118	007102	004737	046302			JSR	R7,WATBIT	:WHAT BIT IS SET
2119	007106	000704				BR	165	:TEST REST OF REGISTERS
2120	007110	004737	047660		35:	JSR	R7,LOOKED	:ERROR IN RHCS2
2121	007114	017737	174220	004100		MOV	DRHCS2,RBUF	:GET CONTENTS
2122	007122	104073				ERROR	73	:BIT SET IN CS2
2123	007124	004737	046302			JSR	R7,WATBIT	:TELL WHAT BIT
2124	007130	000707				BR	175	:CONTINUE TEST
2125	007132	004737	047704		45:	JSR	R7,LOOKED	:RHER HAS A BIT SET
2126	007136	017737	174202	004100		MOV	DRHER,RBUF	:GET CONTENTS
2127	007144	104074				ERROR	74	:ERI HAS AN ERROR BIT SET
2128	007146	004737	046302			JSR	R7,WATBIT	:TELL WHAT BIT
2129	007152	005737	001210			TST	\$TMP5	:IS IT BEING USED AS A SUBROUTINE
2130	007156	001430				BEG	LEAVE	:YES
2131	007160	000430				BR	ERR2	:WAS THERE ANY ERRORS
2132	007162	004737	047730		95:	JSR	R7,FIND	:RHST HAS AN ERROR BIT SET
2133	007166	017737	174150	004100		MOV	DRHST,RBUF	:GET CONTENTS
2134	007174	104075				ERROR	75	:ERROR IN RH5
2135	007176	004737	046302			JSR	R7,WATBIT	:TELL WHAT BIT
2136	007202	000676				BR	185	:CONTINUE TEST
2137	007204	004737	050000		135:	JSP	R7,CS3ERP	:CLEAR UNWANTED BITS
2138	007210	017737	174146	004100		MOV	DRHCS3,RBUF	:GET REG. CONTENTS
2139	007216	104176				ERROR	176	:RHCS3 HAS AN ERROR BIT SET

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MASSBUS RMTD AND RH11 DIAGNOSTIC
DZRMBC.P11 *2 CLEAR TEST

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2140	007220	004737	046302		JSR	R7, WATBIT	: TELL WHAT BITS
2141	007224	000137	006670		JMP	15\$	: CONT CHECK
2142	007230	000137	006626		JMP	12\$	: START JSR WHYFC
2143	007234	000137	007230		WHYFC: JMP	-4	: FIND ERROR BITS SET
2144	007240	000207			LEAVE: RTS	R7	: GO BACK TO PROGRAM THAT SENT CL HERE
2145	007242	004737	050130		ERR2: JSR	R7, ERR2ST	
2146					*****		
2147					: *TEST 3	THIS TEST SEES IF THE TESTER IS CONNECTED	
2148					: *THIS TEST SEES IF THE DEVICE CODE IS		
2149					: *A 40 TO SAY AN RH SIMULATOR IS ATTACHED		
2150					*****		
2151	007246	000004			TST3: SCOPE		
2152	007250	012777	000040	174062	MOV	#CLR, DRHCS2	: CLEAR TESTER
2153	007256	012777	000007	174054	MOV	#7, DRHCS2	: UNIT SEVEN
2154	007264	017737	174066	001172	MOV	DRHDT, \$REGH	: GET DRIVE TYPE
2155	007272	022737	000040	001172	CMP	#40, \$REGH	: IS IT THE TESTER
2156	007300	001401			BEQ	ERR4	: WAS THERE AN ERROR
2157	007302	104034			ERROR	34	: TESTER NOT CONNECTED
2158	007304	004737	050130		ERR4: JSR	R7, ERR2ST	
2159							
2160					*****		
2161					: *TEST 4	WC CLEAR TEST	
2162					: *THIS TEST WILL SEE THAT WHEN A CLEAR IS GIVEN		
2163					: *THE WORD COUNT REGISTER REMAINS THE SAME		
2164					*****		
2165					TST4: SCOPE		
2166	007310	000004			MOV	#1, \$TIMES	: DO 1 ITERATION
2167	007312	012737	000001	001212	MOV	#-1, DRHWC	: MAKE WC NEGATIVE
2168	007320	012777	177777	174004	MOV	#-1, DRHWC	: WAS IT LOADED CORRECTLY
2169	007326	022777	177777	173776	CMP	#-1, DRHWC	: NO, ALL BITS DID NOT SET
2170	007334	001056			BNE	WCERR1	: TELL DEVICE TO CLEAR
2171	007336	012777	000040	173774	HERE: MOV	#CLR, DRHCS2	: SAVE RHCS1
2172	007344	017737	173760	003420	MOV	DRHCS1, CS1	: SAVE WORD COUNT
2173	007352	017737	173754	003444	MOV	DRHWC, WC	: SAVE BUS ADDRESS
2174	007360	017737	173750	003414	MOV	DRHBA, BA	: IS IT AN RH11
2175	007366	005701			TST	R1	: NO IT'S A 70
2176	007370	001406			BEQ	87\$	: CLEAR BAE
2177	007372	005037	003416		CLR	BAE	: CLEAR CS3
2178	007376	005037	003424		CLR	CS3	: CONTINUE
2179	007402	000137	007422		JMP	86\$	: SAVE BUS ADDRESS EXTENSION
2180	007406	017737	173746	003416	87\$: MOV	DRHBAE, BAE	: SAVE RHCS3
2181	007414	017737	173742	003424	MOV	DRHCS3, CS3	: SAVE CS2
2182	007422	017737	173712	003422	86\$: MOV	DRHCS2, CS2	: SAVE TESTER STATUS
2183	007430	017737	173706	003432	MOV	DRHST, DS1	: SAVE ERROR REGISTER
2184	007436	017737	173702	003436	MOV	DRHER, ER1	: SAVE TESTER DATA REG.
2185	007444	017737	173700	003442	MOV	DRHTDB, TOR	: SAVE MR2 TESTER REG.
2186	007452	017737	173660	003440	MOV	DRHMR2, TC	: DID IT CLEAR
2187	007460	005777	173646		TST	DRHWC	: YES, CLEAR SHOULD NOT CLEAR WC
2188	007464	001434			BEQ	WCERR2	: GO TO NEXT CHECK
2189	007466	000137	007606		JMP	#DOIT	: DID ANY BITS LOAD
2190	007472	005777	173634		WCERR1: TST	DRHWC	: NO
2191	007476	001416			BEQ	1\$	: SAVE WHAT WC SHOULD HAVE BEEN
2192	007500	012737	177777	001162	MOV	#-1, \$REGO	: SAVE CONTENTS OF WC
2193	007506	017737	173620	003444	MOV	DRHWC, WC	: ALL BITS DID NOT SET
2194	007514	104042			ERROR	42	: SETUP FOR WATBIT
2195	007516	013737	003444	001200	MOV	WC, \$TMP1	

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2196 007524 004737 046302      JSR      R7,WATBIT      ;FIND THE BIT(S)
2197 007530 000137 007336      JMP      @HERE          ;SEE IF BITS SET CLEAR
2198 007534 013737 177777 001162 1S:  MOV      #-1,$REGO      ;SETUP FOR ERROR
2199 007542 017737 173564 003444  MOV      @RWC,WC        ;GET BAD DATA
2200 007550 104043          ERROR 43      ;WC DID NOT LOAD ANY BITS
2201 007552 000137 007606      JMP      @DOIT          ;GO TO NEXT REG. TEST
2202 007556 012737 177777 001162 WCERR2: MOV      #-1,$REGO      ;SETUP GOOD DATA
2203 007564 017737 173542 003444  MOV      @RWC,WC        ;GET BAD DATA
2204 007572 013737 003444 001200  MOV      WC,$TMP1      ;SETUP FOR WATBIT
2205 007600 104044          ERROR 44      ;SOME BITS CLEARED IN WC
2206 007602 004737 046302      JSR      R7,WATBIT      ;FIND THE BITS THAT CLEARED
2207 007606 004737 006602      JSR      R7,CLEER      ;CLEAR ERRORS
2208 007612 004737 050130      JSR      R7,ERRTST
2209
2210 *****
2211 ;*TEST 5      RHBA CLEAR TEST
2212 ;*THIS TEST SEES THAT WHEN A CLEAR IS GENERATED
2213 ;*THE BUS ADDRESS REGISTER IS CLEARED
2214 *****
2215 tst5: SCOPE
2216 ITD0:  MOV      #-2,@RHBA      ;SET ALL BITS IN RHBA
2217      CMP      #-2,@RHBA      ;ARE THEY ALL SET
2218      BNE      1S              ;ALL THE BITS DID NOT SET
2219      MOV      @CLR,@RHCS2     ;TELL IT TO CLEAR
2220      MOV      @RHCS1,CS1      ;SAVE RHCS1
2221      MOV      @RWC,WC        ;SAVE WORD COUNT
2222      MOV      @RHBA,BA       ;SAVE BUS ADDRESS
2223      TST      R1              ;IS IT AN RH11
2224      BEQ      87$            ;NO IT'S A 70
2225      CLR      BAE            ;CLEAR BAE
2226      CLR      CS3           ;CLEAR CS3
2227      JMP      86$           ;CONTINUE
2228 87$:  MOV      @RHBAE,BAE     ;SAVE BUS ADDRESS EXTENSION
2229      MOV      @RHCS3,CS3     ;SAVE RHCS3
2230 86$:  MOV      @RHCS2,CS2     ;SAVE CS2
2231      MOV      @RHST,DS1      ;SAVE TESTER STATUS
2232      MOV      @RHER,ER1      ;SAVE ERROR REGISTER
2233      MOV      @RHTDB,TDR     ;SAVE TESTER DATA REG.
2234      MOV      @RHMR2,TC      ;SAVE MR2 TESTER REG.
2235      TST      @RHBA          ;IS IT ZERO
2236      BEQ      TOIT           ;TEST IS GOOD
2237      CLR      $REGO          ;CREATE GOOD DATA
2238      MOV      @RHBA,$TMP1     ;SETUP FOR WATBIT
2239      ERROR 45                ;RHBA DID NOT CLEAR
2240      JSR      R7,WATBIT      ;FIND BITS STILL SET
2241      JMP      @TOIT          ;GO TO NEXT REG. TEST
2242 1S:   MOV      #-2,$REGO      ;SETUP GOOD DATA
2243      MOV      @RHBA,$TMP1     ;SETUP FOR WATBIT
2244      ERROR 46                ;BITS DID NOT SET IN RHBA
2245      JSR      R7,CLEER      ;CLEAR ERRORS
2246      JSR      R7,ERRTST
2247 *****
2248 ;*TEST 6      RHBAE CLEAR TEST
2249 ;*THIS TEST CHECKS THAT WHEN A CLEAR IS GENERATED
2250 ;*THE BUS ADDRESS EXTENSION REGISTER IS CLEARED
2251 *****

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MASSBUS RHD AND RH11 DIAGNOSTIC MACY11 27(732) 01-OCT-76 09:03 PAGE 46
 DZRHBC.P11 T6 RHBAE CLEAR TEST

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2252 010040 000004          TST6: SCOPE
2253 010042 005701          TST R1
2254 010044 100510          BMI TST7
2255 010046 012777 000077 173304 WATFOR: MOV #77, RHBAE      ;:SKIP OVER TEST FOR RH11
2256 010054 022777 000077 173276      CMP #77, RHBAE      ;SET ALL BITS IN RHBAE
2257 010062 001066          BNE 1$      ;ARE THEY ALL SET
2258 010064 012777 000040 173246      MOV #CLR, RHCS2      ;ALL THE BITS DID NOT SET
2259 010072 017737 173232 003420      MOV RHCS1, CS1      ;TELL IT TO CLEAR
2260 010100 017737 173226 003444      MOV RHWC, WC      ;SAVE RHCS1
2261 010106 017737 173222 003414      MOV RHBA, BA      ;SAVE WORD COUNT
2262 010114 005701          TST R1      ;SAVE BUS ADDRESS
2263 010116 001406          BEQ 87$      ;IS IT AN RH11
2264 010120 005037 003416          CLR BAE      ;NO IT'S A 70
2265 010124 005037 003424          CLR CS3      ;CLEAR BAE
2266 010130 000137 010150          JMP 86$      ;CLEAR CS3
2267 010134 017737 173220 003416 87$: MOV RHBAE, BAE      ;CONTINUE
2268 010142 017737 173214 003424      MOV RHCS3, CS3      ;SAVE BUS ADDRESS EXTENSION
2269 010150 017737 173164 003422 86$: MOV RHCS2, CS2      ;SAVE RHCS3
2270 010156 017737 173160 003432      MOV RHST, DS1      ;SAVE CS2
2271 010164 017737 173154 003436      MOV RHER, ER1      ;SAVE TESTER STATUS
2272 010172 017737 173152 003442      MOV RHTRD, TDR      ;SAVE ERROR REGISTER
2273 010200 017737 173132 003440      MOV RHMR2, TC      ;SAVE TESTER DATA REG.
2274 010206 005777 173146          TST RHBAE      ;SAVE MR2 TESTER REG.
2275 010212 001421          BEQ WATFIV      ;IS IT ZERO
2276 010214 005037 001162          CLR $REGO      ;TEST IS GOOD
2277 010220 017737 173134 001200      MOV RHBAE, $TMP1      ;CREATE GOOD DATA
2278 010226 104100          ERROR 100      ;SETUP FOR WATBIT
2279 010230 004737 046302          JSR R7, WATBIT      ;RHBAE DID NOT CLEAR
2280 010234 000137 010256          JMP #WATFIV      ;FIND BITS STILL SET
2281 010240 012737 000077 001162 1$: MOV #77, $REGO      ;GO TO NEXT REG. TEST
2282 010246 017737 173106 001200      MOV RHBAE, $TMP1      ;SETUP GOOD DATA
2283 010254 104101          ERROR 101      ;SETUP FOR WATBIT
2284 010256          WATFIV:      ;BITS DID NOT SET IN RHBAE
2285 010256 004737 006602          JSR R7, CLEER      ;CLEAR ERRORS
2286 010262 004737 050130          JSR R7, ERRST
2287 *****
2288 :*TEST 7
2289 :*THIS TEST CHECKS THAT WHEN A CLEAR IS GENERATED
2290 :*OUTPUT READY IS NEGATED
2291 *****
2292 010266 000004          TST7: SCOPE
2293 010270 012777 177777 173054      MOV #-1, RHDB      ;SET ALL BITS IN RHDB
2294 010276 005037 003446          CLR BITCNT      ;CLEAR BIT COUNTER
2295 010302 032777 000200 173030 18$: BIT #0R, RHCS2      ;IS OR SET
2296 010310 001015          BNE DBMG      ;BIT IS SET
2297 010312 005237 003446          INC BITCNT      ;COUNT UP
2298 010316 001371          BNE 18$      ;NOT FINISHED COUNTING
2299 010320 005037 003446          CLR BITCNT      ;GET READY TO DO IT AGAIN
2300 010324 032777 000200 173006 19$: BIT #0R, RHCS2      ;IS IT SET YET?
2301 010332 001004          BNE DBMG      ;YES
2302 010334 005237 003446          INC BITCNT      ;COUNT UP
2303 010340 001401          BEQ DBMG      ;BIT IS NOT GOING TO SET
2304 010342 000770          BR 19$
2305 010344          DBMG:
2306 010344 017737 172760 003420      MOV RHCS1, CS1      ;SAVE RHCS1
2307 010352 017737 172754 003444      MOV RHWC, WC      ;SAVE WORD COUNT

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 MASSBUS RHTO AND RH11: DIAGNOSTIC
 02RHBC.P11 7 RHDB CLEAR TEST

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2308	010360	017737	172750	003414		MOV	2RHBA,BA	:SAVE BUS ADDRESS
2309	010366	005701				TST	R1	:IS IT AN RH11
2310	010370	001406				BEQ	87\$	:NO IT'S A 70
2311	010372	005037	003416			CLR	BAE	:CLEAR BAE
2312	010376	005037	003424			CLR	CS3	:CLEAR CS3
2313	010402	000137	010422			JMP	86\$	:CONTINUE
2314	010406	017737	172746	003416	87\$:	MOV	2RHBAE,BAE	:SAVE BUS ADDRESS EXTENSION
2315	010414	017737	172742	003424		MOV	2RHCS3,CS3	:SAVE RHCS3
2316	010422	017737	172712	003422	86\$:	MOV	2RHCS2,CS2	:SAVE CS2
2317	010430	017737	172706	003432		MOV	2RHST,DS1	:SAVE TESTER STATUS
2318	010436	017737	172702	003436		MOV	2RHER,ER1	:SAVE ERROR REGISTER
2319	010444	017737	172700	003442		MOV	2RHTDB,TDR	:SAVE TESTER DATA REG.
2320	010452	017737	172660	003440		MOV	2RHMR2,TC	:SAVE MR2 TESTER REG.
2321	010460	032777	000200	172652		BIT	#OR,2RHCS2	:IS OUTPUT READY SET
2322	010466	001001				BNE	HURTS	:YES, CONTINUE TEST
2323	010470	104041				ERROR	41	:OUTPUT READY DID NOT SET
2324	010472	022777	177777	172652	HURTS:	CMP	#-1,2RHDB	:DID INFO GET LOADED TO DB
2325	010500	005037	003446			CLR	BITCNT	:CLEAR BIT COUNTER
2326	010504	032777	000200	172626	18\$:	BIT	#OR,2RHCS2	:IS OR SET
2327	010512	001015				BNE	DBMSG	:BIT IS SET
2328	010514	005237	003446			INC	BITCNT	:COUNT UP
2329	010520	001371				BNE	18\$	:NOT FINISHED COUNTING
2330	010522	005037	003446			CLR	BITCNT	:GET READY TO DO IT AGAIN
2331	010526	032777	000200	172604	19\$:	BIT	#OR,2RHCS2	:IS IT SET YET?
2332	010534	001004				BNE	DBMSG	:YES
2333	010536	005237	003446			INC	BITCNT	:COUNT UP
2334	010542	001401				BEQ	DBMSG	:BIT IS NOT GOING TO SET
2335	010544	000770				BR	19\$	
2336	010546				DBMSG:			
2337	010546	012777	000040	172564		MOV	#CLR,2RHCS2	:TELL IT TO CLEAR
2338	010554	005037	003446			CLR	BITCNT	:CLEAR THE COUNTER
2339	010560	032777	000200	172552	18\$:	BIT	#OR,2RHCS2	:DID OUTPUT READY CLEAR
2340	010566	001403				BEQ	SNAF00	:YES GET OUT OF LOOP
2341	010570	005237	003446			INC	BITCNT	:INCREMENT COUNT LOOP
2342	010574	001371				BNE	18\$	:CONTINUE LOOP IF NO CARRY
2343	010576	032777	000200	172534	SNAF00:	BIT	#OR,2RHCS2	:IS OUTPUT READY CLEARED
2344	010604	001403				BEQ	1\$	:YES, EXIT TEST
2345	010606	104114				ERROR	114	:OUTPUT READY NOT CLEARED
2346								:BY SETTING CLR IN RHCS2
2347	010610	004737	007234			JSR	R7,WHYFO	:ANY ERROR BITS SET
2348	010614	004737	006602		1\$:	JSR	R7,CLEER	:CLEAR ERRORS
2349	010620	004737	050130			JSR	R7,ERRTST	
2350								:*****
2351								:*TEST 10 PROM REGISTER DECODE TEST
2352								:*THIS TEST CHECKS THAT THE PROM
2353								:*CAN ACCESS ALL REGISTERS
2354								:*****
2355	010624	000004			†ST10:	SCOPE		
2356	010626	023727	003366	160100		CMP	DEVIC1,#160100	:CHECK FOR WHAT REG END
2357	010634	001000				BNE	1\$	:WE ARE OK
2358	010636	013704	003356		1\$:	MOV	RHDT,R4	:SETUP TO TEST RH11
2359	010642	005724				TST	(R4)+	:CORRECT ADDRESS
2360	010644	005724			2\$:	TST	(R4)+	:TEST REGISTER
2361	010646	001004				BNE	3\$	:SOME INFORMATION WAS FOUND
2362	010650	023704	003360			CMP	RHBAE,R4	:ARE ALL REGISTERS CHECKED
2363	010654	001521				BEQ	ERR3	:WAS THERE ANY ERRORS

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2364 010656 000772 BR 25 ;TEST NOT COMPLETED
2365 010660 005744 35: TST -(R4) ;CORRECT ADDRESS
2366 010662 010437 003416 MOV R4,BAE ;SAVE ADDRESS
2367 010666 011437 001162 MOV (R4),$REGO ;GET CONTENTS
2368 010672 017737 172450 003412 MOV 2RHAS,AS ;GET ATTENTION SUMMARY
2369 010700 104052 ERROR 52 ;FALSE INFO IN FAKE REGISTER
2370 010702 005003 CLR R3 ;GET OFFSET READY
2371 010704 013737 003330 003420 MOV RHCS1,CS1 ;GET ADDRESS TO START CHECKING
2372 010712 027737 172502 001162 295: CMP 2CS1,$REGO ;HAS A REGISTER BEEN FOUND THAT COMPARES
2373 010720 001412 BEQ 285 ;YES,PRINT IT OUT
2374 010722 023737 003356 003420 305: CMP RHDT,CS1 ;IS IT LAST REG IN RH11
2375 010730 001473 BEQ ERR3 ;WAS THERE ANY ERRORS
2376 010732 062737 000002 003420 ADD #TWO,CS1 ;NO,CORRECT FOR NEXT CHECK
2377 010740 062703 000004 ADD #4,R3 ;CORRECT OFFSET
2378 010744 000762 BR 295 ;CONTINUE TEST
2379 010746 032737 020000 177570 285: BIT #SW13,2#177570 ;SKIP ERROR PRINTOUT
2380 010754 001024 BNE 555 ;SKIP MESSAGE
2381 010756 104401 010764 TYPE 655 ;:TYPE ASCIZ STRING
2382 010762 000421 BR 645 ;:GET OVER THE ASCIZ
2383 ;:655: .ASCIZ <15><12>/REGISTER CONTENTS COMPARES TO:/
2384 011026 000163 011032 645: JMP 275(R3) ;PRINT REGISTER
2385 011026 104053 555: ERROR 53 ;RHCS1
2386 011032 000732 275: BR 305 ;CONTINUE TEST
2387 011034 104054 BR 54 ;RHC
2388 011040 000730 BR 305 ;CONTINUE TEST
2389 011042 104055 ERROR 55 ;RHBA
2390 011044 000726 BR 305 ;CONTINUE TEST
2391 011046 104056 ERROR 56 ;RHMR2
2392 011050 000724 BR 305 ;CONTINUE TEST
2393 011052 104057 ERROR 57 ;RHCS2
2394 011054 000722 BR 305 ;CONTINUE TEST
2395 011056 104060 ERROR 60 ;RHST
2396 011060 000720 BR 305 ;CONTINUE TEST
2397 011062 104061 ERROR 61 ;RHER
2398 011064 000716 BR 305 ;CONTINUE TEST
2399 011066 104062 ERROR 62 ;RHAS
2400 011070 000714 BR 305 ;CONTINUE TEST
2401 011072 104063 ERROR 63 ;RHTDB
2402 011074 000712 BR 305 ;CONTINUE TEST
2403 011076 104064 ERROR 64 ;RHDB
2404 011100 000710 BR 305 ;CONTINUE TEST
2405 011102 104065 ERROR 65 ;RHMR1
2406 011104 000706 BR 305 ;CONTINUE TEST
2407 011106 104066 ERROR 66 ;RHDT
2408 011110 000704 BR 305 ;CONTINUE TEST
2409 011112 104067 ERROR 67 ;RHBAE
2410 011114 000702 BR 305 ;CONTINUE TEST
2411 011116 104070 ERROR 70 ;RHCS3
2412 011120 004737 050130 ERR3: JSR R7,ERRTST
2413 011124 004737 006602 JSR R7,CLEER ;CLEAR ERRORS
2414
2415 ;*****
2416 ;*TEST 11 RHCS3 TEST
2417 ;*THIS TEST CHECKS THE READ/WRITE BITS
2418 ;*IN THE RHCS3 REGISTER CAN BE CLEARED AND SET.
2419

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2420
2421 011130 000004
2422 011132 012777 000040 172200
2423 011140 012777 000007 172172
2424 011146 005701
2425 011150 001122
2426 011152 012737 000004 003450
2427 011160 012737 000001 001162
2428 011166 013777 001162 172166
2429 011174 017737 172162 003424
2430 011202 013737 003424 001200
2431 011210 123777 001162 172144
2432 011216 001022
2433 011220 006137 001162
2434 011224 005337 003450
2435 011230 001356
2436 011232 012737 000100 001162
2437 011240 013777 001162 172114
2438 011246 017737 172110 003424
2439 011254 023777 001162 172100
2440 011262 001451
2441 011264
2442 011264 017737 172040 003420
2443 011272 017737 172034 003444
2444 011300 017737 172030 003414
2445 011306 005701
2446 011310 001406
2447 011312 005037 003416
2448 011316 005037 003424
2449 011322 000137 011342
2450 011326 017737 172026 003416
2451 011334 017737 172022 003424
2452 011342 017737 171772 003422
2453 011350 017737 171766 003432
2454 011356 017737 171762 003436
2455 011364 017737 171760 003442
2456 011372 017737 171740 003440
2457 011400 104035
2458 011402 004737 046302
2459 011406 004737 050130
2460 011412 004737 006602
2461
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2463
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2466
2467
2468
2469
2470 011416 000004
2471 011420 012737 000001 001162
2472 011426 013777 001162 171676
2473 011434 023777 001162 171670
2474 011442 001454
2475 011444 013737 003444 001200

*****
;ST11: SCOPE
;MOV #CLR, ARHCS2 ;CLEAR TESTER
;MOV #7, ARHCS2 ;SETUP UNIT SEVEN
;TST R1 ;IS IT AN RH70
;BNE TST12 ;;THIS IS A RH11
;MOV #4, LOOCNT ;SETUP LOOP COUNT OF FOUR
;MOV #1, SREG0 ;SETUP BIT TO BE TESTED
15: MOV SREG0, ARHCS3 ;SET THE BIT
;MOV ARHCS3, CS3 ;SAVE CONTENTS OF RHCS3
;MOV CS3, STMP1 ;SETUP FOR WHAT BIT IF NEEDED
;CMPB SREG0, ARHCS3 ;IS THE BIT SET?
;BNE 25 ;NO GO TO ERROR
;ROL SREG0 ;SETUP TO TEST NEXT BIT
;DEC LOOCNT ;-1 TO THE LOOP COUNT
;BNE 15 ;TEST NEXT BIT
;MOV #IE3, SREG0 ;SET INTERRUPT BIT
;MOV SREG0, ARHCS3 ;SET BIT
;MOV ARHCS3, CS3 ;SAVE CONTENTS
;CMP SREG0, ARHCS3 ;IS BIT SET?
;BEQ ERR5 ;WAS THERE AN ERROR
25: MOV ARHCS1, CS1 ;SAVE RHCS1
;MOV ARHWC, WC ;SAVE WORD COUNT
;MOV ARHBA, 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$: MOV ARHBAE, BAE ;SAVE BUS ADDRESS EXTENSION
;MOV ARHCS3, CS3 ;SAVE RHCS3
86$: MOV ARHCS2, CS2 ;SAVE CS2
;MOV ARHST, DS1 ;SAVE TESTER STATUS
;MOV ARHER, ER1 ;SAVE ERROR REGISTER
;MOV ARHTDB, TDR ;SAVE TESTER DATA REG.
;MOV ARHMR2, TC ;SAVE MR2 TESTER REG.
;ERROR 35 ;BIT DID NOT SET
;JSR R7, WATBIT ;TELL WHAT BIT POSITION IS NO GOOD
ERR5: JSR R7, ERR1ST
;JSR R7, CLEAR ;CLEAR ERRORS

*****
;TEST 12 RHWC BIT TEST
;THIS TEST CHECKS THE WORD COUNT REGISTER
;TO SEE IF ALL BITS CAN BE SET AND CLEARED
;AND CHECKS THE REGISTER USING ALTERNATE BITS
;SET (52525) AND USING (125252) TO MAKE SURE
;IT WORKS WITH ALTERNATE PATTERN.
*****
;ST12: SCOPE
;MOV #ONE, SREG0 ;SET UP REFERENCE WORD
RHWC: MOV SREG0, ARHWC ;MOVE BIT INTO WORD COUNT REGISTER
;CMP SREG0, ARHWC ;IS BIT SET?
;BEQ 15 ;YES, CONTINUE BIT TEST
;MOV WC, STMP1 ;SETUP FOR WATBIT PROG.

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MASSBUS RH70 AND RH11 DIAGNOSTIC
DZRHBC.F11 T12 RHWC BIT TEST

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2476	011452	004737	046302		JSR	R7,WATBIT	;GO TO WATBIT PROGRAM
2477	011456	017737	171646	003420	MOV	ARHCS1,CS1	;SAVE RHCS1
2478	011464	017737	171642	003444	MOV	ARHWC,WC	;SAVE WORD COUNT
2479	011472	017737	171636	003414	MOV	ARHBA,BA	;SAVE BUS ADDRESS
2480	011500	005701			TST	R1	;IS IT AN RH11
2481	011502	001406			BEQ	B7\$	;NO IT'S A 70
2482	011504	005037	003416		CLR	BAE	;CLEAR BAE
2483	011510	005037	003424		CLR	CS3	;CLEAR CS3
2484	011514	000137	011534		JMP	B6\$	;CONTINUE
2485	011520	017737	171634	003416	MOV	ARHBAE,BAE	;SAVE BUS ADDRESS EXTENSION
2486	011526	017737	171630	003424	MOV	ARHCS3,CS3	;SAVE RHCS3
2487	011534	017737	171600	003422	MOV	ARHCS2,CS2	;SAVE CS2
2488	011542	017737	171574	003432	MOV	ARHST,DS1	;SAVE TESTER STATUS
2489	011550	017737	171570	003436	MOV	ARHER,ER1	;SAVE ERROR REGISTER
2490	011556	017737	171566	003442	MOV	ARHTDB,TDR	;SAVE TESTER DATA REG.
2491	011564	017737	171546	003440	MOV	ARHMR2,TC	;SAVE MR2 TESTER REG.
2492	011572	104001			ERROR	1	;BIT WAS NOT SET IN RHWC REG
2493	011574	005737	001162		TST	\$REGO	;WAS IT BIT 15 THAT WAS LAST TESTED
2494	011600	100403			BMI	RHWCA	;YES,GO TO NEXT PART OF TEST
2495	011602	006137	001162		ROL	\$REGO	;NO,THEN TEST NEXT BIT
2496	011606	000707			BR	RHWCT	;DO BIT TEST AGAIN
2497	011610	012737	052525	001162	MOV	#AB,\$REGO	;SET UP ALTERNATE BIT PATTERN
2498	011616	013777	001162	171506	MOV	\$REGO,ARHWC	;SET ALTERNATE BITS
2499	011624	017737	171502	003444	MOV	ARHWC,WC	;SAVE RHWC CONTENTS
2500	011632	023777	001162	171472	CMP	\$REGO,ARHWC	;ARE THEY ALL SET?
2501	011640	001457			BEQ	1\$	;YES,CONTINUE TEST
2502	011642	013737	003444	001200	MOV	WC,\$TMP1	;SETUP FOR WATBIT PROG.
2503	011650	004737	046302		JSR	R7,WATBIT	;GO TO WATBIT PROGRAM
2504	011654	017737	171450	003420	MOV	ARHCS1,CS1	;SAVE RHCS1
2505	011662	017737	171444	003444	MOV	ARHWC,WC	;SAVE WORD COUNT
2506	011670	017737	171440	003414	MOV	ARHBA,BA	;SAVE BUS ADDRESS
2507	011676	005701			TST	R1	;IS IT AN RH11
2508	011700	001406			BEQ	B7\$	;NO IT'S A 70
2509	011702	005037	003416		CLR	BAE	;CLEAR BAE
2510	011706	005037	003424		CLR	CS3	;CLEAR CS3
2511	011712	000137	011732		JMP	B6\$	;CONTINUE
2512	011716	017737	171436	003416	MOV	ARHBAE,BAE	;SAVE BUS ADDRESS EXTENSION
2513	011724	017737	171432	003424	MOV	ARHCS3,CS3	;SAVE RHCS3
2514	011732	017737	171402	003422	MOV	ARHCS2,CS2	;SAVE CS2
2515	011740	017737	171376	003432	MOV	ARHST,DS1	;SAVE TESTER STATUS
2516	011746	017737	171372	003436	MOV	ARHER,ER1	;SAVE ERROR REGISTER
2517	011754	017737	171370	003442	MOV	ARHTDB,TDR	;SAVE TESTER DATA REG.
2518	011762	017737	171350	003440	MOV	ARHMR2,TC	;SAVE MR2 TESTER REG.
2519	011770	104001			ERROR	1	;TEST FAILED
2520	011772	012737	125252	001162	MOV	#OAB,\$REGO	;SET UP ALTERNATE OPPISITE BITS
2521	012000	013777	001162	171324	MOV	\$REGO,ARHWC	;SET OPPISITE ALTERNATE BITS
2522	012006	017737	171320	003444	MOV	ARHWC,WC	;SAVE CONTENTS OF RHWC
2523	012014	023777	001162	171310	CMP	\$REGO,ARHWC	;ARE CORRECT BITS SET?
2524	012022	001454			BEQ	ERR6	;WAS THERE AN ERROR
2525	012024	013737	003444	001200	MOV	WC,\$TMP1	;SETUP FOR WATBIT PROG.
2526	012032	004737	046302		JSR	R7,WATBIT	;GO TO WATBIT PROGRAM
2527	012036						
2528	012036	017737	171266	003420	MOV	ARHCS1,CS1	;SAVE RHCS1
2529	012044	017737	171262	003444	MOV	ARHWC,WC	;SAVE WORD COUNT
2530	012052	017737	171256	003414	MOV	ARHBA,BA	;SAVE BUS ADDRESS
2531	012060	005701			TST	R1	;IS IT AN RH11

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2532 012062 001406          BEQ      87$      ; NO IT'S A 70
2533 012064 005037 003416    CLR      BAE      ; CLEAR BAE
2534 012070 005037 003424    CLR      CS3     ; CLEAR CS3
2535 012074 000137 012114    JMP      86$     ; CONTINUE
2536 012100 017737 171254 003416 87$: MOV   2RHBAE,BAE ; SAVE BUS ADDRESS EXTENSION
2537 012106 017737 171250 003424    MOV   2RHCS3,CS3 ; SAVE RHCS3
2538 012114 017737 171220 003422 86$: MOV   2RHCS2,CS2 ; SAVE CS2
2539 012122 017737 171214 003432    MOV   2RHST,0S1 ; SAVE TESTER STATUS
2540 012130 017737 171210 003436    MOV   2RHER,ER1 ; SAVE ERROR REGISTER
2541 012136 017737 171206 003442    MOV   2RHTD8,TDR ; SAVE TESTER DATA REG.
2542 012144 017737 171166 003440    MOV   2RHMR2,TC ; SAVE MR2 TESTER REG.
2543 012152 134001          ERROR    1 ; OPPOSITE BIT TEST FAILED
2544 012154 013737 003332 004142 ERR6: MOV   RHWC,$RHWC ; GET READY TO TEST BYTES
2545 012162 012777 000000 171142    MOV   #ZERO,2RHWC ; CLEAR WC FIRST
2546 012170 113777 004120 171744    MOVB   M1US,2$RHWC ; CHECK LOBYTE
2547 012176 022777 000377 171126    CMP    #377,2RHWC ; ANY EXTRA BITS
2548 012204 001401          BEQ      HIBYTE ; OK SO FAR
2549 012206 104200          ERROR    200 ; HIBYTE GATE NOT WORKING PROPERLY
2550 012210 005237 004142    HIBYTE: INC   $RHWC ; GET READY FOR NEXT BYTE
2551 012214 012777 000000 171110    MOV   #ZERO,2RHWC ; CLEAR WC
2552 012222 113777 004121 171712    MOVB   MINUS+1,2$RHWC ; CHECK THE HI BYTE
2553 012230 022777 177400 171074    CMP    #177400,2RHWC ; IS IT OK
2554 012236 001401          BEQ      ALRIGT ; ITS OK
2555 012240 104200          ERROR    200 ; LOBYTE GATE NOT WORKING PROPERLY
2556 012242 004737 050130    ALRIGT: JSR    R7,ERRTST ;
2557 012246 012777 000000 171056    MOV   #ZERO,2RHWC ; CLEAR WORD COUNT
2558 012254 004737 006602    JSR      R7,CLEER ; CLEAR ERRORS
2559
2560
2561 ::*****
2562 :*TEST 13      RHBAE BIT TEST
2563 ;*THIS TEST TESTS THE RHBAE REGISTER
2564 ;*ONLY IF THE RH IS AN RH70,RH11'S
2565 ;*DO NOT HAVE AN RHBAE REGISTER
2566 ::*****
2567 TST13: SCOPE
2568 TST      R1
2569 BNE      TST14 ; IS RH AN RH70
2570 MOV      #1,$REGO ; NO PASS OVER TEST
2571 MOV      $REGO,2RHBAE ; SET UP BIT TEST
2572 MOV      2RHBAE,BAE ; SET BIT IN RHBAE REGISTER
2573 CMP      $REGO,2RHBAE ; SAVE CONTENTS OF RHBAE REGISTER
2574 BEQ      1$ ; IS IT SET?
2575 MOV      BAE,$TMP1 ; YES CONTINUE TEST
2576 JSR      R7,WATBIT ; SETUP FOR WATBIT PROG.
2577 MOV      2RHCS1,CS1 ; GO TO WATBIT PROGRAM
2578 MOV      2RHWC,WC ; SAVE RHCS1
2579 MOV      2RHBA,BA ; SAVE WORD COUNT
2580 TST      R1 ; SAVE BUS ADDRESS
2581 BEQ      87$ ; IS IT AN RH11
2582 CLR      BAE ; NO IT'S A 70
2583 CLR      CS3 ; CLEAR BAE
2584 JMP      86$ ; CLEAR CS3
2585 MOV      2RHBAE,BAE ; CONTINUE
2586 MOV      2RHCS3,CS3 ; SAVE BUS ADDRESS EXTENSION
2587 MOV      2RHCS2,CS2 ; SAVE RHCS3
; SAVE CS2

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M04

MASSBUS RH70 AND RH1: DIAGNOSTIC
DZRHBC.P11 T13 RHBAE BIT TEST

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2588 012416 017737 170720 003432      MOV      @RHST,DS1      ;SAVE TESTER STATUS
2589 012424 017737 170714 003436      MOV      @RHER,ER1      ;SAVE ERROR REGISTER
2590 012432 017737 170712 003442      MOV      @RHTDB,TDR      ;SAVE TESTER DATA REG.
2591 012440 017737 170672 003440      MOV      @RHMR2,TC      ;SAVE MR2 TESTER REG.
2592 012446 104002      ERROR      2      ;BIT DID NOT SET
2593 012450 022737 000040 001162 15:  CMP      #40,$REGO      ;IS IT LAST BIT TO BE TESTED
2594 012456 001403      BEQ      ERR7      ;WAS THERE AN ERROR
2595 012460 006137 001162      ROL      $REGO      ;NO,SET UP FOR NEXT BIT
2596 012464 000703      BR       BAETST      ;CONTINUE TEST
2597 012466 004737 006602  ERR7:  JSR      R7,CLEER      ;CLEAR ERRORS
2598 012472 004737 050130      JSR      R7,ERRTST

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2609 012476 000004      ;*****
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2611 012500 012737 000002 001162      ;*TEST 14      RHBA BIT TEST
2612 012506 013777 001162 170620      ;*THIS TEST TESTS THE BUS ADDRESS REGISTER
2613 012514 017737 170614 003414      ;*BY FIRST ALTERNATLY SETTING AND CLEARING
2614 012522 023777 001162 170604      ;*BITS IN THE BA REGISTER AND THEN BY USING
2615 012530 001454      ;*AN ALTERNATE BIT PATTERN (52525) AND AN
2616 012532 013737 003414 001200      ;*OPPOSITE BIT PATTERN (125252).
2617 012540 017737 170564 003420      ;*****
2618 012546 017737 170560 003444      ;*ST14: SCOPE
2619 012554 017737 170554 003414
2620 012562 005701
2621 012564 001406
2622 012566 005037 003416
2623 012572 005037 003424
2624 012576 000137 012616
2625 012602 017737 170552 003416 87$: MOV      @RHBAE,BAE      ;SET UP BIT TEST
2626 012610 017737 170546 003424      MOV      @RHCS3,CS3      ;SET BIT IN RHBA REGISTER
2627 012616 017737 170516 003422 86$: MOV      @RHCS2,CS2      ;SAVE CONTENTS OF BA REGISTER
2628 012624 017737 170512 003432      MOV      @RHST,DS1      ;ARE CORRECT BITS SET
2629 012632 017737 170506 003436      MOV      @RHER,ER1      ;YES,CONTINUE TEST
2630 012640 017737 170504 003442      MOV      @RHTDB,TDR      ;SETUP FOR WATBIT PROG.
2631 012646 017737 170464 003440      MOV      @RHMR2,TC      ;SAVE RHCS1
2632 012654 104003      ERROR      3      ;SAVE WORD COUNT
2633 012656 004737 046302      JSR      R7,WATBIT      ;SAVE BUS ADDRESS
2634 012662 005737 001162 15:  TST      $REGO      ;IS IT AN RH11
2635 012666 100403      BMI      BATSTA      ;NO IT'S A 70
2636 012670 006137 001162      ROL      $REGO      ;CLEAR BAE
2637 012674 000704      BR       BATST      ;CLEAR CS3
2638 012676 012737 052525 001162  BATSTA: MOV      #AB,$REGO      ;CONTINUE
2639 012704 042737 000001 001162      BIC      #ONE,$REGO      ;SET UP BIT PATTERN
2640 012712 013777 001162 170414      MOV      $REGO,@RHBA      ;CLEAR BIT 0 POSITION
2641 012720 017737 170410 003414      MOV      @RHBA,BA      ;SET BITS IN RHBA REGISTER
2642 012726 023777 001162 170400      CMP      $REGO,@RHBA      ;SAVE CONTENTS OF BA REGISTER
2643 012734 001454      BEQ      15      ;ARE CORRECT BITS SET
                        ;YES,CONTINUE TEST

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2644	012736	013737	003414	001200		MOV	BA, STMP1	: SETUP FOR WATBIT PROG.
2645	012744	017737	170360	003420		MOV	ARHCS1, CS1	: SAVE RHCS1
2646	012752	017737	170354	003444		MOV	ARHWC, WC	: SAVE WORD COUNT
2647	012760	017737	170350	003414		MOV	ARHBA, BA	: SAVE BUS ADDRESS
2648	012766	005701				TST	R1	: IS IT AN RH11
2649	012770	001406				BEQ	87\$	: NO IT'S A 70
2650	012772	005037	003416			CLR	BAE	: CLEAR BAE
2651	012776	005037	003424			CLR	CS3	: CLEAR CS3
2652	013002	000137	013022			JMP	86\$	: CONTINUE
2653	013006	017737	170346	003416	87\$:	MOV	ARHBAE, BAE	: SAVE BUS ADDRESS EXTENSION
2654	013014	017737	170342	003424		MOV	ARHCS3, CS3	: SAVE RHCS3
2655	013022	017737	170312	003422	86\$:	MOV	ARHCS2, CS2	: SAVE CS2
2656	013030	017737	170306	003432		MOV	ARHST, DS1	: SAVE TESTER STATUS
2657	013036	017737	170302	003436		MOV	ARHER, ER1	: SAVE ERROR REGISTER
2658	013044	017737	170300	003442		MOV	ARHTDB, TOR	: SAVE TESTER DATA REG.
2659	013052	017737	170260	003440		MOV	ARHMR2, TC	: SAVE MR2 TESTER REG.
2660	013060	104003				ERROR	3	: NO, CORRECT BITS ARE NOT SET
2661	013062	004737	046302			JSR	R7, WATBIT	: GO TO WATBIT PROGRAM
2662	013066	012737	125252	001162	1\$:	MOV	#0AB, \$REGO	: SET UP OPPOSITE ALTERNATE BIT TEST
2663	013074	013777	001162	170232		MOV	\$REGO, ARHBA	: SET BITS IN RHBA REGISTER
2664	013102	017737	170226	003414		MOV	ARHBA, BA	: SAVE CONTENTS OF BA REGISTER
2665	013110	023777	001162	170216		CMP	\$REGO, ARHBA	: ARE CORRECT BITS SET
2666	013116	001454				BEQ	ERR10	: WAS THERE AN ERROR
2667	013120	013737	003414	001200		MOV	BA, STMP1	: SETUP FOR WATBIT PROG.
2668	013126				GOOFED:			
2669	013126	017737	170176	003420		MOV	ARHCS1, CS1	: SAVE RHCS1
2670	013134	017737	170172	003444		MOV	ARHWC, WC	: SAVE WORD COUNT
2671	013142	017737	170166	003414		MOV	ARHBA, BA	: SAVE BUS ADDRESS
2672	013150	005701				TST	R1	: IS IT AN RH11
2673	013152	001406				BEQ	87\$	: NO IT'S A 70
2674	013154	005037	003416			CLR	BAE	: CLEAR BAE
2675	013160	005037	003424			CLR	CS3	: CLEAR CS3
2676	013164	000137	013204			JMP	86\$	: CONTINUE
2677	013170	017737	170164	003416	87\$:	MOV	ARHBAE, BAE	: SAVE BUS ADDRESS EXTENSION
2678	013176	017737	170160	003424		MOV	ARHCS3, CS3	: SAVE RHCS3
2679	013204	017737	170130	003422	86\$:	MOV	ARHCS2, CS2	: SAVE CS2
2680	013212	017737	170124	003432		MOV	ARHST, DS1	: SAVE TESTER STATUS
2681	013220	017737	170120	003436		MOV	ARHER, ER1	: SAVE ERROR REGISTER
2682	013226	017737	170116	003442		MOV	ARHTDB, TOR	: SAVE TESTER DATA REG.
2683	013234	017737	170076	003440		MOV	ARHMR2, TC	: SAVE MR2 TESTER REG.
2684	013242	104003				ERROR	3	: NO, CORRECT BITS ARE NOT SET
2685	013244	004737	046302			JSR	R7, WATBIT	: GO TO WATBIT PROGRAM
2686	013250	013737	003334	004136	ERR10:	MOV	RHBA, \$RHBA	: GET READY TO TEST BYTES
2687	013256	012777	000000	170050		MOV	#ZERO, ARHBA	: ZERO THE BUS ADDRESS
2688	013264	113777	004120	170644		MOVB	MINUS, ARHBA	: MOVE THE BYTE
2689	013272	022777	000376	170034		CMP	#376, ARHBA	: DID IT GET THERE ALRIGHT
2690	013300	001401				BEQ	99\$	: YES, CHECK NEXT BYTE
2691	013302	104202				ERROR	202	: HIGH BYTE DOES NOT SEEM TO BE WORKING
2692	013304	005237	004136		99\$:	INC	\$RHBA	: GET READY FOR NEXT BYTE
2693	013310	012777	000000	170016		MOV	#ZERO, ARHBA	: ZERO THE BUS ADDRESS
2694	013316	113777	004121	170612		MOVB	MINUS+1, ARHBA	: MOVE TO UPPER BYTE
2695	013324	022777	177400	170002		CMP	#177400, ARHBA	: DID IT GET THERE ALRIGHT
2696	013332	001401				BEQ	98\$	: YES, EXIT TEST
2697	013334	104202				ERROR	202	: LOW BYTE IS NOT WORKING PROPERLY
2698	013336	004737	006602		98\$:	JSR	R7, CLEAR	: CLEAR ERRORS
2699	013342	004737	050130			JSR	R7, ERRST	

B05

MASSBUS RMTD AND RMTD: DIAGNOSTIC
DIR-OC.P11 -14 RMTD BI TEST

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2710 013346 000004
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2713 013350 005037 003450 CLR LOOCNT :CLEAR LOOP COUNT
2714 013354 012737 000001 001162 MOV #ONE,$REGO :SET UP BIT TEST
2715 013362 013777 001162 167762 DB*ST: MOV $REGO,$RHOB :SET BIT IN RHOB REGISTER
2716 013370 005037 003446 CLR BITCNT :CLEAR BIT COUNTER
2717 013374 032777 000200 167726 18$: BIT #RDY,$RHCS1 :IS RDY SET
2718 013402 001015 BNE ABLE :BIT IS SET
2719 013404 005237 003446 INC BITCNT :COUNT UP
2720 013410 001371 BNE 18$: :NOT FINISHED COUNTING
2721 013412 005037 003446 CLR BITCNT :GET READY TO DO IT AGAIN
2722 013416 032777 000200 167704 19$: BIT #RDY,$RHCS1 :IS IT SET YET?
2723 013424 001004 BNE ABLE :YES
2724 013426 005237 003446 INC BITCNT :COUNT UP
2725 013432 001401 BEQ ABLE :BIT IS NOT GOING TO SET
2726 013434 000770 BR 19$
2727 013436 ABLE:
2728 013436 017737 167666 003420 MOV $RHCS1,$CS1 :SAVE RHCS1
2729 013444 017737 167662 003444 MOV $RHWC,$C :SAVE WORD COUNT
2730 013452 017737 167656 003414 MOV $RHBA,$BA :SAVE BUS ADDRESS
2731 013460 005701 TST R1 :IS IT AN RH11
2732 013462 001406 BEQ 87$: :NO IT'S A 70
2733 013464 005037 003416 CLR BAE :CLEAR BAE
2734 013470 005037 003424 CLR CS3 :CLEAR CS3
2735 013474 000137 013514 JMP 86$: :CONTINUE
2736 013500 017737 167654 003416 87$: MOV $RHEAE,$BAE :SAVE BUS ADDRESS EXTENSION
2737 013506 017737 167650 003424 MOV $RHCS3,$CS3 :SAVE RHCS3
2738 013514 017737 167620 003422 86$: MOV $RHCS2,$CS2 :SAVE CS2
2739 013522 017737 167614 003432 MOV $RHS1,$DS1 :SAVE TESTER STATUS
2740 013530 017737 167610 003436 MOV $RHER,$ER1 :SAVE ERROR REGISTER
2741 013536 017737 167606 003442 MOV $RHTDB,$TOR :SAVE TESTER DATA REG.
2742 013544 017737 167566 003440 MOV $RHMR2,$TC :SAVE MR2 TESTER REG.
2743 013552 032777 000200 167550 BIT #RDY,$RHCS1 :IS READY SET
2744 013560 001003 BNE RDYSET :SKIP ERROR
2745 013562 104102 ERROR 102 :READY DID NOT SET
2746 013564 004737 007234 JSR R7,WHYFO :ANY ERRORS SET
2747 013570 032777 000200 167542 RDYSET: BIT #OR,$RHCS2 :IS OR SET?
2748 013576 001004 BNE ORSET :YES, IT'S SET
2749 013600 017737 167546 003426 MOV $RHOB,$DB :SAVE CONTENTS OF RHOB REGISTER
2750 013606 104041 ERROR 4: :OUTPUT READY DID NOT SET
2751 013610 017737 167536 003426 ORSET: MOV $RHOB,$DB :SAVE CONTENTS OF REGISTER
2752 013616 023737 001162 003426 CMP $REGO,$DB :IS CORRECT BIT SET?
2753 013624 001406 BEQ 1$: :YES, CONTINUE TEST
2754 013626 013737 003426 001200 MOV DB,$TMP1 :SETUP FOR WATBIT PROG.
2755 013634 104004 ERROR 4 :NO, CORRECT BIT IS NOT SET
2756 013636 004737 046302 JSR R7,WATBIT :GO TO WATBIT PROGRAM

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2757	013642	005737	001162	15:	TST	\$REGO	: WAS BIT 15 THE LAST BIT TESTED
2758	013646	004115			BMV	DBTSTA	: YES GO TO ALTERNATE BIT PATTERN TEST
2759	013650	022737	000001 003450		CMF	#ONE, LOOCNT	: IS IT FIRST TIME
2760	013656	001404			BEQ	25	: NO IT'S SECOND
2761	013660	005237	003450		INC	LOOCNT	: YES
2762	013664	000137	013362		JMP	DBTST	: CONTINUE TEST
2763	013670	005037	003450	25:	CLR	LOOCNT	: CLEAR LOOP COUNT
2764	013674	006137	001162		ROL	\$REGO	: NO, SET UP TO TEST NEXT BIT
2765	013700	000630			BR	DBTST	: GO AND TEST BIT
2766	013702	022737	000001 003450	DBTSTA:	CMF	#ONE, LOOCNT	: IS IT FIRST TIME
2767	013710	001404			BEQ	15	: NO
2768	013712	005237	003450		INC	LOOCNT	: INCREMENT LOOP COUNTER
2769	013716	000137	013362		JMP	DBTST	: DO AGAIN
2770	013722	012737	052525 001162	15:	MOV	#AB, \$REGO	: SET UP BIT PATTERN TEST
2771	013730	013777	001162 167414		MOV	\$REGO, RHDB	: SET BITS IN REGISTER
2772	013736	005037	003446		CLR	BITCNT	: CLEAR BIT COUNTER
2773	013742	032777	000200 167370	185:	BIT	#OR, RHCS2	: IS OR SET
2774	013750	001015			BNE	DBOUT	: BIT IS SET
2775	013752	005237	003446		INC	BITCNT	: COUNT UP
2776	013756	001371			BNE	185	: NOT FINISHED COUNTING
2777	013760	005037	003446		CLR	BITCNT	: GET READY TO DO IT AGAIN
2778	013764	032777	000200 167346	195:	BIT	#OR, RHCS2	: IS IT SET YET?
2779	013772	001004			BNE	DBOUT	: YES
2780	013774	005237	003446		INC	BITCNT	: COUNT UP
2781	014000	001401			BEQ	DBOUT	: BIT IS NOT GOING TO SET
2782	014002	000770			BR	195	
2783	014004			DBOUT:			
2784	014004	017737	167320 003420		MOV	RHCS1, CS1	: SAVE RHCS1
2785	014012	017737	167314 003444		MOV	RHWC, WC	: SAVE WORD COUNT
2786	014020	017737	167310 003414		MOV	RHBA, BA	: SAVE BUS ADDRESS
2787	014026	005701			TST	R1	: IS IT AN RH11
2788	014030	001406			BEQ	875	: NO IT'S A 70
2789	014032	005037	003416		CLR	BAE	: CLEAR BAE
2790	014036	005037	003424		CLR	CS3	: CLEAR CS3
2791	014042	000137	014052		JMP	865	: CONTINUE
2792	014046	017737	167306 003416	875:	MOV	RHBAE, BAE	: SAVE BUS ADDRESS EXTENSION
2793	014054	017737	167302 003424		MOV	RHCS3, CS3	: SAVE RHCS3
2794	014062	017737	167252 003422	865:	MOV	RHCS2, CS2	: SAVE CS2
2795	014070	017737	167246 003432		MOV	RHST, DS1	: SAVE TESTER STATUS
2796	014076	017737	167242 003436		MOV	RHER, ER1	: SAVE ERROR REGISTER
2797	014104	017737	167240 003442		MOV	RHTDB, TDR	: SAVE TESTER DATA REG.
2798	014112	017737	167220 003440		MOV	RHMR2, TC	: SAVE MR2 TESTER REG.
2799	014120	032777	000200 167212		BIT	#OR, RHCS2	: IS OUTPUT READY?
2800	014126	001001			BNE	25	: YES CONTINUE TEST
2801	014130	104041			ERROR	41	: OUTPUT READY DID NOT SET
2802	014132	023777	001162 167212	25:	CMF	\$REGO, RHDB	: ARE CORRECT BITS SET?
2803	014140	001411			BEQ	15	: YES CONTINUE TESTS
2804	014142	017737	167204 003426		MOV	RHDB, DB	: SAVE CONTENTS OF REGISTER
2805	014150	013737	003426 001200		MOV	DB, STMP1	: SETUP FOR WATBIT TEST
2806	014156	104004			ERROR	4	: NO, CORRECT BITS ARE NOT SET
2807	014160	004737	046302		JSR	R7, WATBIT	: GO TO WATBIT PROGRAM
2808	014164	012737	125252 001162	15:	MOV	#OAB, \$REGO	: SET UP OPPOSITE ALTERNATE BIT PATTERN TEST
2809	014172	013777	001162 167152		MOV	\$REGO, RHDB	: SET BITS IN REGISTER
2810	014200	005037	003446		CLR	BITCNT	: CLEAR BIT COUNTER
2811	014204	032777	000200 167126	185:	BIT	#OR, RHCS2	: IS OR SET
2812	014212	001015			BNE	OABTST	: BIT IS SET

E05

 MASSBUS RMTD AND RMI: DIAGNOSTIC
 00000.P11 *15 RHOB BIT TEST

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2813	014214	005237	003446		INC	BITCNT		:COUNT UP
2814	014220	001371			BNE	185		:NOT FINISHED COUNTING
2815	014222	005237	003446		CLR	BITCNT		:GET READY TO DO IT AGAIN
2816	014226	032777	000200	167104	195:	BIT	*OR, ARHCS2	:IS IT SET YET?
2817	014234	001004			BNE	0ABTST		:YES
2818	014236	005237	003446		INC	BITCNT		:COUNT UP
2819	014242	001401			BEQ	0ABTST		:BIT IS NOT GOING TO SET
2820	014244	000770			BR	195		
2821	014246				0ABTST:			
2822	014248				MYSTIC:			
2823	014254	017737	167056	003420	MOV	ARHCS1, CS1		:SAVE RHCS1
2824	014254	017737	167052	003444	MOV	ARHWC, WC		:SAVE WORD COUNT
2825	014262	017737	167046	003414	MOV	ARHBA, BA		:SAVE BUS ADDRESS
2826	014270	005701			TST	R1		:IS IT AN RH11
2827	014272	001406			BEQ	875		:NO IT'S A 7C
2828	014274	005037	003416		CLR	BAE		:CLEAR BAE
2829	014300	005037	003424		CLR	CS3		:CLEAR CS3
2830	014304	000137	014324		JMP	865		:CONTINUE
2831	014310	017737	167044	003416	875:	MOV	ARHBAE, BAE	:SAVE BUS ADDRESS EXTENSION
2832	014316	017737	167040	003424	MOV	ARHCS3, CS3		:SAVE RHCS3
2833	014324	017737	167010	003422	865:	MOV	ARHCS2, CS2	:SAVE CS2
2834	014332	017737	167004	003432	MOV	ARHST, DS1		:SAVE TESTER STATUS
2835	014340	017737	167000	003436	MOV	ARHER, ER1		:SAVE ERROR REGISTER
2836	014346	017737	166776	003442	MOV	ARHTDB, TDR		:SAVE TESTER DATA REG.
2837	014354	017737	166756	003440	MOV	ARHMR2, TC		:SAVE MR2 TESTER REG.
2838	014362	032777	000200	166750	BIT	*OR, ARHCS2		:IS OUTPUT READY SET
2839	014370	001001			BNE	25		:YES
2840	014372	104041			ERROR	41		:OUTPUT READY DID NOT SET
2841	014374	017737	166752	003426	25:	MOV	ARHDB, DB	:SAVE CONTENTS OF REGISTER
2842	014402	023737	001162	003426	CMP	\$REG0, DB		:ARE CORRECT BITS SET?
2843	014410	001406			BEQ	ERR11		:WAS THERE AN ERROR
2844	014412	013737	003426	001200	MOV	DB, \$TMP1		:SETUP FOR WATBIT PROG.
2845	014420	104004			ERROR	4		:CORRECT BITS ARE NOT SET
2846	014422	004737	046302		JSR	R7, WATBIT		:GO TO WATBIT PROGRAM
2847	014426	004737	006602		ERR11:	JSR	R7, CLEER	:CLEAR ERRORS
2848	014432	004737	050130		JSR	R7, ERRST		
2849								
2850								
2851								
2852								
2853								
2854								
2855								
2856								
2857								
2858	014436	000004			166664			
2859	014440	012777	177777	166664				
2860	014446	012777	000007	166664				
2861	014454	005701						
2862	014456	100403						
2863	014460	012777	000000	166672				
2864	014466	012777	001204	166640	15:	MOV	*ZERO, ARHBAE	:SETUP BUS ADDRESS EXTENSION
2865	014474	012777	000061	166626	MOV	*\$TMP3, ARHBA		:SETUP BUS ADDRESS
2866	014502	005037	003446		CLR	BITCNT		:CLEAR BIT COUNTER
2867	014506	032777	000200	166614	185:	BIT	*RDY, ARHCS1	:IS RDY SET
2868	014514	001015			BNE	65		:BIT IS SET

 :TEST 16 RHWC OPERATIONAL TEST

 :*THIS TEST CHECKS THAT WHEN THE WORD COUNT
 :*REGISTER IS INCREMENTED IT IS CARRIED TO THE
 :*HIGHEST BIT AND IS RETURNED TO ZERO

 :TEST 16: SCOPE

MOV	*-1, ARHWC	:SETUP FOR 1 WORD
MOV	*7, ARHCS2	:SETUP UNIT 7
TST	R1	:IS IT AN RH11
BMI	15	:YES
MOV	*ZERO, ARHBAE	:SETUP BUS ADDRESS EXTENSION
MOV	*\$TMP3, ARHBA	:SETUP BUS ADDRESS
MOV	*WRITED, ARHCS1	
CLR	BITCNT	:CLEAR BIT COUNTER
BIT	*RDY, ARHCS1	:IS RDY SET
BNE	65	:BIT IS SET

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

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MASSBUS RMTD AND R411 DIAGNOSTIC MAC11 27(732) 01-OCT-76 09:03 PAGE 59
 DZRHBC.P11 T16 RHWC OPERATIONAL TEST

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2925 015006 004737 007234      JSR      R7,WHYFO      :WAS AN ERROR SET
2926 015012 004737 006602      JSR      R7,CLEER      :CLEAR ERRORS
2927 015016 004737 000130      JSR      R7,ERRST      :WAS THER ANY ERRORS
2928
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2936 015022 000004
2937 015024 012737 000001 001212
2938
2939 015032 005701      TST      R1      :IS IT AN 11 OR A 70
2940 015034 100403      BMI      1$      :IT'S AN RH11
2941 015036 012777 000037 166314      MOV      #37,DRHBAE      :SETUP BAE IN RH70
2942 015044 012777 177776 166262      MOV      #177776,DRHBA      :SETUP BA
2943 015052 012777 177777 166252      MOV      #-1,DRHWC      :SETUP WORD COUNT
2944 015060 005701      TST      R1      :IS IT A RH70
2945 015062 001404      BEQ      34$      :YES
2946 015064 012777 000461 166236      MOV      #A16!WRITED,DRHCS1 :TELL IT TO WRITE
2947 015072 000403      BR      35$      :SKIP OVER 70 CODE
2948 015074 112777 000061 166226      MOV      #WRITED,DRHCS1 :TELL IT TO WRITE
2949
2950 015102 005037 003446
2951 015106 032777 000200 166214      CLR      BITCNT      :CLEAR BIT COUNTER
2952 015114 001015      BIT      #RDY,DRHCS1 :IS RDY SET
2953 015116 005237 003446      BNE      2$      :BIT IS SET
2954 015122 001371      INC      BITCNT      :COUNT UP
2955 015124 005037 003446      BNE      18$      :NOT FINISHED COUNTING
2956 015130 032777 000200 166172      CLR      BITCNT      :GET READY TO DO IT AGAIN
2957 015136 001004      BIT      #RDY,DRHCS1 :IS IT SET YET?
2958 015140 005237 003446      BNE      2$      :YES
2959 015144 001401      INC      BITCNT      :COUNT UP
2960 015146 000770      BEQ      2$      :BIT IS NOT GOING TO SET
2961
2962 015150 017737 166154 003420      BR      2$
2963 015156 017737 166150 003444      MOV      DRHCS1,CS1 :SAVE RHCS1
2964 015164 017737 166144 003414      MOV      DRHWC,WC :SAVE WORD COUNT
2965 015172 005701      MOV      DRHBA,BA :SAVE BUS ADDRESS
2966 015174 001406      TST      R1      :IS IT AN RH11
2967 015176 005037 003416      BEQ      B7$      :NO IT'S A 70
2968 015202 005037 003424      CLR      BAE      :CLEAR BAE
2969 015206 000137 015226      CLR      CS3      :CLEAR CS3
2970 015212 017737 166142 003416      JMP      B6$      :CONTINUE
2971 015220 017737 166136 003424      MOV      DRHBAE,BAE :SAVE BUS ADDRESS EXTENSION
2972 015226 017737 166106 003422      MOV      DRHCS3,CS3 :SAVE RHCS3
2973 015234 017737 166102 003432      MOV      DRHCS2,CS2 :SAVE CS2
2974 015242 017737 166076 003436      MOV      DRHST,CS1 :SAVE TESTER STATUS
2975 015250 017737 166074 003442      MOV      DRHER,ER1 :SAVE ERROR REGISTER
2976 015256 017737 166054 003440      MOV      DRHTDB,TOR :SAVE TESTER DATA REG.
2977 015264 005701      MOV      DRHMR2,TC :SAVE MR2 TESTER REG.
2978 015266 001406      TST      R1      :IS IT AN 11 OR A 70
2979 015270 032777 001000 166032      BEQ      12$      :DO RH70 PART OF TEST
2980 015276 001022      BIT      #A17,DRHCS1 :DID A17 GET SET
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2998
2999
3000
  
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MASSBUS RH70 AND RH1: DIAGNOSTIC MACY11 27 (732) 01-OCT-76 09:03 PAGE 60
 DZRHBC.P11 717 RHBA OPERATIONAL TEST

2981	015300	000137	015412			JMP	5\$		:CONT. FOR RH1:
2982	015304	022777	000040	166046	12\$:	CMP	#40,2RHBAE		:DID BAE INC
2983	015312	001414				BEQ	4\$		:BAE INCREMENTED
2984	015314	022777	000037	166036		CMP	#37,2RHBAE		:IS BAE OLD VALUE
2985	015322	001420				BEQ	3\$		:BAE DID NOT INCREMENT
2986	015324	005777	166030			TST	2RHBAE		:IS BAE ZERO
2987	015330	001425				BEQ	9\$		:BAE IS ZERO
2988	015332	104105				ERROR	105		:BAE GOT MESSED UP DOING A WRITE
2989	015334	004737	007234			JSR	R7,WHYFO		:DID AN ERROR OTHER THAN NEM CAUSIT
2990	015340	000137	015430			JMP	10\$		
2991	015344	005777	165764		4\$:	TST	2RHBA		:DID BA INCREMENT ?
2992	015350	001443				BEQ	8\$		:YES, EXIT TEST
2993	015352	104112				ERROR	112		:BA DID NOT INCREMENT
2994	015354	004737	007234			JSR	R7,WHYFO		:WAS AN ERROR BIT SET
2995	015360	000137	015460			JMP	8\$		:EXIT TEST
2996	015364	104106			3\$:	ERROR	106		:BAE DID NOT INCREMENT
2997	015366	004737	007234			JSR	R7,WHYFO		:WAS AN ERROR BIT SET
2998	015372	000137	015460			JMP	8\$		:EXIT TEST
2999	015376	104107			6\$:	ERROR	107		:BAE INCREMENTED OK BUT A17 +
3000									:A16 DID NOT INC PROPERLY IN RHCS1
3001	015400	000137	015460			JMP	8\$		:EXIT TEST
3002	015404	104110			9\$:	ERROR	110		:RHBAE IS ZERO
3003	015406	000137	015460			JMP	8\$		:BIT 5 IN BAE SHOULD BE SET
3004	015412	033777	000400	165710	5\$:	BIT	A16,2RHCS1		:IS A 16 SET
3005	015420	001003				BNE	10\$		:YES, BA DID NOT INCREMENT
3006	015422	104111				ERROR	111		:A17 DID NOT SET WHEN BA WAS
3007									:INC
3008	015424	000137	015460			JMP	8\$		:EXIT TEST
3009	015430	005777	165700		10\$:	TST	2RHBA		:DOES BA =0
3010	015434	001403				BEQ	11\$		:YES, BA INCREMENTED
3011	015436	104112				ERROR	112		:BA DID NOT INCREMENT
3012	015440	000137	015460			JMP	8\$		:EXIT TEST
3013	015444	005701			11\$:	TST	R1		:IS IT A 70 OR 11
3014	015446	100403				BMI	13\$		:GO TO CORRECT ERROR
3015	015450	104076				ERROR	76		:BA INCREMENTED BUT DID NOT
3016									:CARRY TO BAE
3017	015452	000137	015460			JMP	8\$		:GET OUT OF TEST
3018	015456	104113			13\$:	ERROR	113		:BA INCREMENTED BUT IT DID NOT
3019									:CARRY OVER TO A17 + A16
3020	015460	004737	006602		8\$:	JSR	R7,CLEER		:CLEAR ERRORS
3021	015464	004737	050130			JSR	R7,ERRTST		:WAS THERE ANY ERRORS
3022									
3023									
3024									
3025									
3026									
3027									
3028	015470	000004				TST20:	SCOPE		
3029	015472	005701				TST	R1		
3030	015474	001404				BEQ	40\$		
3031	015476	013777	003362	165630		MOV	RHCS3,2RHBA		
3032	015504	000403				BR	41\$		
3033									
3034	015506	012777	177702	165620	40\$:	MOV	#177702,2RHBA		:SET UP BUS ADDRESS
3035	015514	005701			41\$:	TST	R1		:IS IT AN RH70
3036	015516	100403				BMI	9\$		:NO SKIP RH11 PORTION

MASSBUS R70 AND RH1: DIAGNOSTIC MACY11 27(732) 01-OCT-76 09:03 PAGE 61
 DZRHBC.P11 T20 NEM,TRE,SC BIT TEST

3037	015520	012777	000077	165632		MOV	#77,DRHBAE	;SET UP BAE REGISTER
3038	015526	012777	177777	165576	9\$:	MOV	#-1,DRHWC	;SET WORD COUNT TO ONE WORD
3039	015534	012777	000007	165576		MOV	#7,DRHCS2	;SET UNIT NUMBER
3040	015542	012777	001471	165560		MOV	#A16!A17!READ0,DRHCS1	;TELL IT TO READ
3041	015550	005037	003446			CLR	BITCNT	;CLEAR BIT COUNTER
3042	015554	032777	000200	165546	19\$:	BIT	#RDY,DRHCS1	;IS RDY SET
3043	015562	001015				BNE	DELTA	;BIT IS SET
3044	015564	005237	003446			INC	BITCNT	;COUNT UP
3045	015570	001371				BNE	19\$	;NOT FINISHED COUNTING
3046	015572	005037	003446			CLR	BITCNT	;GET READY TO DO IT AGAIN
3047	015576	032777	000200	165524	19\$:	BIT	#RDY,DRHCS1	;IS IT SET YET?
3048	015604	001004				BNE	DELTA	;YES
3049	015606	005237	003446			INC	BITCNT	;COUNT UP
3050	015612	001401				BEQ	DELTA	;BIT IS NOT GOING TO SET
3051	015614	000770				BR	19\$	
3052	015616							DELTA:
3053	015616	017737	165516	003422		MOV	DRHCS2,CS2	;SAVE CONTENTS OF RHCS2
3054	015624	017737	165500	001162		MOV	DRHCS1,\$REGO	;SET UP NEEDED BITS ONLY
3055	015632	042737	027777	001162		BIC	#GO!IE!RDY!A16!A17!PSEL!DVA!MCPE!READ6,\$REGO	
3056	015640	042777	100000	165514		BIC	#APE,DRHCS3	
3057								;CLEAR BITS NOT NEEDED
3058	015646	017737	165456	003420		MOV	DRHCS1,CS1	;SAVE RHCS1
3059	015654	017737	165452	003444		MOV	DRHWC,WC	;SAVE WORD COUNT
3060	015662	017737	165446	003414		MOV	DRHBA,BA	;SAVE BUS ADDRESS
3061	015670	005701				TST	R1	;IS IT AN RH11
3062	015672	001406				BEQ	87\$	;NO IT'S A 70
3063	015674	005037	003416			CLR	BAE	;CLEAR BAE
3064	015700	005037	003424			CLR	CS3	;CLEAR CS3
3065	015704	000137	015724			JMP	86\$	;CONTINUE
3066	015710	017737	165444	003416	87\$:	MOV	DRHBAE,BAE	;SAVE BUS ADDRESS EXTENSION
3067	015716	017737	165440	003424		MOV	DRHCS3,CS3	;SAVE RHCS3
3068	015724	017737	165410	003422	86\$:	MOV	DRHCS2,CS2	;SAVE CS2
3069	015732	017737	165404	003432		MOV	DRHST,DS1	;SAVE TESTER STATUS
3070	015740	017737	165400	003436		MOV	DRHER,ER1	;SAVE ERROR REGISTER
3071	015746	017737	165376	003442		MOV	DRHTDB,TDR	;SAVE TESTER DATA REG.
3072	015754	017737	165356	003440		MOV	DRHMR2,TC	;SAVE MR2 TESTER REG.
3073	015762	032777	000200	165340		BIT	#RDY,DRHCS1	;IS READY SET
3074	015770	001003				BNE	99\$	;YES CONTINUE TEST
3075	015772	104102				ERROR	102	;READY NOT SET
3076	015774	004737	007234			JSR	R7,WHYFO	;ANY ERRORS SET
3077	016000	032777	004000	165332	99\$:	BIT	#NEM,DRHCS2	;IS NEM SET
3078	016006	001016				BNE	1\$	;YES CHECK TRE AND SC
3079	016010	022737	140000	001162		CMP	#SC!TRE,\$REGO	;IS THE SC AND TRE BITS SET
3080	016016	001460				BEQ	2\$	;YES NEM IS IN ERROR
3081	016020	032737	040000	001162		BIT	#TRE,\$REGO	;IS JUST THE TRE BIT SET
3082	016026	001060				BNE	3\$	;TRE BIT MUST BE IN ERROR
3083	016030	032737	100000	001162		BIT	#SC,\$REGO	;IS JUST THE SC BIT SET
3084	016036	001060				BNE	4\$	;SC BIT SET ERRONIOUSLY
3085	016040	104005				ERROR	5	;NEM NOT SET IN RHCS2
3086	016042	000467				BR	8\$	;SET UP TO TEST AGAIN
3087	016044	022737	140000	001162	1\$:	CMP	#SC!TRE,\$REGO	;IS SC AND TRE SET
3088	016052	001030				BNE	22\$	;FIND THE ERROR
3089	016054	012737	020000	004124		MOV	#MCPE,\$CS1	;TEST FOR SHORTS
3090	016062	012737	173400	004126		MOV	#MPE!MXF!PGE!NED!UPE!WCE!DLT,\$CS2	
3091	016070	012737	174000	004130		MOV	#WCELO!WCEHI!DPELO!DPEHI!APE,\$CS3	
3092	016076	012737	000000	004132		MOV	#0,\$ST	

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3093 016104 012737 030175 004134 MOV #ILF!RMR!CPE!DPE!RMBEX!RFAIL!DTE!OPI,SER
3094 016112 012737 177777 004122 MOV #-1,BEFORE ;TELL WHYFO ITS FOR SHORTS
3095 016120 004737 007234 JSR R7,WHYFO ;TEST FOR SHORTS
3096 016124 005037 004122 CLR BEFORE ;WE HAVE CHECKED FOR SHORTS
3097 016130 000137 016222 JMP B5 ;LEAVE THE TEST
3098 016134 032737 040000 001162 22$: BIT #TRE,$REGO ;THEN IS THE TRE BIT SET
3099 016142 001022 BNE B5 ;SC BIT DID NOT SEE TRE BIT
3100 016144 032737 100000 001162 BIT #SC,$REGO ;IS THE SC BIT SET
3101 016152 001022 BNE B5 ;TRE HAS AN OPEN GOING TO BUS
3102 016154 104006 ERROR 6 ;TRE SET LOGIC NOT WORKING
3103 016156 000421 BR B5 ;SET UP TO TEST AGAIN
3104 016160 104007 2$: ERROR 7 ;NEM HAS OPEN IN LINE GOING TO BUS
3105 016162 004737 007234 JSR R7,WHYFO ;SEE IF ANY OTHER ERROR BIT IS
3106 ;SET OTHER THAN NEM
3107 016166 000415 BR B5 ;SET UP TO TEST AGAIN
3108 016170 104010 3$: ERROR 10 ;SOMTHING WRONG WITH TRE BIT
3109 016172 004737 007234 JSR R7,WHYFO ;SEE IF AN ERROR BIT IS SET
3110 ;OR BOTH NEM IN RHCS2 AND SC IN
3111 ;RHCS1 HAS AN OPEN BETWEEN IT AND THE BUS
3112 016176 000411 BR B5 ;SET UP TO TEST AGAIN
3113 016200 104011 4$: ERROR 11 ;SC BIT WAS SET BY EITHER ATTN OR
3114 016202 004737 007234 JSR R7,WHYFO ;FIND WHAT ERROR BIT IS SET
3115 ;MCPE ERROR OR SC IS SHORTED TO +5 VOLTS
3116 016206 000405 BR B5 ;SETUP TO TEST AGAIN
3117 016210 104012 6$: ERROR 12 ;TRE WAS SET BY OTHER THAN NEM
3118 016212 004737 007234 JSR R7,WHYFO ;FIND ERROR BIT THAT SET TRE
3119 016216 000401 BR B5 ;SETUP TO TEST AGAIN
3120 016220 104013 7$: ERROR 13 ;TRE HAS AN OPEN GOING TO THE BUS
3121 016222 032737 041400 177570 8$: BIT #SW14!SW9!SW8,@177570 ;ANY LOOPING BEEING DONE
3122 016230 001003 BNE B5 ;YES,LOAD TRE NO MATTER WHAT
3123 016232 105737 001103 TSTB $ERFLG ;WAS THERE AN ERROR
3124 016236 001010 BNE B5 ;SKIP TRE CHECK
3125 016240 112777 000100 165116 21$: MOVB #TREB,@RHCS1B ;LOAD TRE
3126 016246 032777 004000 165064 BIT #NEM,@RHCS2 ;DID ERROR CLEAR
3127 016254 001401 BEQ B5 ;YES EXIT TEST
3128 016256 104050 ERROR 50 ;LOADING TRE DID NOT CLEAR ERROR
3129 016260 004737 006602 9$: JSR R7,CLEER ;SEE IF ERRORS ARE CLEARED
3130 016264 004737 050130 JSR R7,ERRTST

;*****
;*TEST 21 WCE,TRE,SC BIT TEST
;*THIS TEST WILL CHECK THAT TRE AND SC SET
;*WHEN A WRITE CHECK ERROR OCCURS (WCE)
;*****
3131
3132
3133
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3136
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3138 016270 000004 1ST21: SCOPE
3139 016272 012777 177777 165032 MOV #-1,@RHWC ;ONE WORD TRANSFER
3140 016300 012777 000007 165032 MOV #7,@RHCS2 ;TO UNIT ONE
3141 016306 005701 TST R1 ;IS IT AN RH70
3142 016310 001003 BNE B5 ;NO
3143 016312 012777 000000 165040 MOV #ZERO,@RHBAE ;SETUP RHBAE REGISTER
3144 016320 012777 001172 165006 9$: MOV #REG4,@RHBA ;SETUP BUS ADDRESS
3145 016326 012737 052525 001172 MOV #AB,$REG4 ;CREATE INFORMATION
3146 016334 012777 000061 164766 MOV #WRITED,@RHCS1 ;TELL IT TO WRITE
3147 016342 005037 003446 CLR BITCNT ;CLEAR BIT COUNTER
3148 016346 032777 000200 164754 18$: BIT #RDY,@RHCS1 ;IS RDY SET

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MASSBUS RHT0 AND RH1: DIAGNOSTIC MACY11 27(732) 01-OCT-76 09:03 PAGE 63
 C2RHBC.F11 *21 WCE,TRE,SC BIT TEST

3149	016354	001015			BNE	WCETST		;BIT IS SET
3150	016356	005237	003446		INC	BITCNT		;COUNT UP
3151	016362	001371			BNE	18\$		;NOT FINISHED COUNTING
3152	016364	005037	003446		CLR	BITCNT		;GET READY TO DO IT AGAIN
3153	016370	032777	000200	164732	91T	*RDY,ARHCS1		;IS IT SET YET?
3154	016376	001004			BNE	WCETST		;YES
3155	016400	005237	003446		INC	BITCNT		;COUNT UP
3156	016404	001401			BEQ	WCETST		;BIT IS NOT GOING TO SET
3157	016406	000770			BR	19\$		
3158	016410					WCETST:		
3159	016410	012777	177777	164714	MOV	*-1,ARHWC		;RESET WORD COUNT
3160	016416	012777	001172	164710	MOV	*\$REG4,ARHBA		;RESET BUS ADDRESS
3161	016424	012737	125252	001172	MOV	*OAB,\$REG4		;CREATE WRITE CHECK ERROR
3162	016432	012777	000051	164670	MOV	*WRCHO,ARHCS1		;MAKE THE ERROR
3163	016440	005037	003446		CLR	BITCNT		;CLEAR BIT COUNTER
3164	016444	032777	000200	164656	18\$:	BIT	*RDY,ARHCS1	;IS RDY SET
3165	016452	001015			BNE	WCETRE		;BIT IS SET
3166	016454	005237	003446		INC	BITCNT		;COUNT UP
3167	016460	001371			BNE	18\$		;NOT FINISHED COUNTING
3168	016462	005037	003446		CLR	BITCNT		;GET READY TO DO IT AGAIN
3169	016466	032777	000200	164634	19\$:	BIT	*RDY,ARHCS1	;IS IT SET YET?
3170	016474	001004			BNE	WCETRE		;YES
3171	016476	005237	003446		INC	BITCNT		;COUNT UP
3172	016502	001401			BEQ	WCETRE		;BIT IS NOT GOING TO SET
3173	016504	000770			BR	19\$		
3174	016506					WCETRE:		
3175	016506	017737	164626	003422	MOV	ARHCS2,CS2		;SAVE CONTENTS
3176	016514	017737	164610	001162	MOV	ARHCS1,\$REGO		;SET UP NEEDED BITS ONLY
3177	016522	042737	027777	001162	BIC	*GO!IE!RDY!A16!A17!PSEL!DVA!MCPE!READ6,\$REGO		
3178	016530	042777	100000	164624	BIC	*APE,ARHCS3		
3179								;CLEAR BITS NOT NEEDED
3180	016536	017737	164566	003420	MOV	ARHCS1,CS1		;SAVE RHCS1
3181	016544	017737	164562	003444	MOV	ARHWC,WC		;SAVE WORD COUNT
3182	016552	017737	164556	003414	MOV	ARHBA,BA		;SAVE BUS ADDRESS
3183	016560	005701			TST	R1		;IS IT AN RH11
3184	016562	001406			BEQ	87\$		;NO IT'S A 70
3185	016564	005037	003416		CLR	BAE		;CLEAR BAE
3186	016570	005037	003424		CLR	CS3		;CLEAR CS3
3187	016574	000137	016614		JMP	86\$		;CONTINUE
3188	016600	017737	164554	003416	87\$:	MOV	ARHBAE,BAE	;SAVE BUS ADDRESS EXTENSION
3189	016606	017737	164550	003424	MOV	ARHCS3,CS3		;SAVE RHCS3
3190	016614	017737	164520	003422	86\$:	MOV	ARHCS2,CS2	;SAVE CS2
3191	016622	017737	164514	003432	MOV	ARHST,DS1		;SAVE TESTER STATUS
3192	016630	017737	164510	003436	MOV	ARHER,ER1		;SAVE ERROR REGISTER
3193	016636	017737	164506	003442	MOV	ARHTDB,TDR		;SAVE TESTER DATA REG.
3194	016644	017737	164466	003440	MOV	ARHMR2,TC		;SAVE MR2 TESTER REC.
3195	016652	032777	000200	164450	BIT	*RDY,ARHCS1		;IS READY SET
3196	016660	001003			BNE	99\$		;YES CONTINUE TEST
3197	016662	104102			ERROR	102		;READY NOT SET
3198	016664	004737	007234		JSR	R7 WHYFO		;ANY ERRORS SET
3199	016670	032777	040000	164442	99\$:	BIT	*WCE,ARHCS2	;IS WCE SET
3200	016676	001016			BNE	1\$		;YES CHECK TRE AND SC
3201	016700	022737	140000	001162	CMP	*SC!TRE,\$REGO		;IS THE SC AND TRE BITS SET
3202	016706	001460			BEQ	2\$		;YES WCE IS IN ERROR
3203	016710	032737	040000	001162	BIT	*TRE,\$REGO		;IS JUST THE TRE BIT SET
3204	016716	001060			BNE	3\$		;TRE BIT MUST BE IN ERROR

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3205 016720 032737 100000 001162      BIT      #SC,$REG0      ;IS JUST THE SC BIT SET
3206 016726 001060      BNE      4$          ;SC BIT SET ERRONIOUSLY
3207 016730 104014      ERROR    14          ;WCE NOT SET IN RHCS2
3208 016732 000467      BR       8$          ;SET UP TO TEST AGAIN
3209 016734 022737 140000 001162 1$:    CMP      #SC!TRE,$REG0      ;IS SC AND TRE SET
3210 016742 001030      BNE      22$         ;FIND THE ERROR
3211 016744 012737 020000 004124      MOV      #MCPE,$CS1      ;TEST FOR SHORTS
3212 016752 012737 137400 004126      MOV      #MPE!MXF!PGE!NEM!NED!UPE!DLT,$CS2
3213 016760 013737 160000 004130      MOV      DPELO!DPEHI!APE,$CS3
3214 016766 013737 004132 004132      MOV      $ST,$ST
3215 016774 013737 004134 004134      MOV      $ER,$ER
3216 017002 012737 177777 004122      MOV      #-1,BEFORE
3217 017010 004737 007234      JSR      R7,WHYFO      ;TELL WHYFO ITS FOR SHORTS
3218 017014 005037 004122      CLR      BEFORE
3219 017020 000137 017112      JMP      8$
3220 017024 032737 040000 001162 22$:    BIT      #TRE,$REG0      ;THEN IS THE TRE BIT SET
3221 017032 001022      BNE      6$          ;SC BIT DID NOT SEE TRE BIT
3222 017034 032737 100000 001162      BIT      #SC,$REG0      ;IS THE SC BIT SET
3223 017042 001022      BNE      7$          ;TRE HAS AN OPEN GOING TO BUS
3224 017044 104006      ERROR    6$          ;TRE SET LOGIC NOT WORKING
3225 017046 000421      BR       8$          ;SET UP TO TEST AGAIN
3226 017050 104015      ERROR    15         ;WCE HAS OPEN IN LINE GOING TO BUS
3227 017052 004737 007234      JSR      R7,WHYFO      ;SEE IF ANY OTHER ERROR BIT IS
3228                                     ;SET OTHER THAN WCE
3229 017056 000415      BR       8$          ;SET UP TO TEST AGAIN
3230 017060 104016      ERROR    16         ;SOMTHING WRONG WITH TRE BIT
3231 017062 004737 007234      JSR      R7,WHYFO      ;SEE IF AN ERROR BIT IS SET
3232                                     ;OR BOTH WCE IN RHCS2 AND SC IN
3233                                     ;RHCS1 HAS AN OPEN BETWEEN IT AND THE BUS
3234 017066 000411      BR       8$          ;SET UP TO TEST AGAIN
3235 017070 104011      ERROR    11         ;SC BIT WAS SET BY EITHER ATTN OR
3236 017072 004737 007234      JSR      R7,WHYFO      ;FIND WHAT ERROR BIT IS SET
3237                                     ;MCPE ERROR OR SC IS SHORTED TO +5 VOLTS
3238 017076 000405      BR       8$          ;SETUP TO TEST AGAIN
3239 017100 104017      ERROR    17         ;TRE WAS SET BY OTHER THAN WCE
3240 017102 004737 007234      JSR      R7,WHYFO      ;FIND ERROR BIT THAT SET TRE
3241 017106 000401      BR       8$          ;SETUP TO TEST AGAIN
3242 017110 104013      ERROR    13         ;TRE HAS AN OPEN GOING TO THE BUS
3243 017112 032737 041400 177570 8$:    BIT      #SW14!SW9!SW8,@#177570 ;ANY LOOPING BEEING DONE
3244 017120 001003      BNE      21$         ;YES,LOAD TRE NO MATTER WHAT
3245 017122 105737 001103      TSTB     $ERFLG      ;WAS THERE AN ERROR
3246 017126 001010      BNE      9$          ;SKIP TRE CHECK
3247 017130 112777 000100 164226 21$:    MOVB     #TREB,@RHCS1B ;LOAD TRE
3248 017136 032777 040000 164174      BIT      #WCE,@RHCS2 ;DID ERROR CLEAR
3249 017144 001401      BEQ      9$          ;YES EXIT TEST
3250 017146 104050      ERROR    50         ;LOADING TRE DID NOT CLEAR ERROR
3251 017150 004737 006602 9$:    JSR      R7,CLEER      ;SEE IF ERRORS ARE CLEARED
3252 017154 004737 050130      JSR      R7,ERRTST
3253
3254 *****
3255 ;*TEST 22 MDPE ,TRE AND SC BIT TEST
3256 ;*THIS TEST CHECKS THAT MDPE CAN BE SET IN
3257 ;*RHCS2,AND THAT MDPE SETS TRE AND SC
3258 ;*IN THE RHCS1 REGISTER.....
3259 *****
3260 017160 000004      TST22: SCOPE

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3261	017162	012777	000007	164150		MOV	#7,ARHCS2	;SET UNIT #
3262	017170	012777	177774	164134		MOV	#-4,ARHWC	;SET UP WORD COUNT
3263	017176	005701				TST	R1	;IS IT AN RH70
3264	017200	001003				BNE	9\$	;NO ITS AN RH11
3265	017202	012777	000000	164150		MOV	#ZERO,ARHBAE	;SET UP BAE REGISTER
3266	017210	012777	004100	164116	9\$:	MOV	#RBUF,ARHBA	;SET UP BUS ADDRESS
3267	017216	012777	000071	164104		MOV	#READ0,ARHCS1	;TELL IT TO READ
3268	017224	012777	000027	164106		MOV	#PAT!7,ARHCS2	;INVERT PARITY
3269	017232	117737	164102	003422		MOV	ARHCS2,CS2	;SAVE CONTENTS
3270	017240	005037	003446			CLR	BITCNT	;CLEAR BIT COUNTER
3271	017244	032777	000200	164056	18\$:	BIT	#RDY,ARHCS1	;IS RDY SET
3272	017252	001015				BNE	UPETRE	;BIT IS SET
3273	017254	005237	003446			INC	BITCNT	;COUNT UP
3274	017260	001371				BNE	18\$	;NOT FINISHED COUNTING
3275	017262	005037	003446			CLR	BITCNT	;GET READY TO DO IT AGAIN
3276	017266	032777	000200	164034	19\$:	BIT	#RDY,ARHCS1	;IS IT SET YET?
3277	017274	001004				BNE	UPETRE	;YES
3278	017276	005237	003446			INC	BITCNT	;COUNT UP
3279	017302	001401				BEQ	UPETRE	;BIT IS NOT GOING TO SET
3280	017304	000770				BR	19\$	
3281	017306							
3282	017306	017737	164016	001162		MOV	ARHCS1,\$REGO	;SET UP NEEDED BITS ONLY
3283	017314	042737	027777	001162		BIC	#GO!IE!RDY!A16!A17!PSEL!DVA!MCPE!READ6,\$REGO	
3284	017322	042777	100000	164032		BIC	#APE,ARHCS3	
3285								;CLEAR BITS NOT NEEDED
3286	017330	017737	163774	003420		MOV	ARHCS1,CS1	;SAVE RHCS1
3287	017336	017737	163770	003444		MOV	ARHWC,WC	;SAVE WORD COUNT
3288	017344	017737	163764	003414		MOV	ARHBA,BA	;SAVE BUS ADDRESS
3289	017352	005701				TST	R1	;IS IT AN RH11
3290	017354	001406				BEQ	87\$	;NO IT'S A 70
3291	017356	005037	003416			CLR	BAE	;CLEAR BAE
3292	017362	005037	003424			CLR	CS3	;CLEAR CS3
3293	017366	000137	017406			JMP	86\$	;CONTINUE
3294	017372	017737	163762	003416	87\$:	MOV	ARHBAE,BAE	;SAVE BUS ADDRESS EXTENSION
3295	017400	017737	163756	003424		MOV	ARHCS3,CS3	;SAVE RHCS3
3296	017406	017737	163726	003422	86\$:	MOV	ARHCS2,CS2	;SAVE CS2
3297	017414	017737	163722	003432		MOV	ARHST,DS1	;SAVE TESTER STATUS
3298	017422	017737	163716	003436		MOV	ARHER,ER1	;SAVE ERROR REGISTER
3299	017430	017737	163714	003442		MOV	ARHTDB,TDR	;SAVE TESTER DATA REG.
3300	017436	017737	163674	003440		MOV	ARHMR2,TC	;SAVE MR2 TESTER REG.
3301	017444	032777	000200	163656		BIT	#RDY,ARHCS1	;IS READY SET
3302	017452	001003				BNE	99\$	;YES CONTINUE TEST
3303	017454	104102				ERROR	102	;READY NOT SET
3304	017456	004737	007234			JSR	R7,WHYFO	;ANY ERRORS SET
3305	017462	032777	000400	163650	99\$:	BIT	#MPE,ARHCS2	;IS MPE SET
3306	017470	001016				BNE	1\$	;YES CHECK TRE AND SC
3307	017472	022737	140000	001162		CMP	#SC!TRE,\$REGO	;IS THE SC AND TRE BITS SET
3308	017500	001460				BEQ	2\$	;YES MPE IS IN ERROR
3309	017502	032737	040000	001162		BIT	#TRE,\$REGO	;IS JUST THE TRE BIT SET
3310	017510	001060				BNE	3\$	;TRE BIT MUST BE IN ERROR
3311	017512	032737	100000	001162		BIT	#SC,\$REGO	;IS JUST THE SC BIT SET
3312	017520	001060				BNE	4\$	;SC BIT SET ERRONIOUSLY
3313	017522	104116				ERROR	116	;MPE NOT SET IN RHCS2
3314	017524	000467				BR	8\$	;SET UP TO TEST AGAIN
3315	017526	022737	140000	001162	1\$:	CMP	#SC!TRE,\$REGO	;IS SC AND TRE SET
3316	017534	001030				BNE	22\$	;FIND THE ERROR

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DZRHBC.P11 T22 MDPE ,TRE AND SC BIT TEST

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3317 017536 013737 004124 004124      MOV      $CS1,$CS1      ;TEST FOR SHORTS
3318 017544 012737 177000 004126      MOV      #MXF!PGE!NEM!NED!UPE!WCE!DLT,$CS2
3319 017552 012737 174000 004130      MOV      #WCELO!WCEHI!DPELO!DPEHI!APE,$CS3
3320 017560 013737 004132 004132      MOV      $ST,$ST
3321 017566 013737 004134 004134      MOV      $ER,$ER
3322 017574 012737 177777 004122      MOV      #-1,BEFORE
3323 017602 004737 007234      JSR      R7,WHYFO
3324 017606 005037 004122      CLR      BEFORE
3325 017612 000137 017704      JMP      B5
3326 017616 032737 040000 001162 22$:  BIT      #TRE,$REGO
3327 017624 001022      BNE      B5
3328 017626 032737 100000 001162      BIT      #SC,$REGO
3329 017634 001022      BNE      75
3330 017636 104006      ERROR    6
3331 017640 000421      BR       B5
3332 017642 104120      2$:      ERROR    120
3333 017644 004737 007234      JSR      R7,WHYFO
3334
3335 017650 000415      BR       B5
3336 017652 104121      3$:      ERROR    121
3337 017654 004737 007234      JSR      R7,WHYFO
3338
3339
3340 017660 000411      BR       B5
3341 017662 104011      4$:      ERROR    11
3342 017664 004737 007234      JSR      R7,WHYFO
3343
3344 017670 000405      BR       B5
3345 017672 104122      6$:      ERROR    122
3346 017674 004737 007234      JSR      R7,WHYFO
3347 017700 000401      BR       B5
3348 017702 104013      7$:      ERROR    13
3349 017704 032737 041400 177570 8$:      BIT      #SW14!SW9!SW8,#177570
3350 017712 001003      BNE      215
3351 017714 105737 001103      TSTB     $ERFLG
3352 017720 001010      BNE      75
3353 017722 112777 000100 163434 21$:  MOVB     #TREB,$RHCS1B
3354 017730 032777 000400 163402      BIT      #MPE,$RHCS2
3355 017736 001401      BEQ      95
3356 017740 104050      ERROR    50
3357 017742 004737 006602      9$:      JSR      R7,CLEER
3358 017746 004737 050130      JSR      R7,ERRTST
3359
3360
3361
3362
3363
3364
3365
3366 017752 000004      ;*****
3367
3368 017754 012777 000007 163356      ;*TEST 23      UPE,TRE,SC ERROR TEST (RH11)
3369 017762 005701      ;*THIS TEST CHECKS THE UPE BIT IN RHCS2
3370 017764 100402      ;*TO SEE IF IT SETS AND WHEN IT SETS IS
3371 017766 000137 020444      ;*TRE AND SC BITS SET IN RHCS1.....
3372 017772 012777 020007 163340      ;*****
FITIT: MOV      #UPE!7,$RHCS2
;SET UP UNIT 7
;IS IT AN RH11
;IT'S AN RH11,DO THE TEST
;IT'S AN RH70, EXIT TEST
;SET PARITY ERROR IN RH11'S CS2 REG

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3373	020000	017737	163324	001162	MOV	DRHCS1, \$REG0	:SET UP NEEDED BITS ONLY
3374	020006	042737	027777	001162	BIC	#GO! !E!RDY!A16!A17!PSEL!DVA!MCPE!PEAGE, \$REG0	
3375	020014	042777	100000	163340	BIC	#APE, DRHCS3	
3376							:CLEAR BITS NOT NEEDED
3377	020022	017737	163302	003420	MOV	DRHCS1, CS1	:SAVE RHCS1
3378	020030	017737	163276	003444	MOV	DRHWC, WC	:SAVE WORD COUNT
3379	020036	017737	163272	003414	MOV	DRHBA, BA	:SAVE BUS ADDRESS
3380	020044	005701			TEST	R1	:IS IT AN RH11
3381	020046	001406			BEG	87\$	:NO IT'S A 70
3382	020050	005037	003416		CLR	BAE	:CLEAR BAE
3383	020054	005037	003424		CLR	CS3	:CLEAR CS3
3384	020060	000137	020100		JMP	86\$	:CONTINUE
3385	020064	017737	163270	003416	MOV	DRHBAE, BAE	:SAVE BUS ADDRESS EXTENSION
3386	020072	017737	163264	003424	MOV	DRHCS3, CS3	:SAVE RHCS3
3387	020100	017737	163234	003422	MOV	DRHCS2, CS2	:SAVE CS2
3388	020106	017737	163230	003432	MOV	DRHST, DS1	:SAVE TESTER STATUS
3389	020114	017737	163224	003436	MOV	DRHER, ER1	:SAVE ERROR REGISTER
3390	020122	017737	163222	003442	MOV	DRHTDB, TDR	:SAVE TESTER DATA REG.
3391	020130	017737	163202	003440	MOV	DRHMR2, TC	:SAVE MR2 TESTER REG.
3392	020136	032777	000200	163164	BIT	#RDY, DRHCS1	:IS READY SET
3393	020144	001003			BNE	99\$	:YES CONTINUE TEST
3394	020146	104102			ERROR	102	:READY NOT SET
3395	020150	004737	007234		JSR	R7, WHYFC	:ANY ERRORS SET
3396	020154	032777	020000	163156	BIT	#UPE, DRHCS2	:IS UPE SET
3397	020162	001016			BNE	1\$	:YES CHECK TRE AND SC
3398	020164	022737	140000	001162	CMP	#SC!TRE, \$REG0	:IS THE SC AND TRE BITS SET
3399	020172	001460			BEG	2\$	:YES UPE IS IN ERROR
3400	020174	032737	040000	001162	BIT	#TRE, \$REG0	:IS JUST THE TRE BIT SET
3401	020202	001060			BNE	3\$	:TRE BIT MUST BE IN ERROR
3402	020204	032737	100000	001162	BIT	#SC, \$REG0	:IS JUST THE SC BIT SET
3403	020212	001060			BNE	4\$	:SC BIT SET ERRONIOUSLY
3404	020214	104020			ERROR	20	:UPE NOT SET IN RHCS2
3405	020216	000467			BR	8\$	:SET UP TO TEST AGAIN
3406	020220	022737	140000	001162	CMP	#SC!TRE, \$REG0	:IS SC AND TRE SET
3407	020226	001030			BNE	22\$	:FIND THE ERROR
3408	020230	013737	004124	004124	MOV	SCS1, SCS1	:TEST FOR SHORTS
3409	020236	012737	157400	004126	MOV	#MPE!MXF!PGE!NEM!NED!WCE!DLT, SCS2	
3410	020244	013737	004130	004130	MOV	SCS3, SCS3	
3411	020252	013737	004132	004132	MOV	\$ST, \$ST	
3412	020260	013737	004134	004134	MOV	\$ER, \$ER	
3413	020266	012737	177777	004122	MOV	#-1, BEFORE	
3414	020274	004737	007234		JSR	R7, WHYFO	:TELL WHYFO ITS FOR SHORTS
3415	020300	005037	004122		CLR	BEFORE	:TEST FOR SHORTS
3416	020304	000137	020376		JMP	8\$	:WE HAVE CHECKED FOR SHORTS
3417	020310	032737	040000	001162	BIT	#TRE, \$REG0	:LEAVE THE TEST
3418	020316	001022			BNE	6\$	:THEN IS THE TRE BIT SET
3419	020320	032737	100000	001162	BIT	#SC, \$REG0	:SC BIT DID NOT SEE TRE BIT
3420	020326	001022			BNE	7\$	:IS THE SC BIT SET
3421	020330	104005			ERROR	6	:TRE HAS AN OPEN GOING TO BUS
3422	020332	000421			BR	8\$	:TRE SET LOGIC NOT WORKING
3423	020334	104021			ERROR	21	:SET UP TO TEST AGAIN
3424	020336	004737	007234		JSR	R7, WHYFO	:UPE HAS OPEN IN LINE GOING TO BUS
3425							:SEE IF ANY OTHER ERROR BIT IS
3426	020342	000415			BR	8\$	:SET OTHER THAN UPE
3427	020344	104023			ERROR	23	:SET UP TO TEST AGAIN
3428	020346	004737	007234		JSR	R7, WHYFO	:SOMTHING WRONG WITH TRE BIT
							:SEE IF AN ERROR BIT IS SET

[illegible]

3485	020612	017737	162512	003420		MOV	2RHCS1,CS1	:SAVE RHCS1
3486	020620	017737	162506	003444		MOV	2RHWC,WC	:SAVE WORD COUNT
3487	020626	017737	162502	003414		MOV	2RHBA,BA	:SAVE BUS ADDRESS
3488	020634	005701				TST	R1	:IS IT AN RMT1
3489	020636	001406				SEQ	87\$	:NO IT'S A 70
3490	020640	005037	003416			CLR	BAE	:CLEAR BAE
3491	020644	005037	003424			CLR	CS3	:CLEAR CS3
3492	020650	000137	020670			JMP	86\$	:CONTINUE
3493	020654	017737	162500	003416	87\$:	MOV	2RHBAE,BAE	:SAVE BUS ADDRESS EXTENSION
3494	020662	017737	162474	003424		MOV	2RHCS3,CS3	:SAVE RHCS3
3495	020670	017737	162444	003422	86\$:	MOV	2RHCS2,CS2	:SAVE CS2
3496	020676	017737	162440	003432		MOV	2RHST,DS1	:SAVE TESTER STATUS
3497	020704	017737	162434	003436		MOV	2RHER,ER1	:SAVE ERROR REGISTER
3498	020712	017737	162432	003442		MOV	2RHTDB,TDR	:SAVE TESTER DATA REG.
3499	020720	017737	162412	003440		MOV	2RHMR2,TC	:SAVE MR2 TESTER REG.
3500	020726	032777	000200	162374		BIT	8RDY,2RHCS1	:IS READY SET
3501	020734	001003				BNE	99\$	:YES CONTINUE TEST
3502	020736	104102				ERROR	102	:READY NOT SET
3503	020740	004737	007234			JSR	R7,WHYFO	:ANY ERRORS SET
3504	020744	032777	020000	162366	99\$:	BIT	8UPE,2RHCS2	:IS UPE SET
3505	020752	001016				BNE	1\$	:YES CHECK TRE AND SC
3506	020754	022737	140000	001162		CMP	8SC!TRE,\$REGO	:IS THE SC AND TRE BITS SET
3507	020762	001460				BEQ	2\$	:YES UPE IS IN ERROR
3508	020764	032737	040000	001162		BIT	8TRE,\$REGO	:IS JUST THE TRE BIT SET
3509	020772	001060				BNE	3\$	:TRE BIT MUST BE IN ERROR
3510	020774	032737	100000	001162		BIT	8SC,\$REGO	:IS JUST THE SC BIT SET
3511	021002	001060				BNE	4\$	:SC BIT SET ERRONIOUSLY
3512	021004	104020				ERROR	20	:UPE NOT SET IN RHCS2
3513	021006	000467				BR	8\$	:SET UP TO TEST AGAIN
3514	021010	022737	140000	001162	1\$:	CMP	8SC!TRE,\$REGO	:IS SC AND TRE SET
3515	021016	001030				BNE	22\$	:FIND THE ERROR
3516	021020	013737	004124	004124		MOV	SCS1,\$CS1	:TEST FOR SHORTS
3517	021026	012737	157400	004126		MOV	8MPE!MXF!PGE!NEM!NED!WCE!DLT,\$CS2	
3518	021034	012737	134100	004130		MOV	8APE!DPELO!WCEHI!WCELO!IE3,\$CS3	
3519	021042	013737	004132	004132		MOV	ST,\$ST	
3520	021050	013737	004134	004134		MOV	SER,\$SER	
3521	021056	012737	177777	004122		MOV	8-1,BEFORE	
3522	021064	004737	007234			JSR	R7,WHYFO	:TELL WHYFO ITS FOR SHORTS
3523	021070	005037	004122			CLR	BEFORE	:TEST FOR SHORTS
3524	021074	000137	021166			JMP	8\$	:WE HAVE CHECKED FOR SHORTS
3525	021100	032737	040000	001162	22\$:	BIT	8TRE,\$REGO	:LEAVE THE TEST
3526	021106	001022				BNE	6\$	:THEN IS THE TRE BIT SET
3527	021110	032737	100000	001162		BIT	8SC,\$REGO	:SC BIT DID NOT SEE TRE BIT
3528	021116	001022				BNE	7\$	:IS THE SC BIT SET
3529	021120	104006				ERROR	6	:TRE HAS AN OPEN GOING TO BUS
3530	021122	000421				BR	8\$	:TRE SET LOGIC NOT WORKING
3531	021124	104021			2\$:	ERROR	21	:SET UP TO TEST AGAIN
3532	021126	004737	007234			JSR	R7,WHYFO	:UPE HAS OPEN IN LINE GOING TO BUS
3533								:SEE IF ANY OTHER ERROR BIT IS
3534	021132	000415				BR	8\$	:SET OTHER THAN UPE
3535	021134	104023			3\$:	ERROR	23	:SET UP TO TEST AGAIN
3536	021136	004737	007234			JSR	R7,WHYFO	:SOMTHING WRONG WITH TRE BIT
3537								:SEE IF AN ERROR BIT IS SET
3538								:OR BOTH UPE IN RHCS2 AND SC IN
3539	021142	000411				BR	8\$	:RHCS1 HAS AN OPEN BETWEEN IT AND THE BUS
3540	021144	104011			4\$:	ERROR	11	:SET UP TO TEST AGAIN
								:SC BIT WAS SET BY EITHER ATTN OR

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MASSBUS RH70 AND RH11: DIAGNOSTIC MACY11 27(732) 01-OCT-76 09:03 PAGE 70
 C2RHBC.P11 724 UPE,TRE,SC ERROR TEST (RH70)

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3541 021146 004737 007234 JSR R7,WHYFO ;FIND WHAT ERROR BIT IS SET
3542 ;MCPE ERROR OR SC IS SHORTED TO +5 VOLTS
3543 021152 000405 BR 8$ ;SETUP TO TEST AGAIN
3544 021154 104022 6$: ERROR 22 ;TRE WAS SET BY OTHER THAN UPE
3545 021156 004737 007234 JSR R7,WHYFO ;FIND ERROR BIT THAT SET TRE
3546 021162 000401 BR 8$ ;SETUP TO TEST AGAIN
3547 021164 104013 7$: ERROR 13 ;TRE HAS AN OPEN GOING TO THE BUS
3548 021166 032737 041400 177570 9$: BIT #SW14!SW9!SW8,2#177570 ;ANY LOOPING BEING DONE
3549 021174 001003 BNE 21$ ;YES,LOAD TRE NO MATTER WHAT
3550 021176 105737 001103 TSTB SERFLG ;WAS THERE AN ERROR
3551 021202 001010 BNE 9$ ;SKIP TRE CHECK
3552 021204 112777 000100 162152 21$: MOVB #TREB,2RHCS1B ;LOAD TRE
3553 021212 032777 020000 162120 BIT #UPE,2RHCS2 ;DID ERROR CLEAR
3554 021220 001401 BEQ 9$ ;YES EXIT TEST
3555 021222 104050 ERROR 50 ;LOADING TRE DID NOT CLEAR ERROR
3556 021224 004737 006602 9$: JSR R7,CLEER ;SEE IF ERRORS ARE CLEARED
3557 021230 004737 050130 JSR R7,EARTST
3558
3559 021234 FANGIE:
3560
3561 ;*****
3562 ;*TEST 25 NED BIT TEST
3563 ;*THIS TEST WILL CHECK THAT NED (NON-EXISTANT DRIVE)
3564 ;*SETS TRE AND SC BITS IN RHCS1.....
3565 ;*****
3566 021234 000004 1ST25: SCOPE
3567
3568 021236 012777 000000 162074 MOV #ZERO,2RHCS2 ;SETUP NED
3569 021244 005701 TST R1 ;RH11 OR RH70
3570 021246 100403 BMI NEDERR ;IT'S AN RH11
3571 021250 012777 000000 162102 MOV #ZERO,2RHBAE ;SETUP BA EXTENSION
3572 021256 012777 177777 162046 NEDERR: MOV #-1,2RHWC ;FOR A 1 WORD TRANSFER
3573 021264 012777 001172 162042 MOV #SREG4,2RHBA ;SETUP BA
3574 021272 012777 000061 162030 MOV #WRITED,2RHCS1 ;TELL IT TO WRITE
3575 021300 005037 003446 CLR BITCNT ;CLEAR BIT COUNTER
3576 021304 032777 000200 162016 18$: BIT #RDY,2RHCS1 ;IS RDY SET
3577 021312 001015 BNE BAKER ;BIT IS SET
3578 021314 005237 003446 INC BITCNT ;COUNT UP
3579 021320 001371 BNE 18$ ;NOT FINISHED COUNTING
3580 021322 005037 003446 CLR BITCNT ;GET READY TO DO IT AGAIN
3581 021326 032777 000200 161774 19$: BIT #RDY,2RHCS1 ;IS IT SET YET?
3582 021334 001004 BNE BAKER ;YES
3583 021336 005237 003446 INC BITCNT ;COUNT UP
3584 021342 001401 BEQ BAKER ;BIT IS NOT GOING TO SET
3585 021344 000770 BR 19$
3586
3587 021346 017737 161756 001162 BAKER: MOV 2RHCS1,SREG0 ;SET UP NEEDED BITS ONLY
3588 021354 042737 027777 001162 BIC #GO!IE!RDY!A16!A17!PSEL!DVA!MCPE!READ6,SREG0
3589 021362 042777 100000 161772 BIC #APE,2RHCS3
3590
3591 021370 017737 161734 003420 MOV 2RHCS1,CS1 ;CLEAR BITS NOT NEEDED
3592 021376 017737 161730 003444 MOV 2RHWC,WC ;SAVE RHCS1
3593 021404 017737 161724 003414 MOV 2RHBA,BA ;SAVE WORD COUNT
3594 021412 005701 TST R1 ;SAVE BUS ADDRESS
3595 021414 001406 BEQ 87$ ;IS IT AN RH11
3596 021416 005037 003416 CLR BAE ;NO IT'S A 70
;CLEAR BAE

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MASSBUS RH70 AND RH11 DIAGNOSTIC
DZRHBC.P11 T25 NED BIT TEST

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3597	021422	005037	003424		CLR	CS3	:CLEAR CS3
3598	021426	000137	021446		JMP	86\$	:CONTINUE
3599	021432	017737	161722	003416	87\$: MOV	DRHBAE,BAE	:SAVE BUS ADDRESS EXTENSION
3600	021440	017737	161716	003424	MOV	DRHCS3,CS3	:SAVE RHCS3
3601	021446	017737	161666	003422	96\$: MOV	DRHCS2,CS2	:SAVE CS2
3602	021454	017737	161662	003432	MOV	DRHST,DS1	:SAVE TESTER STATUS
3603	021462	017737	161656	003436	MOV	DRHER,ER1	:SAVE ERROR REGISTER
3604	021470	017737	161654	003442	MOV	DRHTDB,TDR	:SAVE TESTER DATA REG.
3605	021476	017737	161634	003440	MOV	DRHMR2,TC	:SAVE MR2 TESTER REG.
3606	021504	032777	000200	161616	BIT	#RDY,DRHCS1	:IS READY SET
3607	021512	001003			BNE	99\$	:YES CONTINUE TEST
3608	021514	104102			ERROR	102	:READY NOT SET
3609	021516	004737	007234		JSR	R7,WHYFO	:ANY ERRORS SET
3610	021522	032777	010000	161610	99\$: BIT	#NED,DRHCS2	:IS NED SET
3611	021530	001016			BNE	1\$	:YES CHECK TRE AND SC
3612	021532	022737	140000	001162	CMP	#SC!TRE,\$REGO	:IS THE SC AND TRE BITS SET
3613	021540	001460			BEQ	2\$	:YES NED IS IN ERROR
3614	021542	032737	040000	001162	BIT	#TRE,\$REGO	:IS JUST THE TRE BIT SET
3615	021550	001060			BNE	3\$	:TRE BIT MUST BE IN ERROR
3616	021552	032737	100000	001162	BIT	#SC,\$REGO	:IS JUST THE SC BIT SET
3617	021560	001060			BNE	4\$	:SC BIT SET ERRONIOUSLY
3618	021562	104024			ERROR	24	:NED NOT SET IN RHCS2
3619	021564	000467			BR	9\$	:SET UP TO TEST AGAIN
3620	021566	022737	140000	001162	1\$: CMP	#SC!TRE,\$REGO	:IS SC AND TRE SET
3621	021574	001030			BNE	22\$	:FIND THE ERROR
3622	021576	012737	000000	004124	MOV	#ZERO,\$CS1	:TEST FOR SHORTS
3623	021604	012737	167400	004126	MOV	#MPE!MXF!PGE!NEM!UPE!WCE!DLT,\$CS2	
3624	021612	012737	174100	004130	MOV	#APE!DPEHI!DPELO!WCEHI!WCELO!IE3,\$CS3	
3625	021620	013737	004132	004132	MOV	\$ST,\$ST	
3626	021626	013737	004134	004134	MOV	\$ER,\$ER	
3627	021634	012737	177777	004122	MOV	#-1,BEFORE	:TELL WHYFO ITS FOR SHORTS
3628	021642	004737	007234		JSR	R7,WHYFO	:TEST FOR SHORTS
3629	021646	005037	004122		CLR	BEFORE	:WE HAVE CHECKED FOR SHORTS
3630	021652	000137	021744		JMP	8\$	:LEAVE THE TEST
3631	021656	032737	040000	001162	22\$: BIT	#TRE,\$REGO	:THEN IS THE TRE BIT SET
3632	021664	001022			BNE	6\$	:SC BIT DID NOT SEE TRE BIT
3633	021666	032737	100000	001162	BIT	#SC,\$REGO	:IS THE SC BIT SET
3634	021674	001022			BNE	7\$	:TRE HAS AN OPEN GOING TO BLS
3635	021676	104006			ERROR	6	:TRE SET LOGIC NOT WORKING
3636	021700	000421			BR	8\$	:SET UP TO TEST AGAIN
3637	021702	104025			2\$: ERROR	25	:NED HAS OPEN IN LINE GOING TO BUS
3638	021704	004737	007234		JSR	R7,WHYFO	:SEE IF ANY OTHER ERROR BIT IS
3639							:SET OTHER THAN NED
3640	021710	000415			BR	8\$	:SET UP TO TEST AGAIN
3641	021712	104026			3\$: ERROR	26	:SOMTHING WRONG WITH TRE BIT
3642	021714	004737	007234		JSR	R7,WHYFO	:SEE IF AN ERROR BIT IS SET
3643							:OR BOTH NED IN RHCS2 AND SC IN
3644							:RHCS1 HAS AN OPEN BETWEEN IT AND THE BUS
3645	021720	000411			BR	8\$	:SET UP TO TEST AGAIN
3646	021722	104011			4\$: ERROR	11	:SC BIT WAS SET BY EITHER ATTN OR
3647	021724	004737	007234		JSR	R7,WHYFO	:FIND WHAT ERROR BIT IS SET
3648							:MCPE ERROR OR SC IS SHORTED TO +5 VOLTS
3649	021730	000405			BR	8\$	:SETUP TO TEST AGAIN
3650	021732	104027			6\$: ERROR	27	:TRE WAS SET BY OTHER THAN NED
3651	021734	004737	007234		JSR	R7,WHYFO	:FIND ERROR BIT THAT SET TRE
3652	021740	000401			BR	8\$	:SETUP TO TEST AGAIN

3709	022250	017737	161062	003440		MOV	DRHMR2,TC	:SAVE MR2 TESTER REG.
3710	022256	032777	000200	161044		BIT	#RDY,DRHCS1	:IS READY SET
3711	022264	001003				BNE	99\$	:YES CONTINUE TEST
3712	022266	104102				ERROR	102	:READY NOT SET
3713	022270	004737	007234			JSR	R7,WHYFO	:ANY ERRORS SET
3714	022274	032777	001000	161036	99\$:	BIT	#MXF,DRHCS2	:IS MXF SET
3715	022302	001016				BNE	1\$	:YES CHECK TRE AND SC
3716	022304	022737	140000	001162		CMP	#SC!TRE,\$REGO	:IS THE SC AND TRE BITS SET
3717	022312	001460				BEQ	2\$	:YES MXF IS IN ERROR
3718	022314	032737	040000	001162		BIT	#TRE,\$REGO	:IS JUST THE TRE BIT SET
3719	022322	001060				BNE	3\$	:TRE BIT MUST BE IN ERROR
3720	022324	032737	100000	001162		BIT	#SC,\$REGO	:IS JUST THE SC BIT SET
3721	022332	001060				BNE	4\$	:SC BIT SET ERRONIOUSLY
3722	022334	104030				ERROR	30	:MXF NOT SET IN RHCS2
3723	022336	000467				BR	8\$	:SET UP TO TEST AGAIN
3724	022340	022737	140000	001162	1\$:	CMP	#SC!TRE,\$REGO	:IS SC AND TRE SET
3725	022346	001030				BNE	22\$	:FIND THE ERROR
3726	022350	012737	020000	004124		MOV	#MCPE,\$CS1	:TEST FOR SHORTS
3727	022356	012737	176400	004126		MOV	#MPE!PGE!NEM!NED!UPE!WCE!DLT,\$CS2	
3728	022364	013737	004130	004130		MOV	\$CS3,\$CS3	
3729	022372	013737	004132	004132		MOV	\$ST,\$ST	
3730	022400	012737	030165	004134		MOV	#ILF!RMR!DPE!RMBEX!RFAIL!DTE!OPI,\$ER	
3731	022406	012737	177777	004122		MOV	#-1,BEFORE	:TELL WHYFO ITS FOR SHORTS
3732	022414	004737	007234			JSR	R7,WHYFO	:TEST FOR SHORTS
3733	022420	005037	004122			CLR	BEFORE	:WE HAVE CHECKED FOR SHORTS
3734	022424	000137	022516			JMP	8\$	:LEAVE THE TEST
3735	022430	032737	040000	001162	22\$:	BIT	#TRE,\$REGO	:THEN IS THE TRE BIT SET
3736	022436	001022				BNE	6\$	:SC BIT DID NOT SEE TRE BIT
3737	022440	032737	100000	001162		BIT	#SC,\$REGO	:IS THE SC BIT SET
3738	022446	001022				BNE	7\$	:TRE HAS AN OPEN GOING TO BUS
3739	022450	104006				ERROR	6	:TRE SET LOGIC NOT WORKING
3740	022452	000421				BR	8\$	:SET UP TO TEST AGAIN
3741	022454	104031			2\$:	ERROR	31	:MXF HAS OPEN IN LINE GOING TO BUS
3742	022456	004737	007234			JSR	R7,WHYFO	:SEE IF ANY OTHER ERROR BIT IS
3743								:SET OTHER THAN MXF
3744	022462	000415				BR	8\$	:SET UP TO TEST AGAIN
3745	022464	104032			3\$:	ERROR	32	:SOMTHING WRONG WITH TRE BIT
3746	022466	004737	007234			JSR	R7,WHYFO	:SEE IF AN ERROR BIT IS SET
3747								:OR BOTH MXF IN RHCS2 AND SC IN
3748								:RHCS1 HAS AN OPEN BETWEEN IT AND THE BUS
3749	022472	000411				BR	8\$	:SET UP TO TEST AGAIN
3750	022474	104011			4\$:	ERROR	11	:SC BIT WAS SET BY EITHER ATTN OR
3751	022476	004737	007234			JSR	R7,WHYFO	:FIND WHAT ERROR BIT IS SET
3752								:MCPE ERROR OR SC IS SHORTED TO +5 VOLTS
3753	022502	000405				BR	8\$	:SETUP TO TEST AGAIN
3754	022504	104033			6\$:	ERROR	33	:TRE WAS SET BY OTHER THAN MXF
3755	022506	004737	007234			JSR	R7,WHYFO	:FIND ERROR BIT THAT SET TRE
3756	022512	000401				BR	8\$	:SETUP TO TEST AGAIN
3757	022514	104013			7\$:	ERROR	13	:TRE HAS AN OPEN GOING TO THE BUS
3758	022516	032737	041400	177570	8\$:	BIT	#SW14!SW9!SW8,@#177570	:ANY LOOPING BEING DONE
3759	022524	001003				BNE	21\$	:YES,LOAD TRE NO MATTER WHAT
3760	022526	105737	001103			TSTB	\$ERFLG	:WAS THERE AN ERROR
3761	022532	001010				BNE	9\$	:SKIP TRE CHECK
3762	022534	112777	000100	160622	21\$:	MOVB	#TREB,DRHCS1B	:LOAD TRE
3763	022542	032777	001000	160570		BIT	#MXF,DRHCS2	:DID ERROR CLEAR
3764	022550	001401				BEQ	9\$	:YES EXIT TEST

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 DZRHC.P11 T26 MXF .TRE AND SC BIT TEST

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3765 022552 104050          ERROR 50          ;LOADING TRE DID NOT CLEAR ERROR
3766 022554 004737 006602 95: JSR R7,CLEER ;SEE IF ERRORS ARE CLEARED
3767 022560 004737 050130 JSR R7,ERRST
3768 ::*****
3769 :*TEST 27 PGE ERROR BIT TEST
3770 :*THIS TEST FORCES PGE TO SET IN RHCS2
3771 :*AND VERIFYS TRE AND SC IS SET IN RHCS1
3772 ::*****
3773 022564 000004 1ST27: SCOPE
3774 022566 012777 000007 160544 MOV #7,RHCS2 ;SET UNIT NUMBER
3775 022574 012777 004000 160532 MOV #EVENAD,RHBA ;SETUP BUS ADDRESS
3776 022602 005701 TST R1 ;IS IT AN 11 OR A 70
3777 022604 100403 BMI JUMP ;ITS AN RH11
3778 022606 012777 000000 160544 MOV #ZERO,RHBAE ;SETUP BAE
3779 022614 012777 000061 160506 JUMP: MOV #WRITED,RHCS1 ;TELL IT TO WRITE
3780 022622 012777 000061 160500 MOV #WRITED,RHCS1 ;CREATE THE ERROR
3781 022630 005037 003446 CLR BITCNT ;CLEAR BIT COUNTER
3782 022634 032777 000200 160466 185: BIT #RDY,RHCS1 ;IS RDY SET
3783 022642 001015 BNE PGETST ;BIT IS SET
3784 022644 005237 003446 INC BITCNT ;COUNT UP
3785 022650 001371 BNE 185 ;NOT FINISHED COUNTING
3786 022652 005037 003446 CLR BITCNT ;GET READY TO DO IT AGAIN
3787 022656 032777 000200 160444 195: BIT #RDY,RHCS1 ;IS IT SET YET?
3788 022664 001004 BNE PGETST ;YES
3789 022666 005237 003446 INC BITCNT ;COUNT UP
3790 022672 001401 BEQ PGETST ;BIT IS NOT GOING TO SET
3791 022674 000770 BR 195
3792 022676 PGETST:
3793 022676 017737 160426 001162 MOV RHCS1,$REG0 ;SET UP NEEDED BITS ONLY
3794 022704 042737 027777 001162 BIC #GO!IE!RDY!A16!A17!PSEL!DVA!MCPE!READ6,$REG0
3795 022712 042777 100000 160442 BIC #APE,RHCS3
3796 ;CLEAR BITS NOT NEEDED
3797 022720 017737 160404 003420 MOV RHCS1,CS1 ;SAVE RHCS1
3798 022726 017737 160400 003444 MOV RHWC,WC ;SAVE WORD COUNT
3799 022734 017737 160374 003414 MOV RHBA,BA ;SAVE BUS ADDRESS
3800 022742 005701 TST R1 ;IS IT AN RH11
3801 022744 001406 BEQ 87$ ;NO IT'S A 70
3802 022746 005037 003416 CLR BAE ;CLEAR BAE
3803 022752 005037 003424 CLR CS3 ;CLEAR CS3
3804 022755 000137 022776 JMP 86$ ;CONTINUE
3805 022762 017737 160372 003416 87$: MOV RHBAE,BAE ;SAVE BUS ADDRESS EXTENSION
3806 022770 017737 160366 003424 MOV RHCS3,CS3 ;SAVE RHCS3
3807 022776 017737 160336 003422 86$: MOV RHCS2,CS2 ;SAVE CS2
3808 023004 017737 160332 003432 MOV RHST,DS1 ;SAVE TESTER STATUS
3809 023012 017737 160326 003436 MOV RHERR,ER1 ;SAVE ERROR REGISTER
3810 023020 017737 160324 003442 MOV RHTRD8,TDR ;SAVE TESTER DATA REG.
3811 023026 017737 160304 003440 MOV RHMR2,TC ;SAVE MR2 TESTER REG.
3812 023034 032777 000200 160266 BIT #RDY,RHCS1 ;IS READY SET
3813 023042 001003 BNE 99$ ;YES CONTINUE TEST
3814 023044 104102 ERROR 102 ;READY NOT SET
3815 023046 004737 007234 JSR R7,WHYFO ;ANY ERRORS SET
3816 023052 032777 002000 160260 99$: BIT #PGE,RHCS2 ;IS PGE SET
3817 023060 001016 BNE 1$ ;YES CHECK TRE AND SC
3818 023062 022737 140000 001162 CMP #SC!TRE,$REG0 ;IS THE SC AND TRE BITS SET
3819 023070 001460 BEQ 2$ ;YES PGE IS IN ERROR
3820 023072 032737 040000 001162 BIT #TRE,$REG0 ;IS JUST THE TRE BIT SET

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3821 023100 001060 BNE 3$ :TRE BIT MUST BE IN ERROR
3822 023102 032737 100000 001162 BIT #SC,$REGO :IS JUST THE SC BIT SET
3823 023110 001060 BNE 4$ :SC BIT SET ERRONIOUSLY
3824 023112 104051 ERROR 51 :PGE NOT SET IN RHCS2
3825 023114 000467 BR 8$ :SET UP TO TEST AGAIN
3826 023116 022737 140000 001162 1$: CMP #SC!TRE,$REGO :IS SC AND TRE SET
3827 023124 001030 BNE 22$ :FIND THE ERROR
3828 023126 013737 004124 004124 MOV $CS1,$CS1 :TEST FOR SHORTS
3829 023134 012737 175400 004126 MOV #MPE!MXF!NEM!NED!UPE!WCE!DLT,$CS2
3830 023142 013737 004130 004130 MOV $CS3,$CS3
3831 023150 013737 004132 004132 MOV $ST,$ST
3832 023156 012737 030175 004134 MOV #ILF!CPE!RMR!DPE!RMBEX!RFAIL!DTE!OPT,$ER
3833 023164 012737 177777 004122 MOV #-1,BEFORE :TELL WHYFO ITS FOR SHORTS
3834 023172 004737 007234 JSR R7,WHYFO :TEST FOR SHORTS
3835 023176 005037 004122 CLR BEFORE :WE HAVE CHECKED FOR SHORTS
3836 023202 000137 023274 JMP 8$ :LEAVE THE TEST
3837 023206 032737 040000 001152 22$: BIT #TRE,$REGO :THEN IS THE TRE BIT SET
3838 023214 001022 BNE 6$ :SC BIT DID NOT SEE TRE BIT
3839 023216 032737 100000 001162 BIT #SC,$REGO :IS THE SC BIT SET
3840 023224 001022 BNE 7$ :TRE HAS AN OPEN GOING TO BUS
3841 023226 104006 ERROR 6 :TRE SET LOGIC NOT WORKING
3842 023230 000421 BR 8$ :SET UP TO TEST AGAIN
3843 023232 104123 2$: ERROR 123 :PGE HAS OPEN IN LINE GOING TO BUS
3844 023234 004737 007234 JSR R7,WHYFO :SEE IF ANY OTHER ERROR BIT IS
3845 :SET OTHER THAN PGE
3846 023240 000415 BR 8$ :SET UP TO TEST AGAIN
3847 023242 104171 3$: ERROR 171 :SOMTHING WRONG WITH TRE BIT
3848 023244 004737 007234 JSR R7,WHYFO :SEE IF AN ERROR BIT IS SET
3849 :OR BOTH PGE IN RHCS2 AND SC IN
3850 :RHCS1 HAS AN OPEN BETWEEN IT AND THE BUS
3851 023250 000411 BR 8$ :SET UP TO TEST AGAIN
3852 023252 104011 4$: ERROR 11 :SC BIT WAS SET BY EITHER ATTN OR
3853 023254 004737 007234 JSR R7,WHYFO :FIND WHAT ERROR BIT IS SET
3854 :MCPE ERROR OR SC IS SHORTED TO +5 VOLTS
3855 023260 000405 BR 8$ :SETUP TO TEST AGAIN
3856 023262 104172 6$: ERROR 172 :TRE WAS SET BY OTHER THAN PGE
3857 023264 004737 007234 JSR R7,WHYFO :FIND ERROR BIT THAT SET TRE
3858 023270 000401 BR 8$ :SETUP TO TEST AGAIN
3859 023272 104013 7$: ERROR 13 :TRE HAS AN OPEN GOING TO THE BUS
3860 023274 032737 041400 177570 8$: BIT #SW14!SW9!SW8,@#177570 :ANY LOOPING BEEING DONE
3861 023302 001003 BNE 21$ :YES,LOAD TRE NO MATTER WHAT
3862 023304 105737 001103 TSTB $ERFLG :WAS THERE AN ERROR
3863 023310 001010 BNE 9$ :SKIP TRE CHECK
3864 023312 112777 000100 160044 21$: MOVB #TREB,@RHCS1B :LOAD TRE
3865 023320 032777 002000 160012 BIT #PGE,@RHCS2 :DID ERROR CLEAR
3866 023326 001401 BEQ 9$ :YES EXIT TEST
3867 023330 104050 ERROR 50 :LOADING TRE DID NOT CLEAR ERROR
3868 023332 004737 006602 9$: JSR R7,CLEER :SEE IF ERRORS ARE CLEARED
3869 023336 004737 050130 JSR R7,ERRST
3870 :*****
3871 :*TEST 30 MXF,TRE AND SC BIT TEST (RH11 ONLY)
3872 :*THIS TEST SEES IF MXF CAN BE SET BY A MOVE
3873 :*INSTRUCTION AND THAT TRE AND SC ARE SET IN
3874 :*RHCS1.MXF CAN BE SET THIS WAY IN AN RH11 BUT CN
3875 :*NOT BE SET THIS WAY IN AN RH70.....
3876 :*****

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MASSBUS RH70 AND RH11 DIAGNOSTIC MACY11 27(732) 01-OCT-76 09:03 PAGE 76
 DZRHBC.P11 T30 MXF, TRE AND SC BIT TEST (RH11 ONLY)

3877	023342	000004			TST30:	SCOPE			
3878	023344	005701				TST	R1		; IS IT A 70 OR !!
3879	023346	100402				BMI	LEAP		; IT'S AN RH11 DO THE TEST
3880	023350	000137	024102			JMP	FROG		; RH70, EXIT TEST
3881	023354	012777	000007	157756	LEAP:	MOV	#7, ARHCS2		; SETUP UNIT 7
3882	023362	052777	001000	157750		BIS	#MXF, ARHCS2		; SET MXF
3883	023370	005037	003446			CLR	BITCNT		; CLEAR BIT COUNTER
3884	023374	032777	001000	157736	18\$:	BIT	#MXF, ARHCS2		; IS MXF SET
3885	023402	001015				BNE	MIXIT		; BIT IS SET
3886	023404	005237	003446			INC	BITCNT		; COUNT UP
3887	023410	001371				BNE	18\$		; NOT FINISHED COUNTING
3888	023412	005037	003446			CLR	BITCNT		; GET READY TO DO IT AGAIN
3889	023416	032777	001000	157714	19\$:	BIT	#MXF, ARHCS2		; IS IT SET YET?
3890	023424	001004				BNE	MIXIT		; YES
3891	023426	005237	003446			INC	BITCNT		; COUNT UP
3892	023432	001401				BEQ	MIXIT		; BIT IS NOT GOING TO SET
3893	023434	000770				BR	19\$		
3894	023436				MIXIT:				
3895	023436	017737	157666	001162		MOV	ARHCS1, \$REGO		; SET UP NEEDED BITS ONLY
3896	023444	042737	027777	001162		BIC	#GO! IE! RDY! A16! A17! PSEL! DVA! MCPE! READ6, \$REGO		
3897	023452	042777	100000	157702		BIC	#APE, ARHCS3		
3898									; CLEAR BITS NOT NEEDED
3899	023460	017737	157644	003420		MOV	ARHCS1, CS1		; SAVE RHCS1
3900	023466	017737	157640	003444		MOV	ARHWC, WC		; SAVE WORD COUNT
3901	023474	017737	157634	003414		MOV	ARHBA, BA		; SAVE BUS ADDRESS
3902	023502	005701				TST	R1		; IS IT AN RH11
3903	023504	001406				BEQ	87\$		; NO IT'S A 70
3904	023506	005037	003416			CLR	BAE		; CLEAR BAE
3905	023512	005037	003424			CLR	CS3		; CLEAR CS3
3906	023516	000137	023536			JMP	86\$		; CONTINUE
3907	023522	017737	157632	003416	87\$:	MOV	ARHBAE, BAE		; SAVE BUS ADDRESS EXTENSION
3908	023530	017737	157626	003424		MOV	ARHCS3, CS3		; SAVE RHCS3
3909	023536	017737	157576	003422	86\$:	MOV	ARHCS2, CS2		; SAVE CS2
3910	023544	017737	157572	003432		MOV	ARHST, DS1		; SAVE TESTER STATUS
3911	023552	017737	157566	003436		MOV	ARHER, ER1		; SAVE ERROR REGISTER
3912	023560	017737	157564	003442		MOV	ARHTDB, TDR		; SAVE TESTER DATA REG.
3913	023566	017737	157544	003440		MOV	ARHMR2, TC		; SAVE MR2 TESTER REG.
3914	023574	032777	000200	157526		BIT	#RDY, ARHCS1		; IS READY SET
3915	023602	001003				BNE	99\$		; YES CONTINUE TEST
3916	023604	104102				ERROR	102		; READY NOT SET
3917	023606	004737	007234			JSR	R7, WHYFO		; ANY ERRORS SET
3918	023612	032777	001000	157520	99\$:	BIT	#MXF, ARHCS2		; IS MXF SET
3919	023620	001016				BNE	1\$		; YES CHECK TRE AND SC
3920	023622	022737	140000	001162		CMP	#SC! TRE, \$REGO		; IS THE SC AND TRE BITS SET
3921	023630	001460				BEQ	2\$		; YES MXF IS IN ERROR
3922	023632	032737	040000	001162		BIT	#TRE, \$REGO		; IS JUST THE TRE BIT SET
3923	023640	001060				BNE	3\$		; TRE BIT MUST BE IN ERROR
3924	023642	032737	100000	001162		BIT	#SC, \$REGO		; IS JUST THE SC BIT SET
3925	023650	001060				BNE	4\$		; SC BIT SET ERRONIOUSLY
3926	023652	104030				ERROR	30		; MXF NOT SET IN RHCS2
3927	023654	000467				BR	8\$		; SET UP TO TEST AGAIN
3928	023656	022737	140000	001162	1\$:	CMP	#SC! TRE, \$REGO		; IS SC AND TRE SET
3929	023664	001030				BNE	22\$		; FIND THE ERROR
3930	023666	013737	004124	004124		MOV	\$CS1, \$CS1		; TEST FOR SHORTS
3931	023674	012737	176400	004126		MOV	#MPE! PGE! NEM! NED! UPE! WCE! DLT, \$CS2		
3932	023702	013737	004130	004130		MOV	\$CS3, \$CS3		

3933	023710	013737	004132	004132	MOV	\$ST,\$ST	
3934	023716	013737	004134	004134	MOV	\$ER,\$ER	
3935	023724	012737	177777	004122	MOV	#-1,BEFORE	: TELL WHYFO ITS FOR SHORTS
3936	023732	004737	007234		JSR	R7,WHYFO	: TEST FOR SHORTS
3937	023736	005037	004122		CLR	BEFORE	: WE HAVE CHECKED FOR SHORTS
3938	023742	000137	024034		JMP	8\$	: LEAVE THE TEST
3939	023746	032737	040000	001162	22\$: BIT	#TRE,\$REGO	: THEN IS THE TRE BIT SET
3940	023754	001022			BNE	6\$	: SC BIT DID NOT SEE TRE BIT
3941	023756	032737	100000	001162	BIT	#SC,\$REGO	: IS THE SC BIT SET
3942	023764	001022			BNE	7\$	: TRE HAS AN OPEN GOING TO BLS
3943	023766	104006			ERROR	6	: TRE SET LOGIC NOT WORKING
3944	023770	000421			BR	8\$	: SET UP TO TEST AGAIN
3945	023772	104031			2\$: ERROR	31	: MXF HAS OPEN IN LINE GOING TO BUS
3946	023774	004737	007234		JSR	R7,WHYFO	: SEE IF ANY OTHER ERROR BIT IS
3947							: SET OTHER THAN MXF
3949	024000	000415			BR	8\$	: SET UP TO TEST AGAIN
3949	024002	104032			3\$: ERROR	32	: SOMTHING WRONG WITH TRE BIT
3950	024004	004737	007234		JSR	R7,WHYFO	: SEE IF AN ERROR BIT IS SET
3951							: OR BOTH MXF IN RHCS2 AND SC IN
3952							: RHCS1 HAS AN OPEN BETWEEN IT AND THE BUS
3953	024010	000411			BR	8\$	: SET UP TO TEST AGAIN
3954	024012	104011			4\$: ERROR	11	: SC BIT WAS SET BY EITHER ATTN OR
3955	024014	004737	007234		JSR	R7,WHYFO	: FIND WHAT ERROR BIT IS SET
3956							: MCPE ERROR OR SC IS SHORTED TO +5 VOLTS
3957	024020	000405			BR	8\$	: SETUP TO TEST AGAIN
3958	024022	104033			6\$: ERROR	33	: TRE WAS SET BY OTHER THAN MXF
3959	024024	004737	007234		JSR	R7,WHYFO	: FIND ERROR BIT THAT SET TRE
3960	024030	000401			BR	8\$	: SETUP TO TEST AGAIN
3961	024032	104013			7\$: ERROR	13	: TRE HAS AN OPEN GOING TO THE BUS
3962	024034	032737	041400	177570	8\$: BIT	#SW14!SW9!SW8,2#177570	: ANY LOOPING BEEING DONE
3963	024042	001003			BNE	21\$	: YES,LOAD TRE NO MATTER WHAT
3964	024044	105737	001103		TSTB	\$ERFLG	: WAS THERE AN ERROR
3965	024050	001010			BNE	9\$	: SKIP TRE CHECK
3966	024052	112777	000100	157304	21\$: MOVB	#TREB,2RHCS1B	: LOAD TRE
3967	024060	032777	001000	157252	BIT	#MXF,2RHCS2	: DID ERROR CLEAR
3968	024066	001401			BEQ	9\$	: YES EXIT TEST
3969	024070	104050			ERROR	50	: LOADING TRE DID NOT CLEAR ERROR
3970	024072	004737	006602		9\$: JSR	R7,CLEER	: SEE IF ERRORS ARE CLEARED
3971	024076	004737	050130		JSR	R7,ERRTST	
3972	024102				FROG:		
3973					::*****		
3974					:*TEST 31	MCPE AND SC ERROR TET	
3975					:	*THIS TEST CHECKS THAT MCPE CAN BE SET IN RHCS1	
3976					:	*AND THAT MCPE SETS SC IN RHCS1.....	
3977					::*****		
3978	024102	000004			†ST31: SCOPE		
3979	024104	012777	000007	157226	MOV	#7,2RHCS2	: SETUP UNIT NO.
3980	024112	012777	000010	157234	MOV	#ICPA,2RHMR1	: INVERT CONTROL PARITY
3981	024120	013777	001162	157222	MOV	\$REGO,2RHDTB	: TRANSFER INFO TO TESTER
3982	024126	013777	001162	157214	MOV	\$REGO,2RHDTB	: DO IT FOR SECOND TIME
3983	024134	005037	003446		CLR	BITCNT	: CLEAR BIT COUNTER
3984	024140	032777	000200	157162	18\$: BIT	#RDY,2RHCS1	: IS RDY SET
3985	024146	001015			BNE	MCPE†	: BIT IS SET
3986	024150	005237	003446		INC	BITCNT	: COUNT UP
3987	024154	001371			BNE	18\$	: NOT FINISHED COUNTING
3988	024156	005037	003446		CLR	BITCNT	: GET READY TO DO IT AGAIN

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3989 024162 032777 000200 157140 19$: BIT #RDY, RHCS1 ;IS IT SET YET?
3990 024170 001004 BNE MCPET ;YES
3991 024172 005237 003446 INC BITCNT ;COUNT UP
3992 024176 001401 BEQ MCPET ;BIT IS NOT GOING TO SET
3993 024200 000770 BR 19$
3994 024202 MCPET:
3995 024202 017737 157122 003420 MOV RHCS1, CS1 ;SAVE RHCS1
3996 024210 017737 157116 003444 MOV RHWC, WC ;SAVE WORD COUNT
3997 024216 017737 157112 003414 MOV RHBA, BA ;SAVE BUS ADDRESS
3998 024224 005701 TST R1 ;IS IT AN RH11
3999 024226 001406 BEQ 87$ ;NO IT'S A 70
4000 024230 005037 003416 CLR BAE ;CLEAR BAE
4001 024234 005037 003424 CLR CS3 ;CLEAR CS3
4002 024240 000137 024260 JMP 86$ ;CONTINUE
4003 024244 017737 157110 003416 87$: MOV RHBAE, BAE ;SAVE BUS ADDRESS EXTENSION
4004 024252 017737 157104 003424 MOV RHCS3, CS3 ;SAVE RHCS3
4005 024260 017737 157054 003422 86$: MOV RHCS2, CS2 ;SAVE CS2
4006 024266 017737 157050 003432 MOV RHST, DS1 ;SAVE TESTER STATUS
4007 024274 017737 157044 003436 MOV RHER, ER1 ;SAVE ERROR REGISTER
4008 024302 017737 157042 003442 MOV RHTRD, TDR ;SAVE TESTER DATA REG.
4009 024310 017737 157022 003440 MOV RHMR2, TC ;SAVE MR2 TESTER REG.
4010 024316 032777 000200 157004 BIT #RDY, RHCS1 ;IS READY SET
4011 024324 001003 BNE MPETST ;YES, TEST MCPE
4012 024326 104102 ERROR 102 ;READY IS NOT SET
4013 024330 004737 007234 JSR R7, WHYFO ;ANY ERRORS SET
4014 024334 032777 020000 156766 MPETST: BIT #MCPE, RHCS1 ;IS MCPE SET
4015 024342 001425 BEQ 1$
4016 024344 032777 100000 156756 BIT #SC, RHCS1 ;IS SC SET
4017 024352 001416 BEQ 22$ ;SC NOT SET
4018 024354 012737 040000 004124 MOV #TRE, SCS1 ;GET READY TO TEST FOR SHORTS
4019 024362 012737 177400 004126 MOV #MPE!MXF!PGE!NEM!NED!UPE!WCE!DLT, SCS2
4020 024370 012737 177777 004122 MOV #-1, BEFORE
4021 024376 004737 007234 JSR R7, WHYFO ;SEE IF ANY SHORTS
4022 024402 005037 004122 CLR BEFORE
4023 024406 000406 BR ERR30 ;GET OUT OF TEST
4024 024410 104130 22$: ERROR 130 ;MCPE ERROR OK BUT SC DID
4025 ;NOT SET SC HAS OPEN TO
4026 ;BUS OR MCPE GOING TO OR
4027 ;GATE FOR SC WAS NOT SEEN
4028 024412 000137 024424 JMP ERR30
4029 024416 104131 1$: ERROR 131 ;MCPE DID NOT SET
4030 024420 004737 007234 JSR R7, WHYFO ;WAS THERE ANOTHER ERROR
4031 024424 004737 006602 ERR30: JSR R7, CLEAR ;CLEAR ERRORS
4032 024430 004737 050130 JSR R7, ERRTST ;WAS THERE AN ERROR
4033 ;*****
4034 ;*TEST 32 DOUBLE TRANSFER TEST, 1 WORD FROM AN ADDRESS BASE 4
4035 ;*THIS TEST CHECKS THAT A ONE WORD TRANSFER
4036 ;*FROM AN ADDRESS DIVISIBLE BY 4 WILL NOT SET
4037 ;*DBL IN RHCS3.....RH70 ONLY.....
4038 ;*****
4039 ;*****
4040 TST32: SCOPE
4041 TST R1 ;IS IN AN RH11
4042 BMI TST33 ;GET OUT OF TEST
4043 MOV #-1, RHWC ;SET UP WC FOR ONE WORD
4044 MOV #EVENAD, RHBA ;SETUP BUS ADDRESS

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MASSBUS RH70 AND RH11 DIAGNOSTIC MACY11 27(732) 01-OCT-76 09:03 PAGE 79
DZRHBC.P11 T32 DOUBLE TRANSFER TEST.1 WORD FROM AN ADDRESS BASE 4

4045	024456	012777	000000	156674		MOV	#ZERO, ARHBAE	; SETUP BUS ADDRESS EXTENSION
4046	024464	012777	000007	156646		MOV	#7, ARHCS2	; DEVICE 7
4047	024472	012777	000001	156630		MOV	#WRITED, ARHCS1	; TELL IT TO WRITED
4048	024500	005037	003446			CLR	BITCNT	; CLEAR BIT COUNTER
4049	024504	032777	000200	156616	18\$:	BIT	#RDY, ARHCS1	; IS RDY SET
4050	024512	001015				BNE	3\$	; BIT IS SET
4051	024514	005237	003446			INC	BITCNT	; COUNT UP
4052	024520	001371				BNE	18\$	; NOT FINISHED COUNTING
4053	024522	005037	003446			CLR	BITCNT	; GET READY TO DO IT AGAIN
4054	024526	032777	000200	156574	19\$:	BIT	#RDY, ARHCS1	; IS IT SET YET?
4055	024534	001004				BNE	3\$	; YES
4056	024536	005237	003446			INC	BITCNT	; COUNT UP
4057	024542	001401				BEQ	3\$	; BIT IS NOT GOING TO SET
4058	024544	000770				BR	19\$	
4059	024546				3\$:			
4060	024546	017737	156556	003420		MOV	ARHCS1, CS1	; SAVE RHCS1
4061	024554	017737	156552	003444		MOV	ARHWC, WC	; SAVE WORD COUNT
4062	024562	017737	156546	003414		MOV	ARHBA, BA	; SAVE BUS ADDRESS
4063	024570	005701				TST	R1	; IS IT AN RH11
4064	024572	001406				BEQ	87\$	; NO IT'S A 70
4065	024574	005037	003416			CLR	BAE	; CLEAR BAE
4066	024600	005037	003424			CLR	CS3	; CLEAR CS3
4067	024604	000137	024624			JMP	86\$	; CONTINUE
4068	024610	017737	156544	003416	87\$:	MOV	ARHBAE, BAE	; SAVE BUS ADDRESS EXTENSION
4069	024616	017737	156540	003424		MOV	ARHCS3, CS3	; SAVE RHCS3
4070	024624	017737	156510	003422	86\$:	MOV	ARHCS2, CS2	; SAVE CS2
4071	024632	017737	156504	003432		MOV	ARHST, DS1	; SAVE TESTER STATUS
4072	024640	017737	156500	003436		MOV	ARHER, ER1	; SAVE ERROR REGISTER
4073	024646	017737	156476	003442		MOV	ARHTDB, TDR	; SAVE TESTER DATA REG.
4074	024654	017737	156456	003440		MOV	ARHMR2, TC	; SAVE MR2 TESTER REG.
4075	024662	032777	000200	156440		BIT	#RDY, ARHCS1	; IS READY SET
4076	024670	001003				BNE	1\$	; RDY SET CONT. TEST
4077	024672	104102				ERROR	102	; READY DID NOT SET
4078	024674	004737	007234			JSR	R7, WHYFO	; ANY ERRORS SET
4079	024700	032777	002000	156454	1\$:	BIT	#DBL, ARHCS3	; IS DOUBLE SET
4080	024706	001403				BEQ	2\$	; DBL SET
4081	024710	104125				ERROR	125	; DBL DID SET ON A 1 WORD TRANSFER
4082	024712	004737	007234			JSR	R7, WHYFO	; TELL WHY NOT
4083	024716	004737	006602		2\$:	JSR	R7, CLEER	; CLEAR ERRORS
4084	024722	004737	050130			JSR	R7, ERRST	
4085						;*****		
4086						;*TEST 33 DOUBLES TEST FOR TWO WORD BASE 4 ADDRESS		
4087						;*THIS TEST CHECKS THAT DOUBLE WILL SET FOR A		
4088						;*TWO WORD TRANSFER STARTING FROM AN ADDRESS		
4089						;*DIVISIBLE BY 4.....RH70 ONLY.....		
4090						;*****		
4091	024726	000004				TST33:	SCOPE	
4092	024730	005701				TST	R1	; IS IT AN 11 OR A 70
4093	024732	100524				BMI	TST34	; GET OUT OF TEST
4094	024734	012777	177776	156370		MOV	#-2, ARHWC	; SETUP WORD COUNT FOR DOUBLE TRANSFER
4095	024742	012777	004000	156364		MOV	#EVENAD, ARHBA	; CORRECT BA
4096	024750	012777	000061	156352		MOV	#WRITED, ARHCS1	; TELL IT TO WRITE
4097	024756	005037	003446			CLR	BITCNT	; CLEAR BIT COUNTER
4098	024762	032777	000200	156340	18\$:	BIT	#RDY, ARHCS1	; IS RDY SET
4099	024770	001015				BNE	DBLWDS	; BIT IS SET
4100	024772	005237	003446			INC	BITCNT	; COUNT UP

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024776 001371 BNE 18$ :NOT FINISHED COUNTING
025000 005037 CLR BITCNT :GET READY TO DO IT AGAIN
025004 032777 000200 156316 19$: BIT $RDY, RHCS1 :IS IT SET YET?
025012 001004 BNE DBLWDS :YES
025014 005237 003446 INC BITCNT :COUNT UP
025020 001401 BEQ DBLWDS :BIT IS NOT GOING TO SET
025022 000770 BR 19$
025024 DBLWDS:
025024 017737 156300 003420 MOV RHCS1, CS1 :SAVE RHCS1
025032 017737 156274 003444 MOV RHWC, WC :SAVE WORD COUNT
025040 017737 156270 003414 MOV RHBA, BA :SAVE BUS ADDRESS
025046 005701 TST R1 :IS IT AN RH11
025050 001406 BEQ B7$ :NO IT'S A 70
025052 005037 003416 CLR BAE :CLEAR BAE
025056 005037 003424 CLR CS3 :CLEAR CS3
025062 000137 025102 JMP BCS :CONTINUE
025066 017737 156266 003416 B7$: MOV RHBAE, BAE :SAVE BUS ADDRESS EXTENSION
025074 017737 156262 003424 MOV RHCS3, CS3 :SAVE RHCS3
025102 017737 156232 003422 B6$: MOV RHCS2, CS2 :SAVE CS2
025110 017737 156226 003432 MOV RHST, DS1 :SAVE TESTER STATUS
025116 017737 156222 003436 MOV RHERR, ER1 :SAVE ERROR REGISTER
025124 017737 156220 003442 MOV RHTRD, TR :SAVE TESTER DATA REG.
025132 017737 156200 003440 MOV RHMR2, TC :SAVE MR2 TESTER REG.
025140 032777 000200 156162 BIT $RDY, RHCS1 :IS READY SET
025146 001003 BNE FOOEY :RDY IS SET
025150 104102 ERROR 102 :RDY DID NOT SET
025152 004737 007234 JSR R7, WHYFO :ANY ERRORS SET
025156 032777 000200 156176 FOOEY: BIT $DBL, RHCS3 :IS DOUBLE SET
025164 001003 BNE ER1R :DBL IS SET
025166 104127 ERROR 127 :DBL DID NOT SET IN RHCS3
025170 004737 007234 JSR R7, WHYFO :ANY OTHER ERROR SET
025174 004737 006602 ER1R: JSR R7, CLEER :CLEAR ERRORS
025200 004737 050130 JSR R7, ERRST

*****
*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 DIVISIBLE BY 4
*.....RH70 ONLY.....
*****
15734: SCOPE
025204 000004 TST R1 :IS IT AN 11 OR A 70
025206 005701 BMT TST35 ::GET OUT OF TEST
025210 100524 MOV #-3, RHWC :SET UP FOR A 3 WORD TRANSFER
025212 012777 177775 156112 MOV $EVENAD, RHBA :CORRECT BA
025220 012777 004000 156106 MOV $WRITED, RHCS1 :TELL IT TO WRITE
025226 012777 000061 156074 CLR BITCNT :CLEAR BIT COUNTER
025234 005037 003446 19$: BIT $RDY, RHCS1 :IS RDY SET
025240 032777 000200 156062 BNE THREE :BIT IS SET
025246 001015 INC BITCNT :COUNT UP
025250 005237 003446 BNE 18$ :NOT FINISHED COUNTING
025254 001371 CLR BITCNT :GET READY TO DO IT AGAIN
025256 005037 003446 19$: BIT $RDY, RHCS1 :IS IT SET YET?
025262 032777 000200 156040 BNE THREE :YES
025270 001004 INC BITCNT :COUNT UP
025272 005237 003446 BEQ THREE :BIT IS NOT GOING TO SET
025276 001401

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 MASSBUS RMT AND RH1: DIAGNOSTIC
 DOUBLE TEST .3 WORD TRANSFER FROM A BASE 4 ADDRESS

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4157 025300 000770 BR 195
4158 025302 THREE:
4159 025302 017737 156022 003420 MOV 2RHCS1,CS1 ;SAVE RHCS1
4160 025310 017737 156016 003444 MOV 2RHWC,WC ;SAVE WORD COUNT
4161 025316 017737 156012 003414 MOV 2RHBA,BA ;SAVE BUS ADDRESS
4162 025324 005701 TST R1 ;IS IT AN RH11
4163 025326 001406 BEQ 875 ;NO IT'S A 70
4164 025330 005037 003416 CLR BAE ;CLEAR BAE
4165 025334 005037 003424 CLR CS3 ;CLEAR CS3
4166 025340 000137 025360 JMP 865 ;CONTINUE
4167 025344 017737 156010 003416 875: MOV 2RHBAE,BAE ;SAVE BUS ADDRESS EXTENSION
4168 025352 017737 156004 003424 MOV 2RHCS3,CS3 ;SAVE RHCS3
4169 025360 017737 155754 003422 865: MOV 2RHCS2,CS2 ;SAVE CS2
4170 025366 017737 155750 003432 MOV 2RHST,CS1 ;SAVE TESTER STATUS
4171 025374 017737 155744 003436 MOV 2RHER,ER1 ;SAVE ERROR REGISTER
4172 025402 017737 155742 003442 MOV 2RHTDB,TDR ;SAVE TESTER DATA REG.
4173 025410 017737 155722 003440 MOV 2RHMR2,TC ;SAVE MR2 TESTER REG.
4174 025416 032777 000200 155704 BIT 2RDY,2RHCS1 ;IS READY SET
4175 025424 001003 BNE ERRIP ;RDY IS SET
4176 025426 104102 ERROR 102 ;RDY DID NOT SET
4177 025430 004737 007234 JSR R7,WHYFO ;ANY ERRORS SET
4178 025434 032777 002000 155720 ERRIP: BIT 2DBL,2RHCS3 ;IS DOUBLE SET
4179 025442 001403 BEQ ERPIP ;DBL IS SET
4180 025444 104126 ERROR 126 ;DOUBLE SET ON A 3 WORD TRANSFER
4181 025446 004737 007234 JSR R7,WHYFO ;SEE IF ANY ERROR BITS ARE SET
4182 025452 004737 006002 ERPIP: JSR R7,CLEAR ;CLEAR ERRORS
4183 025456 004737 000130 JSR R7,ERRTST
4184 *****
4185 ;*TEST 35 DOUBLE TEST .4 WORDS FROM A BASE 4 ADDRESS
4186 ;*THIS TEST CHECKS THAT DBL WILL SET IN RHCS3
4187 ;*AFTER A 4 WORD TRANSFER STARTING WITH AN
4188 ;*ADDRESS DIVISIBLE BY 4*****
4189 ;*.....RH70 ONLY.....
4190 *****
4191 025462 000004 TST35: SCOPE
4192 025464 005701 TST R1 ;IS IT AN 11 OR A 70
4193 025466 100524 BMI TST36 ;;GET OUT OF TEST
4194 025470 012777 177774 155634 MOV 2-4,2RHWC ;SET UP FOR 4 WORD TRANSFER
4195 025476 012777 004000 155630 MOV 2EVENAD,2RHBA ;CORRECT BA
4196 025504 012777 000061 155616 MOV 2WRITED,2RHCS1 ;TELL IT TO WRITE
4197 025512 005037 003446 CLR BITCNT ;CLEAR BIT COUNTER
4198 025516 032777 000200 155604 185: BIT 2RDY,2RHCS1 ;IS RDY SET
4199 025524 001015 BNE DBLED ;BIT IS SET
4200 025526 005237 003446 INC BITCNT ;COUNT UP
4201 025532 001371 BNE 185 ;NOT FINISHED COUNTING
4202 025534 005037 003446 CLR BITCNT ;GET READY TO DO IT AGAIN
4203 025540 032777 000200 155562 195: BIT 2RDY,2RHCS1 ;IS IT SET YET?
4204 025546 001004 BNE DBLED ;YES
4205 025550 005237 003446 INC BITCNT ;COUNT UP
4206 025554 001401 BEQ DBLED ;BIT IS NOT GOING TO SET
4207 025556 000770 BR 195
4208 025560 DBLED:
4209 025560 017737 155544 003420 MOV 2RHCS1,CS1 ;SAVE RHCS1
4210 025566 017737 155540 003444 MOV 2RHWC,WC ;SAVE WORD COUNT
4211 025574 017737 155534 003414 MOV 2RHBA,BA ;SAVE BUS ADDRESS
4212 025602 005701 TST R1 ;IS IT AN RH11

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MASSBUS RMTD AND RH11 DIAGNOSTIC MACY11 27(732) 01-OCT-76 09:03 PAGE 92
 D2R4BC.P11 *35 DOUBLE TEST .4 WORDS FROM A BASE 4 ADDRESS

4213	025604	001406				BEG	87\$		:NO IT'S A 70
4214	025606	005037	003416			CLR	BAE		:CLEAR BAE
4215	025612	005037	003424			CLR	CS3		:CLEAR CS3
4216	025616	000137	025636			JMP	86\$		:CONTINUE
4217	025622	017737	155532	003416	97\$:	MOV	2RHBAE,BAE		:SAVE BUS ADDRESS EXTENSION
4218	025630	017737	155526	003424		MOV	2RHCS3,CS3		:SAVE RHCS3
4219	025636	017737	155476	003422	86\$:	MOV	2RHCS2,CS2		:SAVE CS2
4220	025644	017737	155472	003432		MOV	2RHST,DS1		:SAVE TESTER STATUS
4221	025652	017737	155466	003436		MOV	2RHER,ER1		:SAVE ERROR REGISTER
4222	025660	017737	155464	003442		MOV	2RHTDB,TDR		:SAVE TESTER DATA REG.
4223	025666	017737	155444	003440		MOV	2RHMR2,TC		:SAVE MR2 TESTER REG.
4224	025674	032777	000200	155426		BIT	8RDY,2RHCS1		:IS READY SET
4225	025702	001003				BNE	DAYAMS		:RDY IS SET
4226	025704	104102				ERROR	102		:RDY DID NOT SET
4227	025706	004737	007234			JSR	R7,WHYFO		:WHAT ERRORS ARE SET
4228	025712	032777	002000	155442	DAYAMS:	BIT	8DBL,2RHCS3		:IS DOUBLE SET
4229	025720	001003				BNE	ERR29		:TEST IS OK
4230	025722	104124				ERROR	124		:DOUBLE DID NOT SET AFTER A 4 WORD
4231	025724	004737	007234			JSR	R7,WHYFO		:SEE IF ANY ERROR ARE SET
4232	025730	004737	006602		ERR29:	JSR	R7,CLEER		:CLEAR ERRORS
4233	025734	004737	050130			JSR	R7,ERRTST		
4234									
4235									
4236									
4237									
4238									
4239									
4240									
4241									
4242									
4243									
4244	025740	000004							
4245	025742	005701							
4246	025744	100532							
4247	025746	012777	177777	155356		MOV	8-1,2RHWC		:SET UP WC FOR ONE WORD
4248	025754	012777	004000	155352		MOV	8EVENAD,2RHBA		:SETUP BUS ADDRESS
4249	025762	012777	000000	155370		MOV	8ZERO,2RHBAE		:SETUP BUS ADDRESS EXTENSION
4250	025770	012777	000007	155342		MOV	87,2RHCS2		:DEVICE 7
4251	025776	012777	000071	155324		MOV	8READD,2RHCS1		:TELL IT TO READD
4252	026004	005037	003446			CLR	BITCNT		:CLEAR BIT COUNTER
4253	026010	032777	000200	155312	18\$:	BIT	8RDY,2RHCS1		:IS RDY SET
4254	026016	001015				BNE	3\$		:BIT IS SET
4255	026020	005237	003446			INC	BITCNT		:COUNT UP
4256	026024	001371				BNE	18\$		:NOT FINISHED COUNTING
4257	026026	005037	003446			CLR	BITCNT		:GET READY TO DO IT AGAIN
4258	026032	032777	000200	155270	19\$:	BIT	8RDY,2RHCS1		:IS IT SET YET?
4259	026040	001004				BNE	3\$		:YES
4260	026042	005237	003446			INC	BITCNT		:COUNT UP
4261	026046	001401				BEG	3\$		:BIT IS NOT GOING TO SET
4262	026050	000770				BR	19\$		
4263	026052				3\$:				
4264	026052	017737	155252	003420		MOV	2RHCS1,CS1		:SAVE RHCS1
4265	026060	017737	155246	003444		MOV	2RHWC,WC		:SAVE WORD COUNT
4266	026066	017737	155242	003414		MOV	2RHBA,BA		:SAVE BUS ADDRESS
4267	026074	005701				TST	R1		:IS IT AN RH11
4268	026076	001406				BEG	87\$		:NO IT'S A 70

 :*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 PERFORMED WILL BE PRINTED OUT
 :*IN ERROR MESSAGE.
 :*.....RH70 ONLY.....

 :*TEST 36: SCOPE
 :*TST R1 :IS IN AN RH11
 :*BMI TST37 :GET OUT OF TEST
 :*MOV 8-1,2RHWC :SET UP WC FOR ONE WORD
 :*MOV 8EVENAD,2RHBA :SETUP BUS ADDRESS
 :*MOV 8ZERO,2RHBAE :SETUP BUS ADDRESS EXTENSION
 :*MOV 87,2RHCS2 :DEVICE 7
 :*MOV 8READD,2RHCS1 :TELL IT TO READD
 :*CLR BITCNT :CLEAR BIT COUNTER
 :*BIT 8RDY,2RHCS1 :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 8RDY,2RHCS1 :IS IT SET YET?
 :*BNE 3\$:YES
 :*INC BITCNT :COUNT UP
 :*BEG 3\$:BIT IS NOT GOING TO SET
 :*BR 19\$
 :*3\$:
 :*MOV 2RHCS1,CS1 :SAVE RHCS1
 :*MOV 2RHWC,WC :SAVE WORD COUNT
 :*MOV 2RHBA,BA :SAVE BUS ADDRESS
 :*TST R1 :IS IT AN RH11
 :*BEG 87\$:NO IT'S A 70

Address	Hex	Op	Op2	Op3	Op4	Op5	Op6	Op7	Op8	Op9	Op10	Op11	Op12	Op13	Op14	Op15	Op16	Op17	Op18	Op19	Op20	Op21	Op22	Op23	Op24	Op25	Op26	Op27	Op28	Op29	Op30	Op31	Op32	Op33	Op34	Op35	Op36	Op37	Op38	Op39	Op40	Op41	Op42	Op43	Op44	Op45	Op46	Op47	Op48	Op49	Op50	Op51	Op52	Op53	Op54	Op55	Op56	Op57	Op58	Op59	Op60	Op61	Op62	Op63	Op64	Op65	Op66	Op67	Op68	Op69	Op70	Op71	Op72	Op73	Op74	Op75	Op76	Op77	Op78	Op79	Op80	Op81	Op82	Op83	Op84	Op85	Op86	Op87	Op88	Op89	Op90	Op91	Op92	Op93	Op94	Op95	Op96	Op97	Op98	Op99	Op100	Op101	Op102	Op103	Op104	Op105	Op106	Op107	Op108	Op109	Op110	Op111	Op112	Op113	Op114	Op115	Op116	Op117	Op118	Op119	Op120	Op121	Op122	Op123	Op124	Op125	Op126	Op127	Op128	Op129	Op130	Op131	Op132	Op133	Op134	Op135	Op136	Op137	Op138	Op139	Op140	Op141	Op142	Op143	Op144	Op145	Op146	Op147	Op148	Op149	Op150	Op151	Op152	Op153	Op154	Op155	Op156	Op157	Op158	Op159	Op160	Op161	Op162	Op163	Op164	Op165	Op166	Op167	Op168	Op169	Op170	Op171	Op172	Op173	Op174	Op175	Op176	Op177	Op178	Op179	Op180	Op181	Op182	Op183	Op184	Op185	Op186	Op187	Op188	Op189	Op190	Op191	Op192	Op193	Op194	Op195	Op196	Op197	Op198	Op199	Op200	Op201	Op202	Op203	Op204	Op205	Op206	Op207	Op208	Op209	Op210	Op211	Op212	Op213	Op214	Op215	Op216	Op217	Op218	Op219	Op220	Op221	Op222	Op223	Op224	Op225	Op226	Op227	Op228	Op229	Op230	Op231	Op232	Op233	Op234	Op235	Op236	Op237	Op238	Op239	Op240	Op241	Op242	Op243	Op244	Op245	Op246	Op247	Op248	Op249	Op250	Op251	Op252	Op253	Op254	Op255	Op256	Op257	Op258	Op259	Op260	Op261	Op262	Op263	Op264	Op265	Op266	Op267	Op268	Op269	Op270	Op271	Op272	Op273	Op274	Op275	Op276	Op277	Op278	Op279	Op280	Op281	Op282	Op283	Op284	Op285	Op286	Op287	Op288	Op289	Op290	Op291	Op292	Op293	Op294	Op295	Op296	Op297	Op298	Op299	Op300	Op301	Op302	Op303	Op304	Op305	Op306	Op307	Op308	Op309	Op310	Op311	Op312	Op313	Op314	Op315	Op316	Op317	Op318	Op319	Op320	Op321	Op322	Op323	Op324	Op325	Op326	Op327	Op328	Op329	Op330	Op331	Op332	Op333	Op334	Op335	Op336	Op337	Op338	Op339	Op340	Op341	Op342	Op343	Op344	Op345	Op346	Op347	Op348	Op349	Op350	Op351	Op352	Op353	Op354	Op355	Op356	Op357	Op358	Op359	Op360	Op361	Op362	Op363	Op364	Op365	Op366	Op367	Op368	Op369	Op370	Op371	Op372	Op373	Op374	Op375	Op376	Op377	Op378	Op379	Op380	Op381	Op382	Op383	Op384	Op385	Op386	Op387	Op388	Op389	Op390	Op391	Op392	Op393	Op394	Op395	Op396	Op397	Op398	Op399	Op400	Op401	Op402	Op403	Op404	Op405	Op406	Op407	Op408	Op409	Op410	Op411	Op412	Op413	Op414	Op415	Op416	Op417	Op418
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MASSBUS RH70 AND RH11 DIAGNOSTIC MACY11 27(732) 01-OCT-76 09:03 PAGE 84
 C2RHBC.P11 T37 DOUBLE TEST WITH 2 WORD TRANSFER AND BAI SET

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4325 026406 017737 154746 003416 87$: MOV 2RHBAE,BAE ;SAVE BUS ADDRESS EXTENSION
4326 026414 017737 154742 003424 MOV 2RHCS3,CS3 ;SAVE RHCS3
4327 026422 017737 154712 003422 86$: MOV 2RHCS2,CS2 ;SAVE CS2
4328 026430 017737 154706 003432 MOV 2RHST,DS1 ;SAVE TESTER STATUS
4329 026436 017737 154702 003436 MOV 2RHER,ER1 ;SAVE ERROR REGISTER
4330 026444 017737 154700 003442 MOV 2RHTDB,TDR ;SAVE TESTER DATA REG.
4331 026452 017737 154660 003440 MOV 2RHMR2,TC ;SAVE MR2 TESTER REG.
4332 026460 032777 000200 154642 BIT 2RDY,2RHCS1 ;IS READY SET
4333 026466 001003 BNE 1$ ;RDY SET CONT. TEST
4334 026470 104102 ERROR 102 ;READY DID NOT SET
4335 026472 004737 007234 JSR R7,WHYFO ;ANY ERRORS SET
4336 026476 032777 002000 154656 1$: BIT 2DBL,2RHCS3 ;IS DOUBLE SET
4337 026504 001403 BEQ 2$ ;DBL SET
4338 026506 104153 ERROR 153 ;DBL DID SET ON A 2 WORD TRANSFER
4339 026510 004737 007234 JSR R7,WHYFO ;TELL WHY NOT
4340 026514 004737 006602 JSR R7,CLEER ;CLEAR ERRORS
4341 026520 004737 050130 JSR R7,ERRTST
4342 *****
4343 :*TEST 40 DBL TEST 2 WORD TRANSFER WITH BAI AND WRITE REV
4344 :*THESE TEST CHECK DBL IN RHCS3 WITH READ FWD AND REV
4345 :*WRITE FWD AND REV AND WITH BAI SET IN RHCS2
4346 :*OPERATION BEING PERFORMED WILL BE PRINTED OUT
4347 :*IN ERROR MESSAGE.
4348 :*.....RH70 ONLY.....
4349 *****
4350 026524 000004 TST40: SCOPE
4351 026526 005701 TST R1 ;IS IN AN RH11
4352 026530 100532 BMI TST41 ;;GET OUT OF TEST
4353 026532 012777 177776 154572 MOV 2-2,2RHWC ;SET UP WC FOR TWO WORD
4354 026540 012777 004000 154566 MOV 2EVENAD,2RHBA ;SETUP BUS ADDRESS
4355 026546 012777 000000 154604 MOV 2ZERO,2RHBAE ;SETUP BUS ADDRESS EXTENSION
4356 026554 012777 000017 154556 MOV 27!BAI,2RHCS2 ;DEVICE 7
4357 026562 012777 000067 154540 MOV 2WRITE6,2RHCS1 ;TELL IT TO WRITE6
4358 026570 005037 003446 CLR BITCNT ;CLEAR BIT COUNTER
4359 026574 032777 000200 154526 18$: BIT 2RDY,2RHCS1 ;IS RDY SET
4360 026602 001015 BNE 3$ ;BIT IS SET
4361 026604 005237 003446 INC BITCNT ;COUNT UP
4362 026610 001371 BNE 18$ ;NOT FINISHED COUNTING
4363 026612 005037 003446 CLR BITCNT ;GET READY TO DO IT AGAIN
4364 026616 032777 000200 154504 19$: BIT 2RDY,2RHCS1 ;IS IT SET YET?
4365 026624 001004 BNE 3$ ;YES
4366 026626 005237 003446 INC BITCNT ;COUNT UP
4367 026632 001401 BEQ 3$ ;BIT IS NOT GOING TO SET
4368 026634 000770 BR 19$
4369 026636 3$:
4370 026636 017737 154466 003420 MOV 2RHCS1,CS1 ;SAVE RHCS1
4371 026644 017737 154462 003444 MOV 2RHWC,WC ;SAVE WORD COUNT
4372 026652 017737 154456 003414 MOV 2RHBA,BA ;SAVE BUS ADDRESS
4373 026660 005701 TST R1 ;IS IT AN RH11
4374 026662 001406 BEQ 87$ ;NO IT'S A 70
4375 026664 005037 003416 CLR BAE ;CLEAR BAE
4376 026670 005037 003424 CLR CS3 ;CLEAR CS3
4377 026674 000137 026714 JMP 86$ ;CONTINUE
4378 026700 017737 154454 003416 87$: MOV 2RHBAE,BAE ;SAVE BUS ADDRESS EXTENSION
4379 026706 017737 154450 003424 86$: MOV 2RHCS3,CS3 ;SAVE RHCS3
4380 026714 017737 154420 003422 MOV 2RHCS2,CS2 ;SAVE CS2

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MASSBUS RH70 AND RH11 DIAGNOSTIC MACY11 27.732) 01-OCT-76 09:03 PAGE 85
 DZRHBC.P11 T40 DBL TEST 2 WORD TRANSFER WITH BAI AND WRITE REV

4381	026722	017737	154414	003432	MOV	DRHST,DS1	:SAVE TESTER STATUS
4382	026730	017737	154410	003436	MOV	DRHER,ERI	:SAVE ERROR REGISTER
4383	026736	017737	154406	003442	MOV	DRHTOB,TCR	:SAVE TESTER DATA REG.
4384	026744	017737	154366	003440	MOV	DRHMR2,TC	:SAVE MR2 TESTER REG.
4385	026752	032777	000200	154350	BIT	RDY,DRHCS1	:IS READY SET
4386	026760	001003			BNE	15	:RDY SET CONT. TEST
4387	026762	104102			ERROR	102	:READY DID NOT SET
4388	026764	004737	007234		JSR	R7,WHYFO	:ANY ERRORS SET
4389	026770	032777	002000	154364	BIT	DBL,DRHCS3	:IS DOUBLE SET
4390	026776	001403			BEQ	25	:DBL SET
4391	027000	104155			ERROR	155	:DBL DID SET ON A 2 WORD TRANSFER
4392	027002	004737	007234		JSR	R7,WHYFO	:TELL WHY NOT
4393	027006	004737	006602		JSR	R7,CLEER	:CLEAR ERRORS
4394	027012	004737	050130		JSR	R7,ERRST	
4395					:*****		
4396					:TEST 41 DBL TEST 2 WORD TRANSFER ODD ADD.		
4397					:THESE TEST CHECK DBL IN RHCS3 WITHREAD FWD AND REV		
4398					:WRITE FWD AND REV AND WITH BAI SET IN RHCS2		
4399					:OPERATION BEING PERFORMED WILL BE PRINTED OUT		
4400					:IN ERROR MESSAGE.		
4401					:*****RH70 ONLY*****		
4402					:*****		
4403	027016	000004			TST41: SCOPE		
4404	027020	005701			TST	R1	:IS IN AN RH11
4405	027022	100532			BMI	TST42	:;GET OUT OF TEST
4406	027024	012777	177776	154300	MOV	#-2,DRHWC	:SET UP WC FOR TWO WORD
4407	027032	012777	004002	154274	MOV	#ODDAD,DRHBA	:SETUP BUS ADDRESS
4408	027040	012777	000C00	154312	MOV	#ZERO,DRHBAE	:SETUP BUS ADDRESS EXTENSION
4409	027046	012777	000007	154264	MOV	#7,DRHCS2	:DEVICE 7
4410	027054	012777	000061	154246	MOV	#WRITED,DRHCS1	:TELL IT TO WRITED
4411	027062	005037	003446		CLR	BITCNT	:CLEAR BIT COUNTER
4412	027066	032777	000200	154234	BIT	RDY,DRHCS1	:IS RDY SET
4413	027074	001015			BNE	35	:BIT IS SET
4414	027076	005237	003446		INC	BITCNT	:COUNT UP
4415	027102	001371			BNE	185	:NOT FINISHED COUNTING
4416	027104	005037	003446		CLR	BITCNT	:GET READY TO DO IT AGAIN
4417	027110	032777	000200	154212	BIT	RDY,DRHCS1	:IS IT SET YET?
4418	027116	001004			BNE	35	:YES
4419	027120	005237	003446		INC	BITCNT	:COUNT UP
4420	027124	001401			BEQ	35	:BIT IS NOT GOING TO SET
4421	027126	000770			BR	195	
4422	027130				35:		
4423	027130	017737	154174	003420	MOV	DRHCS1,CS1	:SAVE RHCS1
4424	027136	017737	154170	003444	MOV	DRHWC,WC	:SAVE WORD COUNT
4425	027144	017737	154164	003414	MOV	DRHBA,BA	:SAVE BUS ADDRESS
4426	027152	005701			TST	R1	:IS IT AN RH11
4427	027154	001406			BEQ	875	:NO IT'S A 70
4428	027156	005037	003416		CLR	BAE	:CLEAR BAE
4429	027162	005037	003424		CLR	CS3	:CLEAR CS3
4430	027166	000137	027206		JMP	865	:CONTINUE
4431	027172	017737	154162	003416	MOV	DRHBAE,BAE	:SAVE BUS ADDRESS EXTENSION
4432	027200	017737	154156	003424	MOV	DRHCS3,CS3	:SAVE RHCS3
4433	027206	017737	154126	003422	MOV	DRHCS2,CS2	:SAVE CS2
4434	027214	017737	154122	003432	MOV	DRHST,DS1	:SAVE TESTER STATUS
4435	027222	017737	154116	003436	MOV	DRHER,ERI	:SAVE ERROR REGISTER
4436	027230	017737	154114	003442	MOV	DRHTOB,TCR	:SAVE TESTER DATA REG.

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MASSBUS RH70 AND RH11: DIAGNOSTIC MACY11 27(732) 01-OCT-76 09:03 PAGE 86
 02RHBC.P11 T41 DBL TEST 2 WORD TRANSFER ODD ADD.

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4437 027236 017737 154074 003440      MOV      02RHMR2,TC      :SAVE MR2 TESTER REG.
4438 027244 032777 000200 154056      BIT      #RDY,02RHCS1  :IS READY SET
4439 027252 001003          BNE      15      :RDY SET CONT. TEST
4440 027254 104102          ERROR    102      :READY DID NOT SET
4441 027256 004737 007234          JSR      R7,WHYFO      :ANY ERRORS SET
4442 027262 032777 002000 154072 15:   BIT      #DBL,02RHCS3  :IS DOUBLE SET
4443 027270 001403          BEQ      25      :DBL SET
4444 027272 104156          ERROR    156      :DBL DID SET ON A 2 WORD TRANSFER
4445 027274 004737 007234          JSR      R7,WHYFO      :TELL WHY NOT
4446 027300 004737 006602 25:         JSR      R7,CLEER      :CLEAR ERRORS
4447 027304 004737 050130          JSR      R7,ERRTST
4448
4449      ;*****
4450      ;*TEST 42 DBL TEST EVEN ADD. WRITE FWD
4451      ;*THESE TEST CHECK DBL IN RHCS3 WITHREAD FWD AND REV
4452      ;*WRITE FWD AND REV AND WITH BAI SET IN RHCS2
4453      ;*OPERATION BEING PERFORMED WILL BE PRINTED OUT
4454      ;*IN ERROR MESSAGE.
4455      ;*.....RH70 ONLY.....
4456      ;*****
4457      ;ST42: SCOPE
4458      TST      R1      :IS IN AN RH11
4459      BMI      TST43      ;:GET OUT OF TEST
4460      MOV      #-2,02RHWC      :SET UP WC FOR TWO WORD
4461      MOV      #EVENAD,02RHBA      :SETUP BUS ADDRESS
4462      MOV      #ZERO,02RHBAE      :SETUP BUS ADDRESS EXTENSION
4463      MOV      #7,02RHCS2      :DEVICE 7
4464      MOV      #WRITE6,02RHCS1      :TELL IT TO WRITE6
4465      CLR      BITCNT      :CLEAR BIT COUNTER
4466      BIT      #RDY,02RHCS1      :IS RDY SET
4467      BNE      35      :BIT IS SET
4468      INC      BITCNT      :COUNT UP
4469      BNE      185      :NOT FINISHED COUNTING
4470      CLR      BITCNT      :GET READY TO DO IT AGAIN
4471      BIT      #RDY,02RHCS1      :IS IT SET YET?
4472      BNE      35      :YES
4473      INC      BITCNT      :COUNT UP
4474      BEQ      35      :BIT IS NOT GOING TO SET
4475      BR      195
4476      35:      MOV      02RHCS1,CS1      :SAVE RHCS1
4477      MOV      02RHWC,WC      :SAVE WORD COUNT
4478      MOV      02RHBA,BA      :SAVE BUS ADDRESS
4479      TST      R1      :IS IT AN RH11
4480      BEQ      875      :NO IT'S A 70
4481      CLR      BAE      :CLEAR BAE
4482      CLR      CS3      :CLEAR CS3
4483      JMP      865      :CONTINUE
4484      875:      MOV      02RHBAE,BAE      :SAVE BUS ADDRESS EXTENSION
4485      MOV      02RHCS3,CS3      :SAVE RHCS3
4486      865:      MOV      02RHCS2,CS2      :SAVE CS2
4487      MOV      02RHST,DS1      :SAVE TESTER STATUS
4488      MOV      02RHER,ER1      :SAVE ERROR REGISTER
4489      MOV      02RH7DB,TDR      :SAVE TESTER DATA REG.
4490      MOV      02RHMR2,TC      :SAVE MR2 TESTER REG.
4491      BIT      #RDY,02RHCS1      :IS READY SET
4492      BNE      15      :RDY SET CONT. TEST

```

MASSBUS RH70 AND RH11 DIAGNOSTIC MACY11 27(732) 01-OCT-76 09:03 PAGE 87
 DZRHBC.P11 T42 DBL TEST EVEN ADD. WRITE FWD

```

4493 027546 104102          ERROR 102          ;READY DID NOT SET
4494 027550 004737 007234    JSR      R7,WHYFO    ;ANY ERRORS SET
4495 027554 032777 002000 153600 1$:  BIT      #DBL,DRHCS3 ;IS DOUBLE SET
4496 027562 001403          BEQ      2$          ;DBL SET
4497 027564 104157          ERROR 157          ;DBL DID SET ON A 2 WORD TRANSFER
4498 027566 004737 007234    JSR      R7,WHYFO    ;TELL WHY NOT
4499 027572 004737 006602    JSR      R7,CLEER    ;CLEAR ERRORS
4500 027576 004737 050130    JSR      R7,ERRTST
4501                                     ;*****
4502                                     ;*TEST 43 DBL TEST 2 WORD ODD ADD. WRITE REV
4503                                     ;*THESE TEST CHECK DBL IN RHCS3 WITHREAD FWD AND REV
4504                                     ;*WRITE FWD AND REV AND WITH BAI SET IN RHCS2
4505                                     ;*OPERATION BEING PREFORMED WILL BE PRINTED OUT
4506                                     ;*IN ERROR MESSAGE.
4507                                     ;*.....RH70 ONLY.....
4508                                     ;*****
4509 027602 000004          TST43: SCOPE
4510 027604 005701          TST      R1
4511 027606 100532          BMI      TST44          ;;GET OUT OF TEST
4512 027610 012777 177776 153514    MOV      #-2,DRHWC          ;SET UP WC FOR TWO WORD
4513 027616 012777 004002 153510    MOV      #ODDAD,DRHBA          ;SETUP BUS ADDRESS
4514 027624 012777 000000 153526    MOV      #ZERO,DRHBAE          ;SETUP BUS ADDRESS EXTENSION
4515 027632 012777 000007 153500    MOV      #7,DRHCS2          ;DEVICE 7
4516 027640 012777 000067 153462    MOV      #WRITE6,DRHCS1          ;TELL IT TO WRITE6
4517 027646 005037 003446          CLR      BITCNT          ;CLEAR BIT COUNTER
4518 027652 032777 000200 153450 18$: BIT      #RDY,DRHCS1          ;IS RDY SET
4519 027660 001015          BNE      3$          ;BIT IS SET
4520 027662 005237 003446          INC      BITCNT          ;COUNT UP
4521 027666 001371          BNE      18$          ;NOT FINISHED COUNTING
4522 027670 005037 003446          CLR      BITCNT          ;GET READY TO DO IT AGAIN
4523 027674 032777 000200 153426 19$: BIT      #RDY,DRHCS1          ;IS IT SET YET?
4524 027702 001004          BNE      3$          ;YES
4525 027704 005237 003446          INC      BITCNT          ;COUNT UP
4526 027710 001401          BEQ      3$          ;BIT IS NOT GOING TO SET
4527 027712 000770          BR       19$
4528 027714          3$:
4529 027714 017737 153410 003420    MOV      DRHCS1,CS1          ;SAVE RHCS1
4530 027722 017737 153404 003444    MOV      DRHWC,WC          ;SAVE WORD COUNT
4531 027730 017737 153400 003414    MOV      DRHBA,BA          ;SAVE BUS ADDRESS
4532 027736 005701          TST      R1
4533 027740 001406          BEQ      87$          ;IS IT AN RH11
4534 027742 005037 003416          CLR      BAE          ;NO IT'S A 70
4535 027746 005037 003424          CLR      CS3          ;CLEAR BAE
4536 027752 000137 027772          JMP      86$          ;CLEAR CS3
4537 027756 017737 153376 003416 87$: MOV      DRHBAE,BAE          ;CONTINUE
4538 027764 017737 153372 003424    MOV      DRHCS3,CS3          ;SAVE BUS ADDRESS EXTENSION
4539 027772 017737 153342 003422 86$: MOV      DRHCS2,CS2          ;SAVE RHCS3
4540 030000 017737 153336 003432    MOV      DRHST,DS1          ;SAVE CS2
4541 030006 017737 153332 003436    MOV      DRHER,ER1          ;SAVE TESTER STATUS
4542 030014 017737 153330 003442    MOV      DRHTDB,TDR          ;SAVE ERROR REGISTER
4543 030022 017737 153310 003440    MOV      DRHMR2,TC          ;SAVE TESTER DATA REG.
4544 030030 032777 000200 153272    BIT      #RDY,DRHCS1          ;SAVE MR2 TESTER REG.
4545 030036 001003          BNE      1$          ;IS READY SET
4546 030040 104102          ERROR 102          ;RDY SET CONT. TEST
4547 030042 004737 007234    JSR      R7,WHYFO    ;READY DID NOT SET
4548 030046 032777 002000 153306 1$: BIT      #DBL,DRHCS3 ;ANY ERRORS SET
                                     ;IS DOUBLE SET

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J07

MASSBUS RH70 AND RH11 DIAGNOSTIC
CZRHBC.P11

MACY11 27(732) 01-OCT-76 09:03 PAGE 88
DBL TEST 2 WORD ODD ADD. WRITE REV

```

4549 030054 001303 BNE 2$ ;DBL SET
4550 030056 104160 ERROR 160 ;DBL DIDN'T SET ON A 2 WORD TRANSFER
4551 030060 004737 007234 JSR R7,WHYFO ;TELL WHY NOT
4552 030064 004737 006602 2$: JSR R7,CLEER ;CLEAR ERRORS
4553 030070 004737 050130 JSR R7,ERRST
4554
4555 ;*****
4556 ;*TEST 44 DBL TEST 3 WORD ODD ADD. WRITE REV
4557 ;*THESE TEST CHECK DBL IN RHCS3 WITHREAD FWD AND REV
4558 ;*WRITE FWD AND REV AND WITH BAI SET IN RHCS2
4559 ;*OPERATION BEING PERFORMED WILL BE PRINTED OUT
4560 ;*IN ERROR MESSAGE.
4561 ;*.....RH70 ONLY.....
4562 ;*****
4563 030074 000004 TST44: SCOPE
4564 030076 005701 TST R1 ;IS IN AN RH11
4565 030100 100532 BMI TST45 ;;GET OUT OF TEST
4566 030102 012777 177775 153222 MOV #-3,ARHWC ;SET UP WC FOR THREE WORD
4567 030110 012777 004002 153216 MOV #000AD,ARHBA ;SETUP BUS ADDRESS
4568 030116 012777 000000 153234 MOV #ZERO,ARHBAE ;SETUP BUS ADDRESS EXTENSION
4569 030124 012777 000007 153206 MOV #7,ARHCS2 ;DEVICE 7
4570 030132 012777 000067 153170 MOV #WRITE6,ARHCS1 ;TELL IT TO WRITE6
4571 030140 005037 003446 CLR BITCNT ;CLEAR BIT COUNTER
4572 030144 032777 000200 153156 18$: BIT #RDY,ARHCS1 ;IS RDY SET
4573 030152 001015 BNE 3$ ;BIT IS SET
4574 030154 005237 003446 INC BITCNT ;COUNT UP
4575 030160 001371 BNE 18$ ;NOT FINISHED COUNTING
4576 030162 005037 003446 CLR BITCNT ;GET READY TO DO IT AGAIN
4577 030166 032777 000200 153134 19$: BIT #RDY,ARHCS1 ;IS IT SET YET?
4578 030174 001004 BNE 3$ ;YES
4579 030176 005237 003446 INC BITCNT ;COUNT UP
4580 030202 001401 BEQ 3$ ;BIT IS NOT GOING TO SET
4581 030204 000770 BR 19$
4582 030206 017737 153116 003420 3$: MOV ARHCS1,CS1 ;SAVE RHCS1
4583 030214 017737 153112 003444 MOV ARHWC,WC ;SAVE WORD COUNT
4584 030222 017737 153106 003414 MOV ARHBA,BA ;SAVE BUS ADDRESS
4585 030230 005701 TST R1 ;IS IT AN RH11
4586 030232 001406 BEQ 87$ ;NO IT'S A 70
4587 030234 005037 003416 CLR BAE ;CLEAR BAE
4588 030240 005037 003424 CLR CS3 ;CLEAR CS3
4589 030244 000137 030264 JMP 86$ ;CONTINUE
4590 030250 017737 153104 003416 87$: MOV ARHBAE,BAE ;SAVE BUS ADDRESS EXTENSION
4591 030256 017737 153100 003424 MOV ARHCS3,CS3 ;SAVE RHCS3
4592 030264 017737 153050 003422 86$: MOV ARHCS2,CS2 ;SAVE CS2
4593 030272 017737 153044 003432 MOV ARHST,DS1 ;SAVE TESTER STATUS
4594 030280 017737 153040 003436 MOV ARHER,ER1 ;SAVE ERROR REGISTER
4595 030306 017737 153036 003442 MOV ARHTDB,TDR ;SAVE TESTER DATA REG.
4596 030314 017737 153016 003440 MOV ARHMR2,TC ;SAVE MR2 TESTER REG.
4597 030322 032777 000200 153000 BIT #RDY,ARHCS1 ;IS READY SET
4598 030330 001003 BNE 1$ ;RDY SET CONT. TEST
4599 030332 104102 ERROR 102 ;READY DID NOT SET
4600 030334 004737 007234 JSR R7,WHYFO ;ANY ERRORS SET
4601 030340 032777 002000 153014 1$: BIT #DBL,ARHCS3 ;IS DOUBLE SET
4602 030346 001403 BEQ 2$ ;DBL SET
4603 030350 104161 ERROR 161 ;DBL DID SET ON A 3 WORD TRANSFER
4604 030352 004737 007234 JSR R7,WHYFO ;TELL WHY NOT

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K07

MASSBUS RH70 AND RH11 DIAGNOSTIC
DZRHBC.P11 T44 DBL TEST 3 WORDMACY11 27(732) 01-OCT-76 09:03 PAGE 89
ODD ADD. WRITE REV

```

4605 030356 004737 006602 2$: JSR R7,CLEER ;CLEAR ERRORS
4606 030362 004737 050130 JSR R7,ERRTST
4607 ;*****
4608 ;:TEST 45 DBL TEST 2 WORD READ FWD
4609 ;:THESE TEST CHECK DBL IN RHCS3 WITHREAD FWD AND REV
4610 ;:WRITE FWD AND REV AND WITH BAI SET IN RHCS2
4611 ;:OPERATION BEING PREFORMED WILL BE PRINTED OUT
4612 ;:IN ERROR MESSAGE.
4613 ;:.....RH70 ONLY.....
4614 ;*****
4615 030366 000004 t$T45: SCOPE
4616 030370 005701 TST R1 ;IS IN AN RH11
4617 030372 100532 BMI TST46 ;;GET OUT OF TEST
4618 030374 012777 177776 152730 MOV #-2,ARHWC ;SET UP WC FOR TWO WORD
4619 030402 012777 004000 152724 MOV #EVENAD,ARHBA ;SETUP BUS ADDRESS
4620 030410 012777 000000 152742 MOV #ZERO,ARHBAE ;SETUP BUS ADDRESS EXTENSION
4621 030416 012777 000007 152714 MOV #7,ARHCS2 ;DEVICE 7
4622 030424 012777 000071 152676 MOV #READO,ARHCS1 ;TELL IT TO READO
4623 030432 005037 003446 CLR BITCNT ;CLEAR BIT COUNTER
4624 030436 032777 000200 152664 18$: BIT #RDY,ARHCS1 ;IS RDY SET
4625 030444 001015 BNE 3$ ;BIT IS SET
4626 030446 005237 003446 INC BITCNT ;COUNT UP
4627 030452 001371 BNE 18$ ;NOT FINISHED COUNTING
4628 030454 005037 003446 CLR BITCNT ;GET READY TO DO IT AGAIN
4629 030460 032777 000200 152642 19$: BIT #RDY,ARHCS1 ;IS IT SET YET?
4630 030466 001004 BNE 3$ ;YES
4631 030470 005237 003446 INC BITCNT ;COUNT UP
4632 030474 001401 BEQ 3$ ;BIT IS NOT GOING TO SET
4633 030476 000770 BR 19$
4634 030500 3$:
4635 030500 017737 152624 003420 MOV ARHCS1,CS1 ;SAVE RHCS1
4636 030506 017737 152620 003444 MOV ARHWC,WC ;SAVE WORD COUNT
4637 030514 017737 152614 003414 MOV ARHBA,BA ;SAVE BUS ADDRESS
4638 030522 005701 TST R1 ;IS IT AN RH11
4639 030524 001406 BEQ 87$ ;NO IT'S A 70
4640 030526 005037 003416 CLR BAE ;CLEAR BAE
4641 030532 005037 003424 CLR CS3 ;CLEAR CS3
4642 030536 000137 030556 JMP 95$ ;CONTINUE
4643 030542 017737 152612 003416 87$: MOV ARHBAE,BAE ;SAVE BUS ADDRESS EXTENSION
4644 030550 017737 152606 003424 MOV ARHCS3,CS3 ;SAVE RHCS3
4645 030556 017737 152556 003422 86$: MOV ARHCS2,CS2 ;SAVE CS2
4646 030564 017737 152552 003432 MOV ARHST,DS1 ;SAVE TESTER STATUS
4647 030572 017737 152546 003436 MOV ARHER,ER1 ;SAVE ERROR REGISTER
4648 030600 017737 152544 003442 MOV ARHTDB,TDR ;SAVE TESTER DATA REG.
4649 030606 017737 152524 003440 MOV ARHMR2,TC ;SAVE MR2 TESTER REG.
4650 030614 032777 000200 152506 BIT #RDY,ARHCS1 ;IS READY SET
4651 030622 001003 BNE 1$ ;RDY SET CONT. TEST
4652 030624 104102 ERROR 102 ;READY DID NOT SET
4653 030626 004737 007234 JSR R7,WHYFO ;ANY ERRORS SET
4654 030632 032777 002000 152522 1$: BIT #DBL,ARHCS3 ;IS DOUBLE SET
4655 030640 001003 BNE 2$ ;DBL SET
4656 030642 104162 ERROR 162 ;DBL DIDN'T SET ON A 2 WORD TRANSFER
4657 030644 004737 007234 JSR R7,WHYFO ;TELL WHY NOT
4658 030650 004737 006602 2$: JSR R7,CLEER ;CLEAR ERRORS
4659 030654 004737 050130 JSR R7,ERRTST
4660 ;*****

```

L07

MASSBUS RH70 AND RH11 DIAGNOSTIC
DZRHBC.P11 T46 DBL TEST 2 WORD

MACY11 27(732) 01-OCT-76 09:03 PAGE 90
ODD ADD. READ FWD

```

4661
4662
4663
4664
4665
4666
4667
4668 030660 000004
4669 030562 005701
4670 030664 100532
4671 030666 012777 177776 152436
4672 030674 012777 004002 152432
4673 030702 012777 000000 152450
4674 030710 012777 000007 152422
4675 030716 012777 000071 152404
4676 030724 005037 003446
4677 030730 032777 000200 152372 18$:
4678 030736 001015
4679 030740 005237 003446
4680 030744 001371
4681 030746 005037 003446
4682 030752 032777 000200 152350 19$:
4683 030760 001004
4684 030762 005237 003446
4685 030766 001401
4686 030770 000770
4687 030772
4688 030772 017737 152332 003420
4689 031000 017737 152326 003444
4690 031006 017737 152322 003414
4691 031014 005701
4692 031016 001406
4693 031020 005037 003416
4694 031024 005037 003424
4695 031030 000137 031050
4696 031034 017737 152320 003416 87$:
4697 031042 017737 152314 003424
4698 031050 017737 152264 003422 86$:
4699 031056 017737 152260 003432
4700 031064 017737 152254 003436
4701 031072 017737 152252 003442
4702 031100 017737 152232 003440
4703 031106 032777 000200 152214
4704 031114 001003
4705 031116 104102
4706 031120 004737 007234
4707 031124 032777 002000 152230 1$:
4708 031132 001403
4709 031134 104163
4710 031136 004737 007234
4711 031142 004737 006602
4712 031146 004737 050130
4713
4714
4715
4716

; *TEST 46 DBL TEST 2 WORD ODD ADD. READ FWD
; *THESE TEST CHECK DBL IN RHCS3 WITHREAD FWD AND REV
; *WRITE FWD AND REV AND WITH BAI SET IN RHCS2
; *OPERATION BEING PERFORMED WILL BE PRINTED OUT
; *IN ERROR MESSAGE.
; *.....RH70 ONLY.....
; *****
; ST46: SCOPE
; TEST R1 IS IN AN RH11
; BMI TST47 ;; GET OUT OF TEST
; MOV #-2, ARHWC ; SET UP WC FOR TWO WORD
; MOV #ODDAD, ARHBA ; SETUP BUS ADDRESS
; MOV #ZERO, ARHBAE ; SETUP BUS ADDRESS EXTENSION
; MOV #7, ARHCS2 ; DEVICE 7
; MOV #READO, ARHCS1 ; TELL IT TO READO
; CLR BITCNT ; CLEAR BIT COUNTER
; BIT #RDY, ARHCS1 ; 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, ARHCS1 ; IS IT SET YET?
; BNE 3$ ; YES
; INC BITCNT ; COUNT UP
; BEQ 3$ ; BIT IS NOT GOING TO SET
; BR 19$

3$:
; MOV ARHCS1, CS1 ; SAVE RHCS1
; MOV ARHWC, WC ; SAVE WORD COUNT
; MOV ARHBA, BA ; SAVE BUS ADDRESS
; TST R1 ; IS IT AN RH11
; BEQ 87$ ; NO IT'S A 70
; CLR BAE ; CLEAR BAE
; CLR CS3 ; CLEAR CS3
; JMP 86$ ; CONTINUE
87$:
; MOV ARHBAE, BAE ; SAVE BUS ADDRESS EXTENSION
; MOV ARHCS3, CS3 ; SAVE RHCS3
86$:
; MOV ARHCS2, CS2 ; SAVE CS2
; MOV ARHST, DS1 ; SAVE TESTER STATUS
; MOV ARHER, ER1 ; SAVE ERROR REGISTER
; MOV ARHTDB, TOR ; SAVE TESTER DATA REG.
; MOV ARHMR2, TC ; SAVE MR2 TESTER REG.
; BIT #RDY, ARHCS1 ; IS READY SET
; BNE 1$ ; RDY SET CONT. TEST
; ERROR 102 ; READY DID NOT SET
; JSR R7, WHYFO ; ANY ERRORS SET
; BIT #DBL, ARHCS3 ; IS DOUBLE SET
; BEQ 2$ ; DBL SET
; ERROR 163 ; DBL DID SET ON A 2 WORD TRANSFER
; JSR R7, WHYFO ; TELL WHY NOT
; JSR R7, CLEAR ; CLEAR ERRORS
; JSR R7, ERRTST

; *****
; *TEST 47 DBL TEST 2 WORD EVEN ADD. READ REV
; *THESE TEST CHECK DBL IN RHCS3 WITHREAD FWD AND REV
; *WRITE FWD AND REV AND WITH BAI SET IN RHCS2

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4717 ;*OPERATION BEING PREFORMED WILL BE PRINTED OUT
4718 ;*IN ERROR MESSAGE.
4719 ;*.....RH70 ONLY.....
4720 ;*****
4721 031152 000004 TST47: SCOPE
4722 031154 005701 TST R1 ;IS IN AN RH11
4723 031156 100532 BMI TST50 ;;GET OUT OF TEST
4724 031160 012777 177776 152144 MOV #-2,ARHWC ;SET UP WC FOR TWO WORD
4725 031166 012777 004000 152140 MOV #EVENAD,ARHBA ;SETUP BUS ADDRESS
4726 031174 012777 000000 152156 MOV #ZERO,ARHBAE ;SETUP BUS ADDRESS EXTENSION
4727 031202 012777 000007 152130 MOV #7,ARHCS2 ;DEVICE 7
4728 031210 012777 000077 152112 MOV #READ6,ARHCS1 ;TELL IT TO READ6
4729 031216 005037 003446 CLR BITCNT ;CLEAR BIT COUNTER
4730 031222 032777 000200 152100 18$: BIT #RDY,ARHCS1 ;IS RDY SET
4731 031230 001015 BNE 3$ ;BIT IS SET
4732 031232 005237 003446 INC BITCNT ;COUNT UP
4733 031236 001371 BNE 18$ ;NOT FINISHED COUNTING
4734 031240 005037 003446 CLR BITCNT ;GET READY TO DO IT AGAIN
4735 031244 032777 000200 152056 19$: BIT #RDY,ARHCS1 ;IS IT SET YET?
4736 031252 001004 BNE 3$ ;YES
4737 031254 005237 003446 INC BITCNT ;COUNT UP
4738 031260 001401 BEQ 3$ ;BIT IS NOT GOING TO SET
4739 031262 000770 BR 19$
4740 031264 3$:
4741 031264 017737 152040 003420 MOV ARHCS1,CS1 ;SAVE RHCS1
4742 031272 017737 152034 003444 MOV ARHWC,WC ;SAVE WORD COUNT
4743 031300 017737 152030 003414 MOV ARHBA,BA ;SAVE BUS ADDRESS
4744 031306 005701 TST R1 ;IS IT AN RH11
4745 031310 001406 BEQ 87$ ;NO IT'S A 70
4746 031312 005037 003416 CLR BAE ;CLEAR BAE
4747 031316 005037 003424 CLR CS3 ;CLEAR CS3
4748 031322 000137 031342 JMP 86$ ;CONTINUE
4749 031326 017737 152026 003416 87$: MOV ARHBAE,BAE ;SAVE BUS ADDRESS EXTENSION
4750 031334 017737 152022 003424 MOV ARHCS3,CS3 ;SAVE RHCS3
4751 031342 017737 151772 003422 86$: MOV ARHCS2,CS2 ;SAVE CS2
4752 031350 017737 151766 003432 MOV ARHST,DS1 ;SAVE TESTER STATUS
4753 031356 017737 151762 003436 MOV ARHER,ER1 ;SAVE ERROR REGISTER
4754 031364 017737 151760 003442 MOV ARHTD8,TDR ;SAVE TESTER DATA REG.
4755 031372 017737 151740 033440 MOV ARHMR2,TC ;SAVE MR2 TESTER REG.
4756 031400 032777 000200 151722 BIT #RDY,ARHCS1 ;IS READY SET
4757 031406 001003 BNE 1$ ;RDY SET CONT. TEST
4758 031410 104102 ERROR 102 ;READY DID NOT SET
4759 031412 004737 007234 JSR R7,WHYFO ;ANY ERRORS SET
4760 031416 032777 002000 151736 1$: BIT #DBL,ARHCS3 ;IS DOUBLE SET
4761 031424 001403 BEQ 2$ ;DBL SET
4762 031426 104164 ERROR 164 ;DBL DID SET ON A 2 WORD TRANSFER
4763 031430 004737 007234 JSR R7,WHYFO ;TELL WHY NOT
4764 031434 004737 006602 2$: JSR R7,CLEER ;CLEAR ERRORS
4765 031440 004737 050130 JSR R7,ERRTST
4766 ;*****
4767 ;*TEST 50 DBL TEST 2 WORD ODD ADD. READ REV
4768 ;*THESE TEST CHECK DBL IN RHCS3 WITHREAD FWD AND REV
4769 ;*WRITE FWD AND REV AND WITH BAI SET IN RHCS2
4770 ;*OPERATION BEING PREFORMED WILL BE PRINTED OUT
4771 ;*IN ERROR MESSAGE.
4772 ;*.....RH70 ONLY.....

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4773                                     ::*****
4774 031444 000004                                †T50: SCOPE
4775 031446 005701                                TST      R1                ;IS IN AN RH11
4776 031450 100532                                BMI      TST51                ;:GET OUT OF TEST
4777 031452 012777 177776 151652                MOV      #-2,ARHWC          ;SET UP WC FOR TWO WORD
4778 031460 012777 004002 151646                MOV      #ODDAD,ARHBA      ;SETUP BUS ADDRESS
4779 031466 012777 000000 151664                MOV      #ZERO,ARHBAE     ;SETUP BUS ADDRESS EXTENSION
4780 031474 012777 000007 151636                MOV      #7,ARHCS2        ;DEVICE 7
4781 031502 012777 000077 151620                MOV      #READ6,ARHCS1    ;TELL IT TO READ6
4782 031510 005037 003446                        CLR      BITCNT            ;CLEAR BIT COUNTER
4783 031514 032777 000200 151606 18$:          BIT      #RDY,ARHCS1    ;IS RDY SET
4784 031522 001015                        BNE      3$                ;BIT IS SET
4785 031524 005237 003446                        INC      BITCNT            ;COUNT UP
4786 031530 001371                        BNE      18$                ;NOT FINISHED COUNTING
4787 031532 005037 003446                        CLR      BITCNT            ;GET READY TO DO IT AGAIN
4788 031536 032777 000200 151564 19$:          BIT      #RDY,ARHCS1    ;IS IT SET YET?
4789 031544 001004                        BNE      3$                ;YES
4790 031546 005237 003446                        INC      BITCNT            ;COUNT UP
4791 031552 001401                        BEQ      3$                ;BIT IS NOT GOING TO SET
4792 031554 000770                        BR       19$
4793 031556                                3$:
4794 031556 017737 151546 003420                MOV      ARHCS1,CS1        ;SAVE RHCS1
4795 031564 017737 151542 003444                MOV      ARHWC,WC         ;SAVE WORD COUNT
4796 031572 017737 151536 003414                MOV      ARHBA,BA         ;SAVE BUS ADDRESS
4797 031600 005701                        TST      R1                ;IS IT AN RH11
4798 031602 001406                        BEQ      87$                ;NO IT'S A 70
4799 031604 005037 003416                        CLR      BAE                ;CLEAR BAE
4800 031610 005037 003424                        CLR      CS3                ;CLEAR CS3
4801 031614 000137 031634                        JMP      86$                ;CONTINUE
4802 031620 017737 151534 003416 87$:          MOV      ARHBAE,BAE        ;SAVE BUS ADDRESS EXTENSION
4803 031626 017737 151530 003424                MOV      ARHCS3,CS3        ;SAVE RHCS3
4804 031634 017737 151500 003422 86$:          MOV      ARHCS2,CS2        ;SAVE CS2
4805 031642 017737 151474 003432                MOV      ARHST,DS1        ;SAVE TESTER STATUS
4806 031650 017737 151470 003436                MOV      ARHER,ER1        ;SAVE ERROR REGISTER
4807 031656 017737 151466 003442                MOV      ARHTDB,TDR       ;SAVE TESTER DATA REG.
4808 031664 017737 151446 003440                MOV      ARHMR2,TC        ;SAVE MR2 TESTER REG.
4809 031672 032777 000200 151430                BIT      #RDY,ARHCS1      ;IS READY SET
4810 031700 001003                        BNE      1$                ;RDY SET CONT. TEST
4811 031702 104102                        ERROR    102            ;READY DID NOT SET
4812 031704 004737 007234                        JSR      R7,WHYFO          ;ANY ERRORS SET
4813 031710 032777 002000 151444 1$:          BIT      #DBL,ARHCS3        ;IS DOUBLE SET
4814 031716 001003                        BNE      2$                ;DBL SET
4815 031720 104165                        ERROR    165            ;DBL DIDN'T SET ON A 2 WORD TRANSFER
4816 031722 004737 007234                        JSR      R7,WHYFO          ;TELL WHY NOT
4817 031726 004737 006602 2$:                JSR      R7,CLEER          ;CLEAR ERRORS
4818 031732 004737 050130                        JSR      R7,ERRTST
4819                                     ::*****
4820                                     ;*TEST 51 DBL TEST 3 WORD EVEN ADD. READ FWD
4821                                     ;*THESE TEST CHECK DBL IN RHCS3 WITHREAD FWD AND REV
4822                                     ;*WRITE FWD AND REV AND WITH BAI SET IN RHCS2
4823                                     ;*OPERATION BEING PERFORMED WILL BE PRINTED OUT
4824                                     ;*IN ERROR MESSAGE.
4825                                     ;*.....RH70 ONLY.....
4826                                     ::*****
4827 031736 000004                                †T51: SCOPE
4828 031740 005701                                TST      R1                ;IS IN AN RH11

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MESSAGES RMC AND RMI: DIAGNOSTIC MACN1: 2707321 01-OCT-75 09:03 PAGE 93
 CTRM01.F11 *51 DBL TEST 3 WORD EVEN ADD. READ FWD

4825	031743	100532			BMI	*TST52	::GET OUT OF TEST
4826	031744	012777	17 775	151560	MOV	#-3,DRHWC	:SET UP WC FOR THREE WORD
4827	031752	012777	004000	151354	MOV	#EVENAD,DRHBA	:SETUP BUS ADDRESS
4828	031760	012777	000000	151372	MOV	#ZERO,DRHBAE	:SETUP BUS ADDRESS EXTENSION
4829	031766	012777	000007	151344	MOV	#7,DRHCS2	:DEVICE 7
4830	031774	012777	000071	151326	MOV	#READD,DRHCS1	:TELL IT TO READD
4831	032002	005037	003446		CLR	BITCNT	:CLEAR BIT COUNTER
4832	032006	032777	000200	151314	BIT	#RDY,DRHCS1	:IS RDY SET
4833	032014	001015			BNE	3\$	:BIT IS SET
4834	032016	005237	003446		INC	BITCNT	:COUNT UP
4835	032022	001371			BNE	18\$	:NOT FINISHED COUNTING
4836	032024	005037	003446		CLR	BITCNT	:GET READY TO DO IT AGAIN
4837	032030	032777	000200	151272	BIT	#RDY,DRHCS1	:IS IT SET YET?
4838	032036	001004			BNE	3\$	:YES
4839	032040	005237	003446		INC	BITCNT	:COUNT UP
4840	032044	001401			BEG	3\$	:BIT IS NOT GOING TO SET
4841	032046	000770			BR	19\$	
4842	032050						
4843	032050	017737	151254	003420	MOV	DRHCS1,CS1	:SAVE RHCS1
4844	032056	017737	151250	003444	MOV	DRHWC,WC	:SAVE WORD COUNT
4845	032064	017737	151244	003414	MOV	DRHBA,BA	:SAVE BUS ADDRESS
4846	032072	005701			TST	R1	:IS IT AN RH1?
4847	032074	001406			BEG	87\$	:NO IT'S A 70
4848	032076	005037	003416		CLR	BAE	:CLEAR BAE
4849	032102	005037	003424		CLR	CS3	:CLEAR CS3
4850	032106	000137	002126		JMP	86\$	:CONTINUE
4851	032112	017737	151242	003416	MOV	DRHBAE,BAE	:SAVE BUS ADDRESS EXTENSION
4852	032120	017737	151236	003424	MOV	DRHCS3,CS3	:SAVE RHCS3
4853	032126	017737	151206	003422	MOV	DRHCS2,CS2	:SAVE CS2
4854	032134	017737	151202	003432	MOV	DRHST,DS1	:SAVE TESTER STATUS
4855	032142	017737	151176	003436	MOV	DRHER,ER1	:SAVE ERROR REGISTER
4856	032150	017737	151174	003442	MOV	DRH*CB,TC	:SAVE TESTER DATA REG.
4857	032156	017737	151154	003440	MOV	DRHMR2,TC	:SAVE MR2 TESTER REG.
4858	032164	032777	000200	151136	BIT	#RDY,DRHCS1	:IS READY SET
4859	032172	001003			BNE	1\$	:RDY SET CONT. TEST
4860	032174	104102			ERROR	102	:READY DID NOT SET
4861	032176	004737	007234		JSR	R7,WHYFO	:ANY ERRORS SET
4862	032202	032777	002000	151152	BIT	#DBL,DRHCS3	:IS DOUBLE SET
4863	032210	001403			BEG	2\$	:DBL SET
4864	032212	104166			ERROR	166	:DBL DID SET ON A 3 WORD TRANSFER
4865	032214	004737	007234		JSR	R7,WHYFO	:TELL WHY NOT
4866	032220	004737	006602		JSR	R7,CLEER	:CLEAR ERRORS
4867	032224	004737	050130		JSR	R7,ERRTST	
4868							
4869							
4870							
4871							
4872							
4873							
4874							
4875							
4876							
4877							
4878							
4879							
4880	032230	000004			*TST52:	SCOPE	
4881	032232	005701			TST	R1	:IS IN AN RH11
4882	032234	100532			BMI	TST53	::GET OUT OF TEST
4883	032236	012777	177775	151066	MOV	#-3,DRHWC	:SET UP WC FOR THREE WORD
4884	032244	012777	004000	151062	MOV	#EVENAD,DRHBA	:SETUP BUS ADDRESS

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 MASSBUS RMTD AND RH1: DIAGNOSTIC MAC11: 27.7321 01-OCT-75 09:03 PAGE 94
 02P00.P11 *52 DBL TEST 3 WORD EVEN ADD. READ REV

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4885 032252 012777 000000 151100      MOV      #ZERO,DRHBAE      :SETUP BUS ADDRESS EXTENSION
4886 032260 012777 000007 151052      MOV      #7,DRHCS2       :DEVICE 7
4887 032266 012777 000077 151034      MOV      #READ6,DRHCS1    :TELL IT TO READ6
4888 032274 005037 003446      CLR      BITCNT          :CLEAR BIT COUNTER
4889 032300 032777 000200 151022 195:  BIT      #RDY,DRHCS1      :IS RDY SET
4890 032306 001015      BNE      3$              :BIT IS SET
4891 032310 005237 003446      INC      BITCNT          :COUNT UP
4892 032314 001371      BNE      19$             :NOT FINISHED COUNTING
4893 032316 005037 003446      CLR      BITCNT          :GET READY TO DO IT AGAIN
4894 032322 032777 000200 151000 195:  BIT      #RDY,DRHCS1      :IS IT SET YET?
4895 032330 001004      BNE      3$              :YES
4896 032332 005237 003446      INC      BITCNT          :COUNT UP
4897 032336 001401      BEQ      3$              :BIT IS NOT GOING TO SET
4898 032340 000770      BR       19$
4899 032342      3$:
4900 032342 017737 150762 003420      MOV      DRHCS1,CS1       :SAVE RHCS1
4901 032350 017737 150756 003444      MOV      DRHWC,WC        :SAVE WORD COUNT
4902 032356 017737 150752 003414      MOV      DRHBA,BA        :SAVE BUS ADDRESS
4903 032364 005701      TST      R1              :IS IT AN RH11
4904 032366 001406      BEQ      87$             :NO IT'S A 70
4905 032370 005037 003416      CLR      BAE             :CLEAR BAE
4906 032374 005037 003424      CLR      CS3            :CLEAR CS3
4907 032400 000137 032420      JMP      86$             :CONTINUE
4908 032404 017737 150750 003416 87$:  MOV      DRHBAE,BAE       :SAVE BUS ADDRESS EXTENSION
4909 032412 017737 150744 003424      MOV      DRHCS3,CS3      :SAVE RHCS3
4910 032420 017737 150714 003422 86$:  MOV      DRHCS2,CS2      :SAVE CS2
4911 032426 017737 150710 003432      MOV      DRHST,DS1       :SAVE TESTER STATUS
4912 032434 017737 150704 003436      MOV      DRHER,ER1       :SAVE ERROR REGISTER
4913 032442 017737 150702 003442      MOV      DRHTDB,TDR      :SAVE TESTER DATA REG.
4914 032450 017737 150662 003440      MOV      DRHMR2,TC       :SAVE MR2 TESTER REG.
4915 032456 032777 000200 150644      BIT      #RDY,DRHCS1     :IS READY SET
4916 032464 001003      BNE      1$              :RDY SET CONT. TEST
4917 032466 104102      ERROR    102            :READY DID NOT SET
4918 032470 004737 007234      JSR      R7,WHYFO        :ANY ERRORS SET
4919 032474 032777 000200 150660 1$:  BIT      #DBL,DRHCS3      :IS DOUBLE SET
4920 032502 001003      BNE      2$              :DBL SET
4921 032504 104167      ERROR    167            :DBL DIDN'T SET ON A 3 WORD TRANSFER
4922 032506 004737 007234      JSR      R7,WHYFO        :TELL WHY NOT
4923 032512 004737 006602 2$:  JSR      R7,CLEER        :CLEAR ERRORS
4924 032516 004737 050130      JSR      R7,ERRTST
4925 *****
4926 :*TEST 53 WCE EW ERROR TEST
4927 :*THIS TEST CHECKS THAT WCELO WILL SET IN
4928 :*RHCS3 AND THAT WCE SETS IN RHCS1
4929 :*IT ALSO CHECKS THAT WCEHI DOES NOT SET
4930 :*WITH WCELO IN RHCS3.....
4931 :*.....RH70 ONLY.....
4932 *****
4933 032522 000004      TST53: SCOPE
4934 032524 012737 000001 001212      MOV      #1,STIMES      ;;DO 1 ITERATION
4935 032532 005701      TST      R1              :IS IT AN RH11
4936 032534 001402      BEQ      1$              :IT'S AN RH70
4937 032536 000137 033306      JMP      FANG           :IT'S AN RH11, EXIT TEST
4938 032542 012777 000007 150570 1$:  MOV      #7,DRHCS2       :SET DEVICE 7
4939 032550 012777 000000 150602      MOV      #ZERO,DRHBAE    :SETUP BUS ADDRESS EXT.
4940 032556 012777 004000 150550      MOV      #EVENAD,DRHBA   :SETUP BUS ADDRESS

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4941	032564	012777	177776	150540		MOV	#-2, 2RHWC	:FOR TWO WORD TRANSFER
4942	032572	012777	000061	150530		MOV	#WRITED, 2RHCS1	:TELL IT TO WRITE
4943	032600	005037	003446			CLR	BITCNT	:CLEAR BIT COUNTER
4944	032604	032777	000200	150516	185:	BIT	#RDY, 2RHCS1	:IS RDY SET
4945	032612	001015				BNE	MITE	:BIT IS SET
4946	032614	005237	003446			INC	BITCNT	:COUNT UP
4947	032620	001371				BNE	185	:NOT FINISHED COUNTING
4948	032622	005037	003446			CLR	BITCNT	:GET READY TO DO IT AGAIN
4949	032626	032777	000200	150474	195:	BIT	#RDY, 2RHCS1	:IS IT SET YET?
4950	032634	001004				BNE	MITE	:YES
4951	032636	005237	003446			INC	BITCNT	:COUNT UP
4952	032642	001401				BEQ	MITE	:BIT IS NOT GOING TO SET
4953	032644	000770				BR	195	
4954	032646							
4955	032646	017737	150456	003420		MOV	2RHCS1, CS1	:SAVE RHCS1
4956	032654	017737	150452	003444		MOV	2RHWC, WC	:SAVE WORD COUNT
4957	032662	017737	150446	003414		MOV	2RHBA, BA	:SAVE BUS ADDRESS
4958	032670	005701				TST	R1	:IS IT AN RH11
4959	032672	001406				BEQ	875	:NO IT'S A 70
4960	032674	005037	003416			CLR	BAE	:CLEAR BAE
4961	032700	005037	003424			CLR	CS3	:CLEAR CS3
4962	032704	000137	032724			JMP	865	:CONTINUE
4963	032710	017737	150444	003416	875:	MOV	2RHBAE, BAE	:SAVE BUS ADDRESS EXTENSION
4964	032716	017737	150440	003424		MOV	2RHCS3, CS3	:SAVE RHCS3
4965	032724	017737	150410	003422	865:	MOV	2RHCS2, CS2	:SAVE CS2
4966	032732	017737	150404	003432		MOV	2RHST, DS1	:SAVE TESTER STATUS
4967	032740	017737	150400	003436		MOV	2RHER, ER1	:SAVE ERROR REGISTER
4968	032746	017737	150376	003442		MOV	2RHTDB, TDR	:SAVE TESTER DATA REG.
4969	032754	017737	150356	003440		MOV	2RHMR2, TC	:SAVE MR2 TESTER REG.
4970	032762	032777	000200	150340		BIT	#RDY, 2RHCS1	:IS READY SET
4971	032770	001003				BNE	VOUS	:RDY IS SET
4972	032772	104102				ERFOR	102	:RDY DID NOT SET
4973	032774	004737	007234			JSR	R7, WHYFO	:ANY ERRORS SET
4974	033000	005137	004000			COM	EVENAD	:INVERT BITS FOR WCELO
4975	033004	012777	004000	150322		MOV	#EVENAD, 2RHBA	:FIX BUS ADDRESS
4976	033012	012777	177776	150312		MOV	#-2, 2RHWC	:FIX WORD COUNT
4977	033020	012777	000051	150302		MOV	#WRCHD, 2RHCS1	:TELL IT TO WRITE CHECK
4978	033026	005037	003446			CLR	BITCNT	:CLEAR BIT COUNTER
4979	033032	032777	000200	150270	185:	BIT	#RDY, 2RHCS1	:IS RDY SET
4980	033040	001015				BNE	FAST	:BIT IS SET
4981	033042	005237	003446			INC	BITCNT	:COUNT UP
4982	033046	001371				BNE	185	:NOT FINISHED COUNTING
4983	033050	005037	003446			CLR	BITCNT	:GET READY TO DO IT AGAIN
4984	033054	032777	000200	150246	195:	BIT	#RDY, 2RHCS1	:IS IT SET YET?
4985	033062	001004				BNE	FAST	:YES
4986	033064	005237	003446			INC	BITCNT	:COUNT UP
4987	033070	001401				BEQ	FAST	:BIT IS NOT GOING TO SET
4988	033072	000770				BR	195	
4989	033074							
4990	033074	017737	150230	003420		MOV	2RHCS1, CS1	:SAVE RHCS1
4991	033102	017737	150224	003444		MOV	2RHWC, WC	:SAVE WORD COUNT
4992	033110	017737	150220	003414		MOV	2RHBA, BA	:SAVE BUS ADDRESS
4993	033116	005701				TST	R1	:IS IT AN RH11
4994	033120	001406				BEQ	875	:NO IT'S A 70
4995	033122	005037	003416			CLR	BAE	:CLEAR BAE
4996	033126	005037	003424			CLR	CS3	:CLEAR CS3

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4997 033132 000137 033152 JMP 86$ :CONTINUE
4998 033136 017737 150216 003416 27$: MOV 2RHBAE,BAE :SAVE BUS ADDRESS EXTENSION
4999 033144 017737 150212 003424 MOV 2RHCS3,CS3 :SAVE RHCS3
5000 033152 017737 150162 003422 86$: MOV 2RHCS2,CS2 :SAVE CS2
5001 033160 017737 150156 003432 MOV 2RHST,DS1 :SAVE TESTER STATUS
5002 033166 017737 150152 003436 MOV 2RHER,ER1 :SAVE ERROR REGISTER
5003 033174 017737 150150 003442 MOV 2RHTDB,TDR :SAVE TESTER DATA REG.
5004 033202 017737 150130 003440 MOV 2RHMR2,TC :SAVE MR2 TESTER REG.
5005 033210 032777 000200 150112 BIT 2RDY,2RHCS1 :IS READY SET
5006 033216 001003 BNE SUPER :RDY IS SET
5007 033220 104102 ERROR 102 :RDY DID NOT SET
5008 033222 004737 007234 JSR R7,WHYFO :ANY ERRORS SET
5009 033226 032777 004000 150126 SJFER: BIT 2WCELO,2RHCS3 :IS WCELO SET
5010 033234 001006 BNE RITEON :WCELO IS SET
5011 033236 104132 ERROR 132 :WCELO DID NOT SET IN RHCS3
5012 033240 004737 007234 JSR R7,WHYFO :ANY ERRORS SET
5013 033244 105737 001103 TS'B SEARLG :WAS THERE AN ERROR
5014 033250 001005 BNE TWANG :YES
5015 033252 032777 010000 150102 RITEON: BIT 2WCEHI,2RHCS3 :IS WCEHI SET
5016 033260 001406 BEQ TWANGY :WCEHI DID NOT SET
5017 033262 104133 ERROR 133 :WCEHI SET WITH WCELO
5018 033264 032777 040000 150046 TWANG: BIT 2WCE,2RHCS2 :DID WCE SET IN CS2
5019 033272 001001 BNE TWANGY :YES, IT SHOULD BE
5020 033274 104134 ERROR 134 :WCE DID NOT SET IN RHCS2
5021 033276 004737 006602 TWANGY: JSR R7,CLEER :CLEAR ERRORS
5022 033302 004737 050130 JSR R7,ERRTST
5023 033306
5024
5025 :*****
5026 :*TEST 54 WCE OW ERROR TEST (WCEHI)
5027 :*THIS TEST CHECKS THAT WCEHI SETS IN RHCS3
5028 :*AND THAT WCE SETS IN RHCS1, IT ALSO TESTS
5029 :*THAT WCELO DOES NOT SET WITH WCEHI.....
5030 :*.....RH70 ONLY.....
5031 :*****
5032 :TEST54: SCOPE
5033 TST R1 :IS IT AN 11 OR A 70
5034 BEQ 1$ :IT'S AN RH70
5035 JMP FANGY :IT'S AN RH11, EXIT TEST
5036 1$: MOV 27,2RHCS2 :SET DEVICE 7
5037 MOV 2-2,2RHWC :TWO WORD TRANSFER
5038 MOV 2EVENAD,2RHBA :SETUP BUS ADDRESS
5039 MOV 0DDAD,EVENAD :DUP 0DDAD
5040 MOV 2WRITED,2RHCS1 :TELL IT TO WRITE
5041 CLR BITCNT :CLEAR BIT COUNTER
5042 BIT 2RDY,2RHCS1 :IS RDY SET
5043 BNE WCEOWT :BIT IS SET
5044 INC BITCNT :COUNT UP
5045 BNE 18$ :NOT FINISHED COUNTING
5046 CLR BITCNT :GET READY TO DO IT AGAIN
5047 BIT 2RDY,2RHCS1 :IS IT SET YET?
5048 BNE WCEOWT :YES
5049 INC BITCNT :COUNT UP
5050 BEQ WCEOWT :BIT IS NOT GOING TO SET
5051 BR 19$
5052 WCEOWT: MOV 2RHCS1,CS1 :SAVE RHCS1

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MASSBUS RH70 AND RH11 DIAGNOSTIC MACY11 27(732) 01-OCT-76 09:03 PAGE 97
 02RHBC.P11 T54 WCE OW ERROR TEST (WCEHI)

5053	033432	017737	147674	003444	MOV	2RHWC,WC	:SAVE WORD COUNT
5054	033440	017737	147670	003414	MOV	2RHBA,BA	:SAVE BUS ADDRESS
5055	033446	005701			TST	R1	:IS IT AN RH11
5056	033450	001406			BEQ	87\$	:NO IT'S A 70
5057	033452	005037	003416		CLR	BAE	:CLEAR BAE
5058	033456	005037	003424		CLR	CS3	:CLEAR CS3
5059	033462	000137	033502		JMP	86\$	:CONTINUE
5060	033466	017737	147666	003416	87\$: MOV	2RHBAE,BAE	:SAVE BUS ADDRESS EXTENSION
5061	033474	017737	147662	003424	MOV	2RHCS3,CS3	:SAVE RHCS3
5062	033502	017737	147632	003422	86\$: MOV	2RHCS2,CS2	:SAVE CS2
5063	033510	017737	147626	003432	MOV	2RHST,DS1	:SAVE TESTER STATUS
5064	033516	017737	147622	003436	MOV	2RHER,ER1	:SAVE ERROR REGISTER
5065	033524	017737	147620	003442	MOV	2RHTDB,TDR	:SAVE TESTER DATA REG.
5066	033532	017737	147600	003440	MOV	2RHMR2,TC	:SAVE MR2 TESTER REG.
5067	033540	032777	000200	147562	BIT	*RDY,2RHCS1	:IS READY SET
5068	033546	001003			BNE	BEAU	:RDY IS SET
5069	033550	104102			ERROR	102	:RDY DID NOT SET
5070	033552	004737	007234		JSR	R7,WHYFO	:ANY ERRORS SET
5071	033556	005137	004002		BEAU: COM	000AD	:REVERSE BITS IN 000AD
5072	033562	012777	004000	147544	MOV	*EVENAD,2RHBA	:CORRECT BUS ADDRESS
5073	033570	012777	177776	147534	MOV	*-2,2RHWC	:CORRECT WC
5074	033576	012777	000051	147524	MOV	*WRCHO,2RHCS1	:TELL IT TO WRITE CHECK
5075	033604	005037	003446		CLR	BITCNT	:CLEAR BIT COUNTER
5076	033610	032777	000200	147512	19\$: BIT	*RDY,2RHCS1	:IS RDY SET
5077	033616	001015			BNE	WCEERR	:BIT IS SET
5078	033620	005237	003446		INC	BITCNT	:COUNT UP
5079	033624	001371			BNE	18\$	:NOT FINISHED COUNTING
5080	033626	005037	003446		CLR	BITCNT	:GET READY TO DO IT AGAIN
5081	033632	032777	000200	147470	19\$: BIT	*RDY,2RHCS1	:IS IT SET YET?
5082	033640	001004			BNE	WCEERR	:YES
5083	033642	005237	003446		INC	BITCNT	:COUNT UP
5084	033646	001401			BEQ	WCEERR	:BIT IS NOT GOING TO SET
5085	033650	000770			BR	19\$	
5086	033652				WCEERR:		
5087	033652	017737	147452	003420	MOV	2RHCS1,CS1	:SAVE RHCS1
5088	033660	017737	147446	003444	MOV	2RHWC,WC	:SAVE WORD COUNT
5089	033666	017737	147442	003414	MOV	2RHBA,BA	:SAVE BUS ADDRESS
5090	033674	005701			TST	R1	:IS IT AN RH11
5091	033676	001406			BEQ	87\$	:NO IT'S A 70
5092	033700	005037	003416		CLR	BAE	:CLEAR BAE
5093	033704	005037	003424		CLR	CS3	:CLEAR CS3
5094	033710	000137	033730		JMP	86\$	:CONTINUE
5095	033714	017737	147440	003416	87\$: MOV	2RHBAE,BAE	:SAVE BUS ADDRESS EXTENSION
5096	033722	017737	147434	003424	MOV	2RHCS3,CS3	:SAVE RHCS3
5097	033730	017737	147404	003422	86\$: MOV	2RHCS2,CS2	:SAVE CS2
5098	033736	017737	147400	003432	MOV	2RHST,DS1	:SAVE TESTER STATUS
5099	033744	017737	147374	003436	MOV	2RHER,ER1	:SAVE ERROR REGISTER
5100	033752	017737	147372	003442	MOV	2RHTDB,TDR	:SAVE TESTER DATA REG.
5101	033760	017737	147352	003440	MOV	2RHMR2,TC	:SAVE MR2 TESTER REG.
5102	033766	032777	000200	147334	BIT	*RDY,2RHCS1	:IS READY SET
5103	033774	001003			BNE	ERTIP	:RDY IS SET
5104	033776	104102			ERROR	102	:RDY DID NOT SET
5105	034000	004737	007234		JSR	R7,WHYFO	:ANY ERRORS SET
5106	034004	032777	010000	147350	ERTIP: BIT	*WCEHI,2RHCS3	:IS WCEHI SET
5107	034012	001006			BNE	BUSH	:WCEHI IS SET
5108	034014	104135			ERROR	135	:WCEHI DID NOT SET IN RHCS3

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MASSBUS RH70 AND RH11 DIAGNOSTIC MACY11 27(732) 01-OCT-76 09:03 PAGE 98
 02RHBC.P11 754 WCE ON ERROR TEST (WCEHI)

5109	034016	004737	007234		JSR	R7, WHYFO	: ANY OTHER ERRORS SET
5110	034022	105737	001103		TSTB	SEFLG	: WAS THERE AN ERROR
5111	034026	001012			BNE	LEAGUE	: YES
5112	034030	032777	004000	147324	BUSH: BIT	#WCELO, RHCS3	: IS WCELO SET
5113	034036	001406			BEQ	LEAGUE	: NO WCELO IS OK
5114	034040	104137			ERROR	137	: WCELO SET WITH WCEHI
5115	034042	032777	040000	147270	LEFOUT: BIT	#WCE, RHCS2	: DID WCE SET
5116	034050	001001			BNE	LEAGUE	: WCE IS SET IN RHCS2
5117	034052	104136			ERROR	136	: WCE DID NOT SET IN RHCS2
5118	034054	004737	006602		LEAGUE: JSR	R7, CLEAR	: CLEAR ERRORS
5119	034060	004737	050130		JSR	R7, ERRST	
5120	034064				FANGY:		
5121					*****		
5122					: TEST SS	INTERUPT ENABLE TEST	
5123						: *THIS TEST VERIFYS THAT IE WILL SET IN RHCS1	
5124						: *AND IT WILL CAUSE AN INTERRUPT WHEN RDY IS SET	
5125					*****		
5126	034064	000004			STSS: SCOPE		
5127	034066	012777	000007	147244	MOV	#7, RHCS2	: SETUP UNIT NUMBER
5128	034074	012777	004000	147232	MOV	#EVENAD, RHBA	: SETUP BUS ADDRESS
5129	034102	005701			TST	R1	: RH11 OR RH70 ?
5130	034104	103403			BMI	READY	: ITS AN RH11
5131	034106	012777	000000	147244	MOV	#ZERO, RHBAE	: ZERO THE BAE
5132	034114	012777	034376	147254	READY: MOV	#IETST, AVECADD	: SET UP VECTOR ADDRESS
5133	034122	012737	000340	177776	MOV	#340, PS	: SET PRIORITY ?
5134	034130	012777	177777	147174	MOV	#-1, RHWC	: SET FOR ONE WORD
5135	034136	012777	000161	147164	MOV	#WRITED! IE, RHCS1	: TELL IT TO WRITE
5136	034144	032777	000100	147156	BIT	#IE, RHCS1	: IS IE SET
5137	034152	001001			BNE	25	: YES CONTINUE TEST
5138	034154	104174			ERROR	174	: IE WILL NOT SET
5139	034156	005037	177776		25: CLR	#177776	
5140	034162	005037	003446		CLR	BITCNT	: CLEAR BIT COUNTER
5141	034166	032777	000200	147134	185: BIT	#RDY, RHCS1	: IS RDY SET
5142	034174	001015			BNE	TSTIE	: BIT IS SET
5143	034176	005237	003446		INC	BITCNT	: COUNT UP
5144	034202	001371			BNE	185	: NOT FINISHED COUNTING
5145	034204	005037	003446		CLR	BITCNT	: GET READY TO DO IT AGAIN
5146	034210	032777	000200	147112	195: BIT	#RDY, RHCS1	: IS IT SET YET?
5147	034216	001004			BNE	TSTIE	: YES
5148	034220	005237	003446		INC	BITCNT	: COUNT UP
5149	034224	001401			BEQ	TSTIE	: BIT IS NOT GOING TO SET
5150	034226	000770			BR	195	
5151	034230				TSTIE:		
5152	034230	017737	147074	003420	MOV	RHCS1, CS1	: SAVE RHCS1
5153	034236	017737	147070	003444	MOV	RHWC, WC	: SAVE WORD COUNT
5154	034244	017737	147064	003414	MOV	RHBA, BA	: SAVE BUS ADDRESS
5155	034252	005701			TST	R1	: IS IT AN RH11
5156	034254	001406			BEQ	875	: NO IT'S A 70
5157	034256	005037	003416		CLR	BAE	: CLEAR BAE
5158	034262	005037	003424		CLR	CS3	: CLEAR CS3
5159	034266	000137	034306		JMP	865	: CONTINUE
5160	034272	017737	147062	003416	875: MOV	RHBAE, BAE	: SAVE BUS ADDRESS EXTENSION
5161	034300	017737	147056	003424	MOV	RHCS3, CS3	: SAVE RHCS3
5162	034306	017737	147026	003422	865: MOV	RHCS2, CS2	: SAVE CS2
5163	034314	017737	147022	003432	MOV	RHST, DS1	: SAVE TESTER STATUS
5164	034322	017737	147016	003436	MOV	RHER, ER1	: SAVE ERROR REGISTER

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MASSBUS RHT0 AND RH1: DIAGNOSTIC MACY11 27(732) 01-OCT-76 09:03 PAGE 99
 C2RHBC.P11 *55 INTERUP* ENABLE TEST

5165	034330	017737	147014	003442	MOV	2RH0DB, TDR	:SAVE TESTER DATA REG.
5166	034336	017737	146774	003440	MOV	2RHMR2, TC	:SAVE MR2 TESTER REG.
5167	034344	032777	000200	146755	BIT	2RDY, 2RHCS1	:IS READY SET?
5168	034352	001003			BNE	15	:YES
5169	034354	104102			ERROR	102	:READY DID NOT SET
5170	034356	000137	034410		JMP	SPLIT	:EXIT TEST
5171	034362	105737	001103		15:	TSTB 2SERFLG	:WAS IE SET
5172	034366	001010			BNE	SPLIT	:NO, EXIT TEST
5173	034370	104173			ERROR	173	:RDY DID NOT CAUSE AN INTERUP
5174	034372	000137	034410		JMP	SPLIT	:EXIT TEST
5175	034376	022626			IETST:	CMP (SP)+, (SP)+	:CORRECT STACK
5176	034400	105737	001103		TSTB	2SERFLG	:DID IE SET
5177	034404	001401			BEQ	SPLIT	:YES, EXIT TEST
5178	034406	104175			ERROR	175	:IE HAS OPEN GOING TO BUS
5179	034410	004737	006602		SPLIT:	JSR R7, CLEER	:CLEAR ERRORS
5180	034414	004737	050130		JSR	R7, ERRST	
5181					:*****		
5182					: *TEST 56 READ OPERATIONAL TEST (NORMAL) #1		
5183					: *THESE TESTS VERIFY ALL READ AND WRITE CODES		
5184					: *WHETHER IT BE A READ REV. OR FWD OR A WRITE REV. OR FWD		
5185					: *DURING THESE TESTS THE TESTER TIMING IS MARGINED AND		
5186					: *NO ERRORS SHOULD OCCUR		
5187					:*****		
5188	034420	000004			TST56:	SCOPE	
5189	034422	012777	000007	146710	MOV	27, 2RHCS2	:SETUP UNIT SEVEN
5190	034430	012777	177777	146674	MOV	2-1, 2RHWC	:FOR ONE WORD
5191	034436	012777	004100	146670	MOV	2RBUF, 2RHBA	:SETUP BA
5192	034444	012737	000000	004100	MOV	2ZERO, RBUF	:SETUP DATA
5193	034452	012777	125252	146670	MOV	2OAB, 2RHTDB	:SETUP TESTER DB
5194	034460	005701			TST	R1	:IS IT AN 11 OR A 70
5195	034462	100403			BMI	15	:IT'S AN RH11
5196	034464	012777	000000	146666	MOV	2ZERO, 2RHBAE	:ZERO BAE
5197	034472	012777	000071	146630	15:	MOV 2READ0, 2RHCS1	:TELL IT TO READ0
5198	034500	005037	003446		CLR	BITCNT	:CLEAR BIT COUNTER
5199	034504	032777	000200	146616	185:	BIT 2RDY, 2RHCS1	:IS RDY SET
5200	034512	001015			BNE	25	:BIT IS SET
5201	034514	005237	003446		INC	BITCNT	:COUNT UP
5202	034520	001371			BNE	185	:NOT FINISHED COUNTING
5203	034522	005037	003446		CLR	BITCNT	:GET READY TO DO IT AGAIN
5204	034526	032777	000200	146574	195:	BIT 2RDY, 2RHCS1	:IS IT SET YET?
5205	034534	001004			BNE	25	:YES
5206	034536	005237	003446		INC	BITCNT	:COUNT UP
5207	034542	001401			BEQ	25	:BIT IS NOT GOING TO SET
5208	034544	000770			BR	195	
5209	034546				25:		
5210	034546	017737	146556	003420	MOV	2RHCS1, CS1	:SAVE RHCS1
5211	034554	017737	146552	003444	MOV	2RHWC, WC	:SAVE WORD COUNT
5212	034562	017737	146546	003414	MOV	2RHBA, BA	:SAVE BUS ADDRESS
5213	034570	005701			TST	R1	:IS IT AN RH11
5214	034572	001406			BEQ	875	:NO IT'S A 70
5215	034574	005037	003416		CLR	BAE	:CLEAR BAE
5216	034600	005037	003424		CLR	CS3	:CLEAR CS3
5217	034604	000137	034624		JMP	865	:CONTINUE
5218	034610	017737	146544	003416	875:	MOV 2RHBAE, BAE	:SAVE BUS ADDRESS EXTENSION
5219	034616	017737	146540	003424	MOV	2RHCS3, CS3	:SAVE RHCS3
5220	034624	017737	146510	003422	865:	MOV 2RHCS2, CS2	:SAVE CS2

5221	034632	017737	146504	003432	MOV	2RHST,DS1	;SAVE TESTER STATUS
5222	034640	017737	146500	003436	MOV	2RHER,ER1	;SAVE ERROR REGISTER
5223	034646	017737	146476	003442	MOV	2RHTDB,TDR	;SAVE TESTER DATA REG.
5224	034654	017737	146456	003440	MOV	2RHMR2,TC	;SAVE MR2 TESTER REG.
5225	034662	017737	146462	001162	MOV	2RHTDB,SREGO	;GET DATA
5226	034670	032777	000200	146432	BIT	2RDY,2RHCS1	;IS OR SET
5227	034676	001003			BNE	3\$	;YES RDY IS SET
5228	034700	104102			ERROR	102	;READY DID NOT SET
5229	034702	004737	007234		JSR	R7,WHYFO	;ARE ANY ERRORS SET
5230	034706	023777	004100	146434	3\$: CMP	RBUF,2RHTDB	;DID INFO GET WRITTEN OR READ
5231	034714	001407			BEG	4\$	;INFO GOT LOADED
5232	034716	005737	004100		TST	RBUF	;DOES RBUF = 0
5233	034722	001403			BEG	5\$	;YES INFO DID NOT LOAD
5234	034724	104147			ERROR	147	;ALL BITS DID NOT LOAD DURING
5235							;AN READO OPERATION
5236	034726	000137	034734		JMP	4\$	;EXIT TEST
5237	034732	104150			5\$: ERROR	150	;READO OPERATION DID NOT WORK
5238							;NO BITS WHERE LOADED TO RBLF
5239	034734	004737	007234		4\$: JSR	R7,WHYFO	;ANY ERRORS SET
5240	034740	105737	001103		TSTB	2ERFLG	;ANY ERRORS ?
5241	034744	001402			BEG	6\$	;NO EXIT TEST
5242	034746	104146			ERROR	146	;PRINT REGISTERS
5243	034750	104170			ERROR	170	
5244	034752	004737	006602		6\$: JSR	R7,CLEER	;CLEAR ERRORS
5245	034756	004737	050130		JSR	R7,ERRTST	
5246							
5247							
5248							
5249							
5250							
5251							
5252							
5253	034762	000004			1\$T57: SCOPE		
5254	034764	012777	000007	146346	MOV	27,2RHCS2	;SETUP UNIT SEVEN
5255	034772	012737	125252	004000	MOV	2OAB,EVENAD	;SETUP INFORMATION
5256	035000	012777	000003	146346	MOV	2DMD,MCLK,2RHMR1	;SETUP DIAG. MODE
5257	035006	012777	177777	146316	MOV	2-1,2RHWC	;FOR ONE WORD
5258	035014	005701			TST	R1	;IS IT A 11 OR 70
5259	035016	100403			BMI	1\$	;IT'S AN 11
5260	035020	012777	000000	146332	MOV	2ZERO,2RHBAE	;ZERO BAE
5261	035026	012777	004000	146300	1\$: MOV	2EVENAD,2RHBA	;SETUP BA
5262	035034	012777	000061	146266	MOV	2WRITED,2RHCS1	;TELL IT TO WRITETO
5263	035042	012777	000001	146304	MOV	2DMD,2RHMR1	;MANIPULATE CLOCK
5264	035050	005037	003446		CLR	BITCNT	;CLEAR LOOP COUNTER
5265	035054	005237	003446		2\$: INC	BITCNT	;INCREMENT LOOP COUNTER
5266	035060	022737	000015	003446	CMP	215,BITCNT	;IS IT THIRD LOOP FOR SUSEC WAIT
5267	035066	001372			BNE	2\$	;NO LOOP AGAIN
5268	035070	012777	000003	146256	MOV	2DMD,MCLK,2RHMR1	;START CHANGING CLOCK
5269	035076	012777	000001	146250	MOV	2DMD,2RHMR1	;CHANGE CLOCK AGAIN
5270	035104	012777	000003	146242	MOV	2DMD,MCLK,2RHMR1	;CHANGE CLOCK AGAIN
5271	035112	012777	000001	146234	MOV	2DMD,2RHMR1	;CHANGE CLOCK AGAIN
5272	035120	012777	000000	146226	MOV	2ZERO,2RHMR1	;GET OUT OF DIAG MODE
5273	035126	005037	003446		CLR	BITCNT	;CLEAR BIT COUNTER
5274	035132	032777	000200	146170	18\$: BIT	2RDY,2RHCS1	;IS RDY SET
5275	035140	001015			BNE	7\$	;BIT IS SET
5276	035142	005237	003446		INC	BITCNT	;COUNT UP

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5277 035146 001371          BNE      18$          ;NOT FINISHED COUNTING
5278 035150 005037 003446    CLR      BITCNT      ;GET READY TO DO IT AGAIN
5279 035154 032777 000200 146146 19$:  BIT      $RDY,$RHCS1  ;IS IT SET YET?
5280 035162 001004          BNE      7$          ;YES
5281 035164 005237 003446    INC      BITCNT      ;COUNT UP
5282 035170 001401          BEQ      7$          ;BIT IS NOT GOING TO SET
5283 035172 000770          BR       19$
5284 035174          7$:
5285 035174 0.7737 146130 003423  MOV     $RHCS1,CS1  ;SAVE RHCS1
5286 035202 C17737 146124 003444  MOV     $RHWC,WC    ;SAVE WORD COUNT
5287 035210 017737 146120 003414  MOV     $RHBA,BA    ;SAVE BUS ADDRESS
5288 035216 005701          TST      R1          ;IS IT AN RH11
5289 035220 001406          BEQ      87$         ;NO IT'S A 70
5290 035222 005037 003416    CLR      BAE        ;CLEAR BAE
5291 035226 005037 003424    CLR      CS3        ;CLEAR CS3
5292 035232 000137 035252    JMP      86$        ;CONTINUE
5293 035236 017737 146116 003416 87$:  MOV     $RHBAE,BAE  ;SAVE BUS ADDRESS EXTENSION
5294 035244 017737 146112 003424    MOV     $RHCS3,CS3  ;SAVE RHCS3
5295 035252 017737 146062 003422 86$:  MOV     $RHCS2,CS2  ;SAVE CS2
5296 035260 017737 146056 003432    MOV     $RHST,$S1  ;SAVE TESTER STATUS
5297 035266 017737 146052 003436    MOV     $RHER,ER1  ;SAVE ERROR REGISTER
5298 035274 017737 146050 003442    MOV     $RHTDB,TDR  ;SAVE TESTER DATA REG.
5299 035302 017737 146030 003440    MOV     $RHMR2,TC  ;SAVE MR2 TESTER REG.
5300 035310 017737 146034 001162    MOV     $RHTDB,$REGO  ;GET DATA
5301 035316 032777 000200 146004    BIT      $RDY,$RHCS1  ;IS READY SET
5302 035324 001001          BNE      8$          ;YES, CONTINUE TEST
5303 035326 104102          ERROR  102          ;READY DID NOT SET
5304 035330 022777 177777 145774 8$:  CMP      #-1,$RHWC  ;DID WC INCREMENT
5305 035336 001001          BNE      3$          ;YES, CONT TEST
5306 035340 104140          ERROR  140          ;WRITETO OPERATION DID NOT INC WC
5307 035342 022777 004002 145764 3$:  CMP      $ODDAD,$RHBA  ;DID BA INCREMENT
5308 035350 001401          BEQ      4$          ;YES, CONT TEST
5309 035352 104141          ERROR  141          ;BA DID NOT INCREMENT AFTER AN WRITETC OPERATION
5310 035354 023777 004000 145766 4$:  CMP      EVENAD,$RHTDB  ;DID INFO WRITETO TESTER
5311 035362 001401          BEQ      5$          ;YES, CONT
5312 035364 104142          ERROR  142          ;INFO DID NOT WRITETO TESTER
5313 035366 004737 007234 5$:  JSR      R7,WHYFO  ;ARE ANY ERROR BITS SET
5314 035372 105737 001103    TSTB     $ERRFLG  ;WAS THER AN ERROR
5315 035376 001402          BEQ      6$          ;NO EXIT TEST
5316 035400 104146          ERROR  146          ;THESE ARE THE CONTENTS OF ALL RH70 REG.
5317 035402 104170          ERROR  170          ;THIS IS TO COMPLETE ERROR PRINTOUT
5318 035404 004737 006602 6$:  JSR      R7,CLEER  ;CLEER ERRORS IF ANY
5319 035410 004737 050130    JSR      R7,ERRTST
5320 *****
5321 ;*TEST 60 READ OPERATIONAL TEST (NORMAL) #2
5322 ;*THESE TESTS VERIFY ALL READ AND WRITE CODES
5323 ;*WHETHER IT BE A READ REV. OR FWD OR A WRITE REV. OR FWD
5324 ;*DURING THESE TESTS THE TESTER TIMING IS MARGINED AND
5325 ;*NO ERRORS SHOULD OCCUR
5326 *****
5327 035414 000004 000007 145714 1$T60: SCOPE
5328 035416 012777 000007 145700    MOV     #7,$RHCS2  ;SETUP UNIT SEVEN
5329 035424 012777 177777 145700    MOV     #-1,$RHWC  ;FOR ONE WORD
5330 035432 012777 004100 145674    MOV     $RBUF,$RHBA ;SRUP BA
5331 035440 012737 000000 004100    MOV     $ZERO,RBUF  ;SETUP DATA
5332 035446 012777 125252 145674    MOV     $OAB,$RHTDB ;SETUP TESTER DB

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 DZRHBC.P11 T60 READ OPERATIONAL TEST (NORMAL) #2

5333	035454	005701				TST	R1		: IS IT AN 11 OR A 70
5334	035456	100403				BMI	1\$		: IT'S AN RH11
5335	035460	012777	000000	145672		MOV	#ZERO, @RHBAE		: ZERO BAE
5336	035466	012777	000073	145634	1\$:	MOV	#READ2, @RHCS1		: TELL IT TO READ2
5337	035474	005037	003446			CLR	BITCNT		: CLEAR BIT COUNTER
5338	035500	032777	000200	145622	18\$:	BIT	#RDY, @RHCS1		: IS RDY SET
5339	035506	001015				BNE	2\$		: BIT IS SET
5340	035510	005237	003446			INC	BITCNT		: COUNT UP
5341	035514	001371				BNE	18\$		: NOT FINISHED COUNTING
5342	035516	005037	003446			CLR	BITCNT		: GET READY TO DO IT AGAIN
5343	035522	032777	000200	145600	19\$:	BIT	#RDY, @RHCS1		: IS IT SET YET?
5344	035530	001004				BNE	2\$		: YES
5345	035532	005237	003446			INC	BITCNT		: COUNT UP
5346	035536	001401				BEQ	2\$		: BIT IS NOT GOING TO SET
5347	035540	000770				BR	19\$		
5348	035542				2\$:				
5349	035542	017737	145562	003420		MOV	@RHCS1, CS1		: SAVE RHCS1
5350	035550	017737	145556	003444		MOV	@RHWC, WC		: SAVE WORD COUNT
5351	035556	017737	145552	003414		MOV	@RHBA, BA		: SAVE BUS ADDRESS
5352	035564	005701				TST	R1		: IS IT AN RH11
5353	035566	001406				BEQ	87\$		: NO IT'S A 70
5354	035570	005037	003416			CLR	BAE		: CLEAR BAE
5355	035574	005037	003424			CLR	CS3		: CLEAR CS3
5356	035600	000137	035620			JMP	86\$		: CONTINUE
5357	035604	017737	145550	003416	87\$:	MOV	@RHBAE, BAE		: SAVE BUS ADDRESS EXTENSION
5358	035612	017737	145544	003424		MOV	@RHCS3, CS3		: SAVE RHCS3
5359	035620	017737	145514	003422	86\$:	MOV	@RHCS2, CS2		: SAVE CS2
5360	035626	017737	145510	003432		MOV	@RHST, DS1		: SAVE TESTER STATUS
5361	035634	017737	145504	003436		MOV	@RHER, ER1		: SAVE ERROR REGISTER
5362	035642	017737	145502	003442		MOV	@RHTDB, TDR		: SAVE TESTER DATA REG.
5363	035650	017737	145462	003440		MOV	@RHMR2, TC		: SAVE MR2 TESTER REG.
5364	035656	017737	145466	001162		MOV	@RHTDB, \$REGO		: GET DATA
5365	035664	032777	000200	145436		BIT	#RDY, @RHCS1		: IS OR SET
5366	035672	001003				BNE	3\$		: YES RDY IS SET
5367	035674	104102				ERROR	102		: READY DID NOT SET
5368	035676	004737	007234			JSR	R7, WHYFO		: ARE ANY ERRORS SET
5369	035702	023777	004100	145440	3\$:	CMP	RBUF, @RHTDB		: DID INFO GET WRITTEN OR READ
5370	035710	001407				BEQ	4\$		: INFO GOT LOADED
5371	035712	005737	004100			TST	RBUF		: DOES RBUF = 0
5372	035716	001403				BEQ	5\$		: YES INFO DID NOT LOAD
5373	035720	104147				ERROR	147		: ALL BITS DID NOT LOAD DURING
5374									: AN READ2 OPERATION
5375	035722	000137	035730			JMP	4\$		: EXIT TEST
5376	035726	104150			5\$:	ERROR	150		: READ2 OPERATION DID NOT WORK
5377									: NO BITS WHERE LOADED TO RBUF
5378	035730	004737	007234		4\$:	JSR	R7, WHYFO		: ANY ERRORS SET
5379	035734	105737	001103			TSTB	\$ERFLG		: ANY ERRORS ?
5380	035740	001402				BEQ	6\$		: NO, EXIT TEST
5381	035742	104146				ERROR	146		: PRINT REGISTERS
5382	035744	104170				ERROR	170		
5383	035746	004737	006602		6\$:	JSR	R7, CLEER		: CLEAR ERRORS
5384	035752	004737	050130			JSR	R7, ERRTST		
5385						;*****			
5386						;*TEST 61 READ OPERATIONAL TEST #1			
5387						;*THESE TESTS VERIFY ALL READ AND WRITE CODES			
5388						;*WHETHER IT BE A READ REV. OR FWD OR A WRITE REV. OR FWD			

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5389                                     : *DURING THESE TESTS THE TESTER TIMING IS MARGINED AND
5390                                     : *NO ERRORS SHOULD OCCUR
5391                                     : *****
5392                                     : STEP1: SCOPE
5393 035756 000004 000007 145352      MOV      #7, ARHCS2      : SETUP UNIT SEVEN
5394 035760 012777 052525 145354      MOV      #AB, ARHTDB      : SETUP INFORMATION
5395 035774 012777 000003 145352      MOV      #DMD!MCLK, ARHMR1      : SETUP DIAG. MODE
5396 036002 012777 177777 145322      MOV      #-1, ARHWC      : FOR ONE WORD
5397 036010 005701          TST      R1      : IS IT A 11 OR 70
5398 036012 100403          BMI      1$      : IT'S AN 11
5399 036014 012777 000000 145336      MOV      #ZERO, ARHBAE      : ZERO BAE
5400 036022 012777 004000 145304 1$: MOV      #EVENAD, ARHBA      : SETUP BA
5401 036030 012777 000071 145272      MOV      #READO, ARHCS1      : TELL IT TO READFROM
5402 036036 012777 000001 145310      MOV      #DMD, ARHMR1      : MANIPULATE CLOCK
5403 036044 005037 003446          CLR      BITCNT      : CLEAR LOOP COUNTER
5404 036050 005237 003446 2$: INC      BITCNT      : INCREMENT LOOP COUNTER
5405 036054 022737 000015 003446      CMP      #15, BITCNT      : IS IT THIRD LOOP FOR SUSEC WAIT
5406 036062 001372          BNE      2$      : NO LOOP AGAIN
5407 036064 012777 000003 145262      MOV      #DMD!MCLK, ARHMR1      : START CHANGING CLOCK
5408 036072 012777 000001 145254      MOV      #DMD, ARHMR1      : CHANGE CLOCK AGAIN
5409 036100 012777 000003 145246      MOV      #DMD!MCLK, ARHMR1      : CHANGE CLOCK AGAIN
5410 036106 012777 000001 145240      MOV      #DMD, ARHMR1      : CHANGE CLOCK AGAIN
5411 036114 012777 000000 145232      MOV      #ZERO, ARHMR1      : GET OUT OF DIAG MODE
5412 036122 005037 003446          CLR      BITCNT      : CLEAR BIT COUNTER
5413 036126 032777 000200 145174 18$: BIT      #RDY, ARHCS1      : IS RDY SET
5414 036134 001015          BNE      7$      : BIT IS SET
5415 036136 005237 003446          INC      BITCNT      : COUNT UP
5416 036142 001371          BNE      18$      : NOT FINISHED COUNTING
5417 036144 005037 003446          CLR      BITCNT      : GET READY TO DO IT AGAIN
5418 036150 032777 000200 145152 19$: BIT      #RDY, ARHCS1      : IS IT SET YET?
5419 036156 001004          BNE      7$      : YES
5420 036160 005237 003446          INC      BITCNT      : COUNT UP
5421 036164 001401          BEQ      7$      : BIT IS NOT GOING TO SET
5422 036166 000770          BR      19$
5423 036170          7$:
5424 036170 017737 145134 003420      MOV      ARHCS1, CS1      : SAVE RHCS1
5425 036176 017737 145130 003444      MOV      ARHWC, WC      : SAVE WORD COUNT
5426 036204 017737 145124 003414      MOV      ARHBA, BA      : SAVE BUS ADDRESS
5427 036212 005701          TST      R1      : IS IT AN RH11
5428 036214 001406          BEQ      87$      : NO IT'S A 70
5429 036216 005037 003416          CLR      BAE      : CLEAR BAE
5430 036222 005037 003424          CLR      CS3      : CLEAR CS3
5431 036226 000137 036246          JMP      86$      : CONTINUE
5432 036232 017737 145122 003416 87$: MOV      ARHBAE, BAE      : SAVE BUS ADDRESS EXTENSION
5433 036240 017737 145116 003424      MOV      ARHCS3, CS3      : SAVE RHCS3
5434 036246 017737 145066 003422 86$: MOV      ARHCS2, CS2      : SAVE CS2
5435 036254 017737 145062 003432      MOV      ARHST, DS1      : SAVE TESTER STATUS
5436 036262 017737 145056 003436      MOV      ARHER, ER1      : SAVE ERROR REGISTER
5437 036270 017737 145054 003442      MOV      ARHTDB, TOR      : SAVE TESTER DATA REG.
5438 036276 017737 145034 003440      MOV      ARHMR2, TC      : SAVE MR2 TESTER REG.
5439 036304 017737 145040 001162      MOV      ARHTDB, $REGO      : GET DATA
5440 036312 032777 000200 145010      BIT      #RDY, ARHCS1      : IS READY SET
5441 036320 001001          BNE      8$      : YES, CONTINUE TEST
5442 036322 104102          ERROR      102      : READY DID NOT SET
5443 036324 022777 177777 145000 8$: CMP      #-1, ARHWC      : DID WC INCREMENT
5444 036332 001001          BNE      3$      : YES, CONT TEST

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 DZRHBC.P11 T61 READ OPERATIONAL TEST #1

5445	036334	104143			ERROR	143		;READFROM OPERATION DID NOT INC WC
5446	036336	022777	004002	144770	3\$:	CMP	#ODDAD,ARHBA	;DID BA INCREMENT
5447	036344	001401			BEQ	4\$		;YES CONT TEST
5448	036346	104144			ERROR	144		;BA DID NOT INCREMENT AFTER AN READFROM OPERATIO
5449	036350	023777	004000	144772	4\$:	CMP	EVENAD,ARHTDB	;DID INFO READFROM TESTER
5450	036356	001401			BEQ	5\$		;YES,CONT
5451	036360	104145			ERROR	145		;INFO DID NOT READFROM TESTER
5452	036362	004737	007234		5\$:	JSR	R7,WHYFO	;ARE ANY ERROR BITS SET
5453	036366	105737	001103		TSTB	\$ERFLG		;WAS THER AN ERROR
5454	036372	001402			BEQ	6\$		;NO EXIT TEST
5455	036374	104146			ERROR	146		;THESE ARE THE CONTENTS OF ALL RH70 REG.
5456	036376	104170			ERROR	170		;THIS IS TO COMPLETE ERROR PRINTOUT
5457	036400	004737	006602		6\$:	JSR	R7,CLEER	;CLEER ERRORS IF ANY
5458	036404	004737	050130		JSR	R7,ERRTST		
5459					;*****			
5460					;*TEST 62 READ OPERATIONAL TEST (NORMAL) #3			
5461					;*THESE TESTS VERIFY ALL READ AND WRITE CODES			
5462					;*WHETHER IT BE A READ REV. OR FWD OR A WRITE REV. OR FWD			
5463					;*DURING THESE TESTS THE TESTER TIMING IS MARGINED AND			
5464					;*NO ERRORS SHOULD OCCUR			
5465					;*****			
5466	036410	000004			†ST62:	SCOPE		
5467	036412	012777	000007	144720	MOV	#7,ARHCS2		;SETUP UNIT SEVEN
5468	036420	012777	177777	144704	MOV	#-1,ARHWC		;FOR ONE WORD
5469	036426	012777	004100	144700	MOV	#RBUF,ARHBA		;SRTUP BA
5470	036434	012737	000000	004100	MOV	#ZERO,RBUF		;SETUP DATA
5471	036442	012777	125252	144700	MOV	#OAB,ARHTDB		;SETUP TESTER DB
5472	036450	005701			TST	R1		;IS IT AN 11 OR A 70
5473	036452	100403			BMI	1\$		;IT'S AN RH11
5474	036454	012777	000000	144676	MOV	#ZERO,ARHBAE		;ZERO BAE
5475	036462	012777	000075	144640	1\$:	MOV	#READ4,ARHCS1	;TELL IT TO READ4
5476	036470	005037	003446		CLR	BITCNT		;CLEAR BIT COUNTER
5477	036474	032777	000200	144626	18\$:	BIT	#RDY,ARHCS1	;IS RDY SET
5478	036502	001015			BNE	2\$		;BIT IS SET
5479	036504	005237	003446		INC	BITCNT		;COUNT UP
5480	036510	001371			BNE	18\$		;NOT FINISHED COUNTING
5481	036512	005037	003446		CLR	BITCNT		;GET READY TO DO IT AGAIN
5482	036516	032777	000200	144604	19\$:	BIT	#RDY,ARHCS1	;IS IT SET YET?
5483	036524	001004			BNE	2\$		;YES
5484	036526	005237	003446		INC	BITCNT		;COUNT UP
5485	036532	001401			BEQ	2\$		;BIT IS NOT GOING TO SET
5486	036534	000770			BR	19\$		
5487	036536				2\$:			
5488	036536	017737	144566	003420	MOV	ARHCS1,CS1		;SAVE RHCS1
5489	036544	017737	144562	003444	MOV	ARHWC,WC		;SAVE WORD COUNT
5490	036552	017737	144556	003414	MOV	ARHBA,BA		;SAVE BUS ADDRESS
5491	036560	005701			TST	R1		;IS IT AN RH11
5492	036562	001406			BEQ	87\$		;NO IT'S A 70
5493	036564	005037	003416		CLR	BAE		;CLEAR BAE
5494	036570	005037	003424		CLR	CS3		;CLEAR CS3
5495	036574	000137	036614		JMP	86\$		;CONTINUE
5496	036600	017737	144554	003416	87\$:	MOV	ARHBAE,BAE	;SAVE BUS ADDRESS EXTENSION
5497	036606	017737	144550	003424	MOV	ARHCS3,CS3		;SAVE RHCS3
5498	036614	017737	144520	003422	86\$:	MOV	ARHCS2,CS2	;SAVE CS2
5499	036622	017737	144514	003432	MOV	ARHST,DS1		;SAVE TESTER STATUS
5500	036630	017737	144510	003436	MOV	ARHER,ER1		;SAVE ERROR REGISTER

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MASSBUS RH70 AND RH11 DIAGNOSTIC MACY11 27(732) 01-OCT-76 09:03 PAGE 105
DZRHBC.P11 T62 READ OPERATIONAL TEST (NORMAL) #3

5501	036636	017737	144506	003442		MOV	ARHTDB, TDR		;SAVE TESTER DATA REG.
5502	036644	017737	144466	003440		MOV	ARHMR2, TC		;SAVE MR2 TESTER REG.
5503	036652	017737	144472	001162		MOV	ARHTDB, \$REGO		;GET DATA
5504	036660	032777	000200	144442		BIT	#RDY, ARHCS1		;IS OR SET
5505	036666	001003				BNE	3\$		;YES RDY IS SET
5506	036670	104102				ERROR	102		;READY DID NOT SET
5507	036672	004737	007234			JSR	R7, WHYFO		;ARE ANY ERRORS SET
5508	036676	023777	004103	144444	3\$:	CMP	RBUF, ARHTDB		;DID INFO GET WRITTEN OR READ
5509	036704	001407				BEQ	4\$		;INFO GOT LOADED
5510	036706	005737	004100			TST	RBUF		;DOES RBUF = 0
5511	036712	001403				BEQ	5\$		;YES INFO DID NOT LOAD
5512	036714	104147				ERROR	147		;ALL BITS DID NOT LOAD DURING
5513									;AN READ4 OPERATION
5514	036716	000137	036724			JMP	4\$		;EXIT TEST
5515	036722	104150			5\$:	ERROR	150		;READY4 OPERATION DID NOT WORK
5516									;NO BITS WERE LOADED TO RBUF
5517	036724	004737	007234		4\$:	JSR	R7, WHYFO		;ANY ERRORS SET
5518	036730	105737	001103			TSTB	\$ERFLG		;ANY ERRORS ?
5519	036734	001402				BEQ	6\$		;NO EXIT TEST
5520	036736	104146				ERROR	146		;PRINT REGISTERS
5521	036740	104170				ERROR	170		
5522	036742	004737	006602		6\$:	JSR	R7, CLEAR		;CLEAR ERRORS
5523	036746	004737	050130			JSR	R7, ERTST		
5524									
5525									
5526									
5527									
5528									
5529									
5530									
5531	036752	000004							
5532	036754	012777	000007	144356		MOV	#7, ARHCS2		;SETUP UNIT SEVEN
5533	036762	012737	125252	004000		MOV	#0AB, EVENAD		;SETUP INFORMATION
5534	036770	012777	001003	144356		MOV	#DMD!MCLK!SLKM, ARHMR1		;SETUP DIAG. MODE
5535	036776	012777	177777	144326		MOV	#-1, ARHWC		;FOR ONE WORD
5536	037004	005701				TST	R1		;IS IT A 11 OR 70
5537	037006	100403				BMI	1\$		;IT'S AN 11
5538	037010	012777	000000	144342		MOV	#ZERO, ARHBAE		;ZERO BAE
5539	037016	012777	004000	144310	1\$:	MOV	#EVENAD, ARHBA		;SETUP BA
5540	037024	012777	000063	144276		MOV	#WRITE2, ARHCS1		;TELL IT TO WRITETO
5541	037032	012777	001001	144314		MOV	#DMD!SLKM, ARHMR1		;MANIPULATE CLOCK
5542	037040	005037	003446			CLR	BITCNT		;CLEAR LOOP COUNTER
5543	037044	005237	003446		2\$:	INC	BITCNT		;INCREMENT LOOP COUNTER
5544	037050	022737	000015	003446		CMP	#15, BITCNT		;IS IT THIRD LOOP FOR SUSEC WAIT
5545	037056	001372				BNE	2\$		;NO LOOP AGAIN
5546	037060	012777	001003	144266		MOV	#DMD!MCLK!SLKM, ARHMR1		;START CHANGING CLOCK
5547	037066	012777	001001	144260		MOV	#DMD!SLKM, ARHMR1		;CHANGE CLOCK AGAIN
5548	037074	012777	001003	144252		MOV	#DMD!MCLK!SLKM, ARHMR1		;CHANGE CLOCK AGAIN
5549	037102	012777	001001	144244		MOV	#DMD!SLKM, ARHMR1		;CHANGE CLOCK AGAIN
5550	037110	012777	000000	144236		MOV	#ZERO, ARHMR1		;GET OUT OF DIAG MODE
5551	037116	005037	003446			CLR	BITCNT		;CLEAR BIT COUNTER
5552	037122	032777	000200	144200	18\$:	BIT	#RDY, ARHCS1		;IS RDY SET
5553	037130	001015				BNE	7\$		;BIT IS SET
5554	037132	005237	003446			INC	BITCNT		;COUNT UP
5555	037136	001371				BNE	18\$		;NOT FINISHED COUNTING
5556	037140	005037	003446			CLR	BITCNT		;GET READY TO DO IT AGAIN

*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

*TEST 63: SCOPE
MOV #7, ARHCS2 ;SETUP UNIT SEVEN
MOV #0AB, EVENAD ;SETUP INFORMATION
MOV #DMD!MCLK!SLKM, ARHMR1 ;SETUP DIAG. MODE
MOV #-1, ARHWC ;FOR ONE WORD
TST R1 ;IS IT A 11 OR 70
BMI 1\$;IT'S AN 11
MOV #ZERO, ARHBAE ;ZERO BAE
MOV #EVENAD, ARHBA ;SETUP BA
MOV #WRITE2, ARHCS1 ;TELL IT TO WRITETO
MOV #DMD!SLKM, ARHMR1 ;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, ARHMR1 ;START CHANGING CLOCK
MOV #DMD!SLKM, ARHMR1 ;CHANGE CLOCK AGAIN
MOV #DMD!MCLK!SLKM, ARHMR1 ;CHANGE CLOCK AGAIN
MOV #DMD!SLKM, ARHMR1 ;CHANGE CLOCK AGAIN
MOV #ZERO, ARHMR1 ;GET OUT OF DIAG MODE
CLR BITCNT ;CLEAR BIT COUNTER
BIT #RDY, ARHCS1 ;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

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5557 037144 032777 000200 144156 198: BIT      BRDY, BRHCS1      : IS IT SET YET?
5558 037152 001004          BNE      75          : YES
5559 037154 005237 003446      INC      BITCNT      : COUNT UP
5560 037160 001401          BEQ      75          : BIT IS NOT GOING TO SET
5561 037162 000770          BR      198
5562 037164          75:
5563 037164 017737 144140 003420      MOV      BRHCS1, CS1      : SAVE RHCS1
5564 037172 017737 144134 003444      MOV      BRHWC, WC      : SAVE WORD COUNT
5565 037200 017737 144130 003414      MOV      BRHBA, BA      : SAVE BUS ADDRESS
5566 037206 005701          TST      R1          : IS IT AN RH11
5567 037210 001406          BEQ      875         : NO IT'S A 70
5568 037212 005037 003416      CLR      BAE      : CLEAR BAE
5569 037216 005037 003424      CLR      CS3      : CLEAR CS3
5570 037222 000137 037242          JMP      865         : CONTINUE
5571 037226 017737 144126 003416 875:      MOV      BRHBAE, BAE      : SAVE BUS ADDRESS EXTENSION
5572 037234 017737 144122 003424          MOV      BRHCS3, CS3      : SAVE RHCS3
5573 037242 017737 144072 003422 865:      MOV      BRHCS2, CS2      : SAVE CS2
5574 037250 017737 144066 003432          MOV      BRHST, DS1      : SAVE TESTER STATUS
5575 037256 017737 144062 003436          MOV      BRHER, ER1      : SAVE ERROR REGISTER
5576 037264 017737 144060 003442          MOV      BRHTDB, TDR      : SAVE TESTER DATA REG.
5577 037272 017737 144040 003440          MOV      BRHMR2, TC      : SAVE MR2 TESTER REG.
5578 037300 017737 144044 001162          MOV      BRHTDB, $REG0      : GET DATA
5579 037306 032777 000200 144014      BIT      BRDY, BRHCS1      : IS READY SET
5580 037314 001001          BNE      85          : YES CONTINUE TEST
5581 037316 104102          ERROR 102      : READY DID NOT SET
5582 037320 022777 177777 144004 85:      CMP      8-1, BRHWC      : DID WC INCREMENT
5583 037326 001001          BNE      35          : YES CONT TEST
5584 037330 104140          ERROR 140      : WRITETO OPERATION DID NOT INC WC
5585 037332 022777 004002 143774 35:      CMP      $000AD, BRHBA      : DID BA INCREMENT
5586 037340 001401          BEQ      45          : YES CONT TEST
5587 037342 104141          ERROR 141      : BA DID NOT INCREMENT AFTER AN WRITETO OPERATION
5588 037344 023777 004000 143776 45:      CMP      EVENAD, BRHTDB      : DID INFO WRITETO TESTER
5589 037352 001401          BEQ      55          : YES CONT
5590 037354 104142          ERROR 142      : INFO DID NOT WRITETO TESTER
5591 037356 004737 007234          JSR      R7, WHYFO      : ARE ANY ERROR BITS SET
5592 037362 105737 001103          TSTB      $EPFLG      : WAS THERE AN ERROR
5593 037366 001402          BEQ      65          : NO EXIT TEST
5594 037370 104146          ERROR 146      : THESE ARE THE CONTENTS OF ALL RH70 REG.
5595 037372 104170          ERROR 170      : THIS IS TO COMPLETE ERROR PRINTOUT
5596 037374 004737 006602          JSR      R7, CLEER      : CLEAR ERRORS IF ANY
5597 037400 004737 050130          JSR      R7, ERRST
5598
5599
5600 *****
5601 *TEST 64      READ OPERATIONAL TEST (NORMAL) #4
5602 : *THESE TESTS VERIFY ALL READ AND WRITE CODES
5603 : *WHETHER IT BE A READ REV. OR FWD OR A WRITE REV. OR FWD
5604 : *DURING THESE TESTS THE TESTER TIMING IS MARGINED AND
5605 : *NO ERRORS SHOULD OCCUR
5606 *****
5607 †TEST64:      SCOPE
5608      MOV      #7, BRHCS2      : SETUP UNIT SEVEN
5609      MOV      #-1, BRHWC      : FOR ONE WORD
5610      MOV      $RBUF, BRHBA      : SETUP BA
5611      MOV      $ZERO, RBUF      : SETUP DATA
5612      MOV      $OAB, BRHTDB      : SETUP TESTER DB
5613      TST      R1          : IS IT AN 11 OR A 70
5614      BMI      15          : IT'S AN RH11

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5613	037450	012777	000000	143702		MOV	#ZERO, ARHBAE	:ZERO BAE
5614	037456	012777	000077	143644	15:	MOV	#READ6, ARHCS1	:TELL IT TO READ6
5615	037464	005037	003446			CLR	BITCNT	:CLEAR BIT COUNTER
5616	037470	032777	000200	143632	185:	BIT	#RDY, ARHCS1	:IS RDY SET
5617	037476	001015				BNE	25	:BIT IS SET
5618	037500	005237	003446			INC	BITCNT	:COUNT UP
5619	037504	001371				BNE	185	:NOT FINISHED COUNTING
5620	037506	005037	003446			CLR	BITCNT	:SET READY TO DO IT AGAIN
5621	037512	032777	000200	143610	195:	BIT	#RDY, ARHCS1	:IS IT SET YET?
5622	037520	001004				BNE	25	:YES
5623	037522	005237	003446			INC	BITCNT	:COUNT UP
5624	037526	001401				BEQ	25	:BIT IS NOT GOING TO SET
5625	037530	000770				BR	195	
5626	037532				25:			
5627	037532	017737	143572	003420		MOV	ARHCS1, CS1	:SAVE RHCS1
5628	037540	017737	143566	003444		MOV	ARHWC, WC	:SAVE WORD COUNT
5629	037546	017737	143562	003414		MOV	ARHBA, BA	:SAVE BUS ADDRESS
5630	037554	005701				TST	R1	:IS IT AN RH11
5631	037556	001406				BEQ	875	:NO IT'S A 70
5632	037560	005037	003416			CLR	BAE	:CLEAR BAE
5633	037564	005037	003424			CLR	CS3	:CLEAR CS3
5634	037570	000137	037610			JMP	865	:CONTINUE
5635	037574	017737	143560	003416	875:	MOV	ARHBAE, BAE	:SAVE BUS ADDRESS EXTENSION
5636	037602	017737	143554	003424		MOV	ARHCS3, CS3	:SAVE RHCS3
5637	037610	017737	143524	003422	865:	MOV	ARHCS2, CS2	:SAVE CS2
5638	037616	017737	143520	003432		MOV	ARHST, DS1	:SAVE TESTER STATUS
5639	037624	017737	143514	003436		MOV	ARHER, ER1	:SAVE ERROR REGISTER
5640	037632	017737	143512	003442		MOV	ARHTDB, TDR	:SAVE TESTER DATA REG.
5641	037640	017737	143472	003440		MOV	ARHMR2, TC	:SAVE MR2 TESTER REG.
5642	037646	017737	143476	001162		MOV	ARHTDB, \$REGO	:GET DATA
5643	037654	032777	000200	143446		BIT	#RDY, ARHCS1	:IS OR SET
5644	037662	001003				BNE	35	:YES RDY IS SET
5645	037664	104102				ERROR	102	:READY DID NOT SET
5646	037666	004737	007234			JSR	R7, WHYFO	:ARE ANY ERRORS SET
5647	037672	023777	004100	143450	35:	CMP	RBUF, ARHTDB	:DID INFO GET WRITTEN OR READ
5648	037700	001407				BEQ	45	:INFO GOT LOADED
5649	037702	005737	004100			TST	RBUF	:DOES RBUF = 0
5650	037706	001403				BEQ	55	:YES INFO DID NOT LOAD
5651	037710	104115				ERROR	115	:ALL BITS DID NOT LOAD DURING
5652								:AN READ6 OPERATION
5653	037712	000137	037720			JMP	45	:EXIT TEST
5654	037716	104107			55:	ERROR	107	:READ6 OPERATION DID NOT WORK
5655								:NO BITS WERE LOADED TO RBUF
5656	037720	004737	007234		45:	JSR	R7, WHYFO	:ANY ERRORS SET
5657	037724	105737	001103			TSTB	\$ERFLG	:ANY ERRORS ?
5658	037730	001402				BEQ	65	:NO EXIT TEST
5659	037732	104146				ERROR	146	:PRINT REGISTERS
5660	037734	104170				ERROR	170	
5661	037736	004737	006602		65:	JSR	R7, CLEAR	:CLEAR ERRORS
5662	037742	004737	050130			JSR	R7, EARTST	
5663								
5664								
5665								
5666								
5667								
5668								

;*****
 ;*TEST 65 RH OPERATIONAL READ 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

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*****
5669          037746 000004          143362 143362 143362 143362 143362 143362
5670          037750 012777 000007 143362 143362 143362 143362 143362 143362
5671          037756 012777 052525 143364 143364 143364 143364 143364 143364
5672          037764 012777 001003 143362 143362 143362 143362 143362 143362
5673          037772 012777 177777 143332 143332 143332 143332 143332 143332
5674          040000 005701          143346 143346 143346 143346 143346 143346
5675          040002 100403          143314 143314 143314 143314 143314 143314
5676          040004 012777 000000 143346 143346 143346 143346 143346 143346
5677          040012 012777 004000 143314 143314 143314 143314 143314 143314
5678          040020 012777 000073 143302 143302 143302 143302 143302 143302
5679          040026 012777 001001 143320 143320 143320 143320 143320 143320
5680          040034 005037 003446          003446 003446 003446 003446 003446 003446
5681          040040 005237 003446          003446 003446 003446 003446 003446 003446
5682          040044 022737 000015 003446 003446 003446 003446 003446 003446
5683          040052 001372          143272 143272 143272 143272 143272 143272
5684          040054 012777 001003 143264 143264 143264 143264 143264 143264
5685          040062 012777 001001 143256 143256 143256 143256 143256 143256
5686          040070 012777 001003 143250 143250 143250 143250 143250 143250
5687          040076 012777 001001 143242 143242 143242 143242 143242 143242
5688          040104 012777 000000 143204 143204 143204 143204 143204 143204
5689          040112 005037 003446          143162 143162 143162 143162 143162 143162
5690          040116 032777 000200 143162 143162 143162 143162 143162 143162
5691          040124 001015          003446 003446 003446 003446 003446 003446
5692          040126 005237 003446          003446 003446 003446 003446 003446 003446
5693          040132 001371          143132 143132 143132 143132 143132 143132
5694          040134 005037 003446          003446 003446 003446 003446 003446 003446
5695          040140 032777 000200 143132 143132 143132 143132 143132 143132
5696          040146 001004          003446 003446 003446 003446 003446 003446
5697          040150 005237 003446          003446 003446 003446 003446 003446 003446
5698          040154 001401          000770 000770 000770 000770 000770 000770
5699          040156 000770          000770 000770 000770 000770 000770 000770
5700          040160          017737 143144 003420 003420 003420 003420 003420 003420
5701          040160 017737 143140 003444 003444 003444 003444 003444 003444
5702          040166 017737 143134 003414 003414 003414 003414 003414 003414
5703          040174 017737 005701          003416 003416 003416 003416 003416 003416
5704          040202 001406          003424 003424 003424 003424 003424 003424
5705          040204 005037 003424 003424 003424 003424 003424 003424
5706          040206 005037 003424 003424 003424 003424 003424 003424
5707          040212 000137 040236          003416 003416 003416 003416 003416 003416
5708          040222 017737 143132 003424 003424 003424 003424 003424 003424
5709          040230 017737 143076 003422 003422 003422 003422 003422 003422
5710          040236 017737 143072 003432 003432 003432 003432 003432 003432
5711          040244 017737 143066 003436 003436 003436 003436 003436 003436
5712          040252 017737 143064 003442 003442 003442 003442 003442 003442
5713          040260 017737 143044 003440 003440 003440 003440 003440 003440
5714          040266 017737 143050 001162 001162 001162 001162 001162 001162
5715          040274 017737 143020 143020 143020 143020 143020 143020
5716          040302 032777 000200 143010 143010 143010 143010 143010 143010
5717          040310 001001          177777 177777 177777 177777 177777 177777
5718          040312 104102          001001 001001 001001 001001 001001 001001
5719          040314 022777 177777 143010 143010 143010 143010 143010 143010
5720          040322 001001          104143 104143 104143 104143 104143 104143
5721          040324 104143          004002 004002 004002 004002 004002 004002
5722          040326 022777 004002 143000 143000 143000 143000 143000 143000
5723          040326 022777 004002 143000 143000 143000 143000 143000 143000
5724          040326 022777 004002 143000 143000 143000 143000 143000 143000

*****
1ST65: SCOPE
MOV #7, RHCS2          : SETUP UNIT SEVEN
MOV #AB, RHDTDB        : SETUP INFORMATION
MOV #DMC!MCLK!SLKM, RHMR1 : SETUP DIAG. MODE
MOV #-1, RHWC          : FOR ONE WORD
TST R1                : IS IT A 11 OR 70
BNI 1$                : IT'S AN 11
MOV #ZERO, RHBAE       : ZERO BAE
MOV #EVENAD, RHBA      : SETUP BA
MOV #READ2, RHCS1      : TELL IT TO READFROM
MOV #DMC!SLKM, 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 #DMC!MCLK!SLKM, RHMR1 : START CHANGING CLOCK
MOV #DMC!SLKM, RHMR1   : CHANGE CLOCK AGAIN
MOV #DMC!MCLK!SLKM, RHMR1 : CHANGE CLOCK AGAIN
MOV #DMC!SLKM, 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 RHDTDB, TDR       : SAVE TESTER DATA REG.
MOV RHMR2, TC         : SAVE MR2 TESTER REG.
MOV RHDTDB, $REGO     : GET DATA
BIT #RDY, RHCS1       : IS READY SET
BNE 8$                : YES, CONTINUE TEST
ERROR 102             : READY DID NOT SET
CMP #-1, RHWC         : DID WC INCREMENT
BNE 3$                : YES, CONT TEST
ERROR 143             : READFROM OPERATION DID NOT INC WC
CMP #ODDAD, RH3A      : DID BA INCREMENT

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MASSBUS RH70 AND RH11 DIAGNOSTIC MACY11 27(732) 01-OCT-76 09:03 PAGE 109
 C2RMBC.P11 T65 RM OPERATIONAL READ TEST #2

5725	040334	001401				BEQ	45		:YES CONT TEST
5726	040336	104144				ERROR	144		:BA DID NOT INCREMENT AFTER AN READFROM OPERATIO
5727	040340	023777	004000	143002	45:	CMP	EVENAD, JRHTD6		:DID INFC READFROM TESTER
5728	040346	001401				BEQ	55		:YES, CONT
5729	040350	104145				ERROR	145		:INFO DID NOT READFROM TESTER
5730	040352	004737	007234		55:	JSR	R7, WHYFO		:ARE ANY ERROR BITS SET
5731	040356	105737	001103			TSTB	ERRFLG		:WAS THER AN ERROR
5732	040362	001402				BEQ	65		:NO EXIT TEST
5733	040364	104146				ERROR	146		:THESE ARE THE CONTENTS OF ALL RH70 REG.
5734	040366	104170				ERROR	170		:THIS IS TO COMPLETE ERROR PRINTOUT
5735	040370	004737	006602		65:	JSR	R7, CLEER		:CLEER ERRORS IF ANY
5736	040374	004737	050130			JSR	R7, ERRST		
5737									
5738									
5739									
5740									
5741									
5742									
5743									
5744	040400	000304							
5745	040402	012777	000007	142730		MOV	#7, JRHCS2		:SETUP UNIT SEVEN
5746	040410	012777	177777	142714		MOV	#-1, JRHWC		:FOR ONE WORD
5747	040416	012777	004100	142710		MOV	#RBUF, JRHBA		:SETUP BA
5748	040424	012737	125252	004100		MOV	#OAB, RBUF		:SETUP DATA
5749	040432	012777	000000	142710		MOV	#ZERO, JRHTD6		:SETUP TESTER DB
5750	040440	005701				TST	R1		:IS IT AN 11 OR A 70
5751	040442	100403				BMI	15		:IT'S AN RH11
5752	040444	012777	000000	142706		MOV	#ZERO, JRHBAE		:ZERO BAE
5753	040452	012777	000061	142650	15:	MOV	#WRTEO, JRHCS1		:TELL IT TO WRTEO
5754	040460	005037	003446			CLR	BITCNT		:CLEAR BIT COUNTER
5755	040464	032777	000200	142636	185:	BIT	#RDY, JRHCS1		:IS RDY SET
5756	040472	001015				BNE	25		:BIT IS SET
5757	040474	005237	003446			INC	BITCNT		:COUNT UP
5758	040500	001371				BNE	185		:NOT FINISHED COUNTING
5759	040502	005037	003446			CLR	BITCNT		:GET READY TO DO IT AGAIN
5760	040506	032777	000200	142614	195:	BIT	#RDY, JRHCS1		:IS IT SET YET?
5761	040514	001004				BNE	25		:YES
5762	040516	005237	003446			INC	BITCNT		:COUNT UP
5763	040522	001401				BEQ	25		:BIT IS NOT GOING TO SET
5764	040524	000770				BR	195		
5765	040526				25:				
5766	040526	017737	142576	003420		MOV	JRHCS1, CS1		:SAVE RHCS1
5767	040534	017737	142572	003444		MOV	JRHWC, WC		:SAVE WORD COUNT
5768	040542	017737	142566	003414		MOV	JRHBA, BA		:SAVE BUS ADDRESS
5769	040550	005701				TST	R1		:IS IT AN RH11
5770	040552	001406				BEQ	875		:NO IT'S A 70
5771	040554	005037	003416			CLR	BAE		:CLEAR BAE
5772	040560	005037	003424			CLR	CS3		:CLEAR CS3
5773	040564	000137	040604			MP	865		:CONTINUE
5774	040570	017737	142564	003416	875:	MOV	JRHBAE, BAE		:SAVE BUS ADDRESS EXTENSION
5775	040576	017737	142560	003424		MOV	JRHCS3, CS3		:SAVE RHCS3
5776	040604	017737	142530	003422	865:	MOV	JRHCS2, CS2		:SAVE CS2
5777	040612	017737	142524	003432		MOV	JRHST, DS1		:SAVE TESTER STATUS
5778	040620	017737	142520	003436		MOV	JRHER, ER1		:SAVE ERROR REGISTER
5779	040626	017737	142516	003442		MOV	JRHTD6, TOR		:SAVE TESTER DATA REG.
5780	040634	017737	142476	003440		MOV	JRHMR2, TC		:SAVE MR2 TESTER REG.

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5781 040642 017737 142502 001162      MOV      2RHTDB, $REGO      ;GET DATA
5782 040650 032777 000200 142452      BIT      2RDY, 2RHCS1      ;IS RDY SET
5783 040656 001003                      BNE      3$              ;YES RDY IS SET
5784 040660 104102                      ERROR    102             ;READY DID NOT SET
5785 040662 004737 007234              JSR      R7, WHYFO        ;ARE ANY ERRORS SET
5786 040666 023777 004100 142454 3$:    CMP      RBUF, 2RHTDB      ;DID INFO GET WRITTEN OR READ
5787 040674 001407                      BEQ      4$              ;INFO GOT LOADED
5788 040676 005777 142446              TST      2RHTDB          ;DOES 2RHTDB = 0
5789 040702 001403                      BEQ      5$              ;YES INFO DID NOT LOAD
5790 040704 104151                      ERROR    151             ;ALL BITS DID NOT LOAD DURING
5791                                         ;AN WRITED OPERATION
5792 040706 000137 040714              JMP      4$              ;EXIT TEST
5793 040712 104152                      5$:    ERROR    152             ;WRITED OPERATION DID NOT WORK
5794                                         ;NO BITS WERE LOADED TO 2RHTDB
5795 040714 004737 007234              4$:    JSR      R7, WHYFO        ;ANY ERRORS SET
5796 040720 105737 001103              TSTB     2ERFLG          ;ANY ERRORS ?
5797 040724 001402                      BEQ      6$              ;NO EXIT TEST
5798 040726 104146                      ERROR    146             ;PRINT REGISTERS
5799 040730 104170                      ERROR    170
5800 040732 004737 006602              6$:    JSR      R7, CLEAR          ;CLEAR ERRORS
5801 040736 004737 050130              JSR      R7, ERRTST
5802                                         ;*****
5803                                         ;*TEST 67      RM OPERATIONAL WRITE TEST #3
5804                                         ;*THESE TESTS VERIFY ALL READ AND WRITE CODES
5805                                         ;*WHETHER IT BE A READ REV. OR FWD OR A WRITE REV. OR FWD
5806                                         ;*DURING THESE TESTS THE TESTER TIMING IS MARGINED AND
5807                                         ;*NO ERRORS SHOULD OCCUR
5808                                         ;*****
5809 040742 000004                      TST67: SCOPE
5810 040744 012777 000007 142366      MOV      27, 2RHCS2      ;SETUP UNIT SEVEN
5811 040752 012737 125252 004000      MOV      2OAB, EVENAD    ;SETUP INFORMATION
5812 040760 012777 003003 142366      MOV      2DMD!MCLK!SLKM!ISLK, 2RHMR1 ;SETUP DIAG. MODE
5813 040766 012777 177777 142336      MOV      2-1, 2RHWC      ;FOR ONE WORD
5814 040774 005701                      TST      R1              ;IS IT A 11 OR 70
5815 040776 100403                      BMI      1$              ;IT'S AN 11
5816 041000 012777 000000 142352      MOV      2ZERO, 2RHBAE    ;ZERO BAE
5817 041006 012777 004000 142320      1$:    MOV      2EVENAD, 2RHBA ;SETUP BA
5818 041014 012777 000065 142306      MOV      2WRITE4, 2RHCS1 ;TELL IT TO WRITETO
5819 041022 012777 003001 142324      MOV      2DMD!SLKM!ISLK, 2RHMR1 ;MANIPULATE CLOCK
5820 041030 005037 003446              CLR      BITCNT          ;CLEAR LOOP COUNTER
5821 041034 005237 003446              2$:    INC      BITCNT          ;INCREMENT LOOP COUNTER
5822 041040 022737 000015 003446      CMP      215, BITCNT      ;IS IT THIRD LOOP FOR SUSEC WAIT
5823 041046 001372                      BNE      2$              ;NO LOOP AGAIN
5824 041050 012777 003003 142276      MOV      2DMD!MCLK!SLKM!ISLK, 2RHMR1 ;START CHANGING CLOCK
5825 041056 012777 003001 142270      MOV      2DMD!SLKM!ISLK, 2RHMR1      ;CHANGE CLOCK AGAIN
5826 041064 012777 003003 142262      MOV      2DMD!MCLK!SLKM!ISLK, 2RHMR1 ;CHANGE CLOCK AGAIN
5827 041072 012777 003001 142254      MOV      2DMD!SLKM!ISLK, 2RHMR1      ;CHANGE CLOCK AGAIN
5828 041100 012777 000000 142246      MOV      2ZERO, 2RHMR1    ;GET OUT OF DIAG MODE
5829 041106 005037 003446              CLR      BITCNT          ;CLEAR BIT COUNTER
5830 041112 032777 000200 142210 18$:    BIT      2RDY, 2RHCS1      ;IS RDY SET
5831 041120 001015                      BNE      7$              ;BIT IS SET
5832 041122 005237 003446              INC      BITCNT          ;COUNT UP
5833 041126 001371                      BNE      18$             ;NOT FINISHED COUNTING
5834 041130 005037 003446              CLR      BITCNT          ;GET READY TO DO IT AGAIN
5835 041134 032777 000200 142166 19$:    BIT      2RDY, 2RHCS1      ;IS IT SET YET?
5836 041142 001004                      BNE      7$              ;YES

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MASSBUS RH70 AND RH11 DIAGNOSTIC MACY11 27(732) 01-OCT-76 09:03 PAGE 111
 DZRHBC.P11 T67 RH OPERATIONAL WRITE TEST #3

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5837 041144 005237 003446 INC BITCNT :COUNT UP
5838 041150 001401 BEQ 7$ :BIT IS NOT GOING TO SET
5839 041152 000770 BR 19$
5840 041154 017737 142150 003420 7$: MOV 2RHCS1,CS1 :SAVE RHCS1
5841 041154 017737 142144 003444 MOV 2RHWC,WC :SAVE WORD COUNT
5842 041162 017737 142140 003414 MOV 2RHBA,BA :SAVE BUS ADDRESS
5843 041176 005701 TST R1 :IS IT AN RH11
5844 041200 00106 BEQ 87$ :NO IT'S A 70
5845 041202 005037 003416 CLR BAE :CLEAR BAE
5846 041206 005037 003424 CLR CS3 :CLEAR CS3
5847 041212 000137 041232 JMP 86$ :CONTINUE
5848 041216 017737 142136 003416 87$: MOV 2RHBAE,BAE :SAVE BUS ADDRESS EXTENSION
5849 041224 017737 142132 003424 MOV 2RHCS3,CS3 :SAVE RHCS3
5850 041232 017737 142102 003422 86$: MOV 2RHCS2,CS2 :SAVE CS2
5851 041240 017737 142076 003432 MOV 2RHST,DS1 :SAVE TESTER STATUS
5852 041246 017737 142072 003436 MOV 2RHER,ER1 :SAVE ERROR REGISTER
5853 041254 017737 142070 003442 MOV 2RHTDB,TDR :SAVE TESTER DATA REG.
5854 041262 017737 142050 003440 MOV 2RHMR2,TC :SAVE MR2 TESTER REG.
5855 041270 017737 142054 001162 MOV 2RHTDB,$REGO :GET DATA
5856 041276 032777 000200 142024 BIT 2RDY,2RHCS1 :IS READY SET
5857 041304 001001 BNE 8$ :YES,CONTINUE TEST
5858 041306 104102 ERROR 102 :READY DID NOT SET
5859 041310 022777 177777 142014 8$: CMP 2-1,2RHWC :DID WC INCREMENT
5860 041316 001001 BNE 3$ :YES,CONT TEST
5861 041320 104140 ERROR 140 :WRTETO OPERATION DID NOT INC WC
5862 041322 022777 004002 142004 3$: CMP 200DAD,2RHBA :DID BA INCREMENT
5863 041330 001401 BEQ 4$ :YES,CONT TEST
5864 041332 104141 ERROR 141 :BA DID NOT INCREMENT AFTER AN WRTETO OPERATION
5865 041334 023777 004000 142006 4$: CMP EVENAD,2RHTDB :DID INFO WRTETO TESTER
5866 041342 001401 BEQ 5$ :YES,CONT
5867 041344 104142 ERROR 142 :INFO DID NOT WRTETO TESTER
5868 041346 004737 007234 5$: JSR R7,WHYFO :ARE ANY ERROR BITS SET
5869 041352 105737 001103 TSTB 2ERFLG :WAS THER AN ERROR
5870 041356 001402 BEQ 6$ :NO EXIT TEST
5871 041360 104146 ERROR 146 :THESE ARE THE CONTENTS OF ALL RH70 REG.
5872 041362 104170 ERROR 170 :THIS IS TO COMPLETE ERROR PRINTOUT
5873 041364 004737 006602 6$: JSR R7,CLEER :CLEAR ERRORS IF ANY
5874 041370 004737 050130 JSR R7,ERRTST
5875 *****
5876 :*TEST 70 WRITE OPERATIONAL TEST (NORMAL) #2
5877 :*THESE TESTS VERIFY ALL READ AND WRITE CODES
5878 :*WHETHER IT BE A READ REV. OR FWD OR A WRITE REV. OR FWD
5879 :*DURING THESE TESTS THE TESTER TIMING IS MARGINED AND
5880 :*NO ERRORS SHOULD OCCUR
5881 *****
5882 :*TEST 70: SCOPE
5883 041374 000004 MOV 27,2RHCS2 :SETUP UNIT SEVEN
5884 041376 012777 000007 141734 MOV 2-1,2RHWC :FOR ONE WORD
5885 041404 012777 177777 141720 MOV 2RBUF,2RHBA :SETUP BA
5886 041412 012777 004100 141714 MOV 2OAB,2RBUF :SETUP DATA
5887 041420 012737 125252 004100 MOV 2ZERO,2RHTDB :SETUP TESTER DB
5888 041426 012777 000000 141714 TST R1 :IS IT AN 11 OR A 70
5889 041434 005701 BMI 1$ :IT'S AN RH11
5890 041436 100403 MOV 2ZERO,2RHBAE :ZERO BAE
5891 041440 012777 000000 141712 1$: MOV 2WRITE2,2RHCS1 :TELL IT TO WRITE2
5892 041446 012777 000063 141654

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MASSBUS RHTO AND RH11 DIAGNOSTIC MACY11 27(732) 01-OCT-76 09:03 PAGE 112
 027400.F11 770 WRITE OPERATIONAL TEST (NORMAL) #2

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5893 041454 005037 003446 CLR BITCNT ;CLEAR BIT COUNTER
5894 041460 032777 000200 141642 19$: BIT #RDY,DRHCS1 ;IS RDY SET
5895 041466 001015 BNE 2$ ;BIT IS SET
5896 041470 005237 003446 INC BITCNT ;COUNT UP
5897 041474 001371 BNE 18$ ;NOT FINISHED COUNTING
5898 041476 005037 003446 CLR BITCNT ;GET READY TO DO IT AGAIN
5899 041502 032777 000200 141620 19$: BIT #RDY,DRHCS1 ;IS IT SET YET?
5900 041510 001004 BNE 2$ ;YES
5901 041512 005237 003446 INC BITCNT ;COUNT UP
5902 041516 001401 BEQ 2$ ;BIT IS NOT GOING TO SET
5903 041520 000770 BR 19$
5904 041522 2$:
5905 041522 017737 141602 003420 MOV DRHCS1,CS1 ;SAVE RHCS1
5906 041530 017737 141576 003444 MOV DRHWC,WC ;SAVE WORD COUNT
5907 041536 017737 141572 003414 MOV DRHBA,BA ;SAVE BUS ADDRESS
5908 041544 005701 TST R1 ;IS IT AN RH11
5909 041546 001406 BEQ 87$ ;NO IT'S A 70
5910 041550 005037 003416 CLR BAE ;CLEAR BAE
5911 041554 005037 003424 CLR CS3 ;CLEAR CS3
5912 041560 000137 041600 JMP 86$ ;CONTINUE
5913 041564 017737 141570 003416 87$: MOV DRHBAE,BAE ;SAVE BUS ADDRESS EXTENSION
5914 041572 017737 141564 003424 MOV DRHCS3,CS3 ;SAVE RHCS3
5915 041600 017737 141534 003422 86$: MOV DRHCS2,CS2 ;SAVE CS2
5916 041606 017737 141530 003432 MOV DRHST,DS1 ;SAVE TESTER STATUS
5917 041614 017737 141524 003436 MOV DRHER,ER1 ;SAVE ERROR REGISTER
5918 041622 017737 141522 003442 MOV DRHTDB,TOR ;SAVE TESTER DATA REG.
5919 041630 017737 141502 003440 MOV DRHMR2,TC ;SAVE MR2 TESTER REG.
5920 041636 017737 141506 001162 MOV DRHTDB,$REGO ;GET DATA
5921 041644 032777 000200 141456 BIT #RDY,DRHCS1 ;IS OR SET
5922 041652 001003 BNE 3$ ;YES RDY IS SET
5923 041654 104102 ERROR 102 ;READY DID NOT SET
5924 041656 004737 007234 JSR R7,WHYFO ;ARE ANY ERRORS SET
5925 041662 023777 004100 141460 3$: CMP RBUF,DRHTDB ;DID INFO GET WRITTEN OR READ
5926 041670 001407 BEQ 4$ ;INFO GOT LOADED
5927 041672 005777 141452 TST DRHTDB ;DOES DRHTDB = 0
5928 041676 001403 BEQ 5$ ;YES INFO DID NOT LOAD
5929 041700 104151 ERROR 151 ;ALL BITS DID NOT LOAD DURING
5930 ;AN WRITE2 OPERATION
5931 041702 000137 041710 JMP 4$ ;EXIT TEST
5932 041706 104152 5$: ERROR 152 ;WRITE2 OPERATION DID NOT WORK
5933 ;NO BITS WHERE LOADED TO DRHTDB
5934 041710 004737 007234 4$: JSR R7,WHYFO ;ANY ERRORS SET
5935 041714 105737 001103 TSTB SERFLG ;ANY ERRORS ?
5936 041720 001402 BEQ 6$ ;NO EXIT TEST
5937 041722 104146 ERROR 146 ;PRINT REGISTERS
5938 041724 104170 ERROR 170
5939 041726 004737 006602 6$: JSR R7,CLEER ;CLEAR ERRORS
5940 041732 004737 050130 JSR R7,ERRTST
5941 ;*****
5942 ;*TEST 71 RH OPERATIONAL READ TEST #3
5943 ;*THESE TESTS VERIFY ALL READ AND WRITE CODES
5944 ;*WHETHER IT BE A READ REV. OR FWD OR A WRITE REV. OR FWD
5945 ;*DURING THESE TESTS THE TESTER TIMING IS MARGINED AND
5946 ;*NO ERRORS SHOULD OCCUR
5947 ;*****
5948 041736 000004 ;ST71: SCOPE

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5949	041740	012777	000007	141372	MOV	#7, ARHCS2	; SETUP UNIT SEVEN
5950	041746	012777	052525	141374	MOV	#AB, ARHTDB	; SETUP INFORMATION
5951	041754	012777	003003	141372	MOV	#DMD!SLKM!ISLK!MCLK, ARHMA1	; SETUP DIAG. MODE
5952	041762	012777	177777	141342	MOV	#-1, ARHWC	; FOR ONE WORD
5953	041770	005701			R1		; IS IT A 11 OR 70
5954	041772	100403			1\$		; IT'S AN 11
5955	041774	012777	000000	141356	MOV	#ZERO, ARHBAE	; ZERO BAE
5956	042002	012777	004000	141324	1\$: MOV	#EVENAD, ARHBA	; SETUP BA
5957	042010	012777	000075	141312	MOV	#READY, ARHCS1	; TELL IT TO READFROM
5958	042016	012777	003001	141330	MOV	#DMD!SLKM!ISLK, ARHMR1	; MANIPULATE CLOCK
5959	042024	005037	003446		CLR	BITCNT	; CLEAR LOOP COUNTER
5960	042030	005237	003446		2\$: INC	BITCNT	; INCREMENT LOOP COUNTER
5961	042034	022737	000015	003446	CMP	#15, BITCNT	; IS IT THIRD LOOP FOR SUSEC WAIT
5962	042042	001372			BNE	2\$	; NO LOOP AGAIN
5963	042044	012777	003003	141302	MOV	#DMD!SLKM!ISLK!MCLK, ARHMR1	; START CHANGING CLOCK
5964	042052	012777	003001	141274	MOV	#DMD!SLKM!ISLK, ARHMR1	; CHANGE CLOCK AGAIN
5965	042060	012777	003003	141266	MOV	#DMD!SLKM!ISLK!MCLK, ARHMR1	; CHANGE CLOCK AGAIN
5966	042066	012777	003001	141260	MOV	#DMD!SLKM!ISLK, ARHMR1	; CHANGE CLOCK AGAIN
5967	042074	012777	000000	141252	MOV	#ZERO, ARHMR1	; GET OUT OF DIAG MODE
5968	042102	005037	003446		CLR	BITCNT	; CLEAR BIT COUNTER
5969	042106	032777	000200	141214	18\$: BIT	#RDY, ARHCS1	; IS RDY SET
5970	042114	001015			BNE	7\$	; BIT IS SET
5971	042116	005237	003446		INC	BITCNT	; COUNT UP
5972	042122	001371			BNE	18\$	; NOT FINISHED COUNTING
5973	042124	005037	003446		CLR	BITCNT	; GET READY TO DO IT AGAIN
5974	042130	032777	000200	141172	19\$: BIT	#RDY, ARHCS1	; IS IT SET YET?
5975	042136	001004			BNE	7\$	; YES
5976	042140	005237	003446		INC	BITCNT	; COUNT UP
5977	042144	001401			BEQ	7\$	; BIT IS NOT GOING TO SET
5978	042146	000770			BR	19\$	
5979	042150				7\$:		
5980	042150	017737	141154	003420	MOV	ARHCS1, CS1	; SAVE RHCS1
5981	042156	017737	141150	003444	MOV	ARHWC, WC	; SAVE WORD COUNT
5982	042164	017737	141144	003414	MOV	ARHBA, BA	; SAVE BUS ADDRESS
5983	042172	005701			TST	R1	; IS IT AN RH11
5984	042174	001406			BEQ	87\$	; NO IT'S A 70
5985	042176	005037	003416		CLR	BAE	; CLEAR BAE
5986	042202	005037	003424		CLR	CS3	; CLEAR CS3
5987	042206	000137	042226		JMP	86\$	; CONTINUE
5988	042212	017737	141142	003416	87\$: MOV	ARHBAE, BAE	; SAVE BUS ADDRESS EXTENSION
5989	042220	017737	141136	003424	MOV	ARHCS3, CS3	; SAVE RHCS3
5990	042226	017737	141106	003422	86\$: MOV	ARHCS2, CS2	; SAVE CS2
5991	042234	017737	141102	003432	MOV	ARHST, DS1	; SAVE TESTER STATUS
5992	042242	017737	141076	003436	MOV	ARHER, ER1	; SAVE ERROR REGISTER
5993	042250	017737	141074	003442	MOV	ARHTDB, TDR	; SAVE TESTER DATA REG.
5994	042256	017737	141054	003440	MOV	ARHMR2, TC	; SAVE MR2 TESTER REG.
5995	042264	017737	141060	001162	MOV	ARHTDB, SREG0	; GET DATA
5996	042272	032777	000200	141030	BIT	#RDY, ARHCS1	; IS READY SET
5997	042300	001001			BNE	8\$	; YES, CONTINUE TEST
5998	042302	104102			ERROR	102	; READY DID NOT SET
5999	042304	022777	177777	141020	8\$: CMP	#-1, ARHWC	; DID WC INCREMENT
6000	042312	001001			BNE	3\$	; YES, CONT TEST
6001	042314	104143			ERROR	143	; READFROM OPERATION DID NOT INC WC
6002	042316	022777	004002	141010	3\$: CMP	#00DAD, ARHBA	; DID BA INCREMENT
6003	042324	001401			BEQ	4\$	; YES CONT TEST
6004	042326	104144			ERROR	144	; BA DID NOT INCREMENT AFTER AN READFROM OPERATIO

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MASSBUS RH70 AND RH1: DIAGNOSTIC MACY11 27(732) 01-OCT-76 09:03 PAGE 114
 DZRHBC.P11 T71 RH OPERATIONAL READ TEST #3

6005	042330	023777	004000	141012	45:	CMP	EVENAD, 0RHTDB	:DID INFO READFROM TESTER
6006	042336	001401				BEQ	55	:YES, CONT
6007	042340	104145				ERROR	145	:INFO DID NOT READFROM TESTER
6008	042342	004737	007234		55:	JSR	R7, WHYFO	:ARE ANY ERROR BITS SET
6009	042346	105737	001103			TSTB	5ERFLG	:WAS THER AN ERROR
6010	042352	001402				BEQ	65	:NO EXIT TEST
6011	042354	104146				ERROR	146	:THESE ARE THE CONTENTS OF ALL RH70 REG.
6012	042356	104170				ERROR	170	:THIS IS TO COMPLETE ERROR PRINTOUT
6013	042360	004737	006602		65:	JSR	R7, CLEER	:CLEER ERRORS IF ANY
6014	042364	004737	050130			JSR	R7, ERRST	

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MASSBUS RH70 AND RH11 DIAGNOSTIC MACY11 27(732) 01-OCT-76 09:03 PAGE 115
 DZRHBC.P11 T72 WRITE OPERATIONAL TEST (NORMAL) #3

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6015 ::*****
6016 :*TEST 72 WRITE OPERATIONAL TEST (NORMAL) #3
6017 :*THESE TESTS VERIFY ALL READ AND WRITE CODES
6018 :*WHETHER IT BE A READ REV. OR FWD OR A WRITE REV. OR FWD
6019 :*DURING THESE TESTS THE TESTER TIMING IS MARGINED AND
6020 :*NO ERRORS SHOULD OCCUR
6021 ::*****
6022 042370 000004 1ST72: SCOPE
6023 042372 012777 000007 140740 MOV #7, @RHCS2 ; SETUP UNIT SEVEN
6024 042400 012777 177777 140724 MOV #-1, @RHWC ; FOR ONE WORD
6025 042406 012777 004100 140720 MOV @RBUF, @RHBA ; SETUP BA
6026 042414 012737 125252 004100 MOV @OAB, @RBUF ; SETUP DATA
6027 042422 012777 000000 140720 MOV @ZERO, @RHTDB ; SETUP TESTER DB
6028 042430 005701 TST R1 ; IS IT AN 11 OR A 70
6029 042432 100403 BMI 15 ; IT'S AN RH11
6030 042434 012777 000000 140716 MOV @ZERO, @RHBAE ; ZERO BAE
6031 042442 012777 000065 140660 15: MOV @WRITE4, @RHCS1 ; TELL IT TO WRITE4
6032 042450 005037 003446 CLR BITCNT ; CLEAR BIT COUNTER
6033 042454 032777 000200 140646 185: BIT @RDY, @RHCS1 ; IS RDY SET
6034 042462 001015 BNE 25 ; BIT IS SET
6035 042464 005237 003446 INC BITCNT ; COUNT UP
6036 042470 001371 BNE 185 ; NOT FINISHED COUNTING
6037 042472 005037 003446 CLR BITCNT ; GET READY TO DO IT AGAIN
6038 042476 032777 000200 140624 195: BIT @RDY, @RHCS1 ; IS IT SET YET?
6039 042504 001004 BNE 25 ; YES
6040 042506 005237 003446 INC BITCNT ; COUNT UP
6041 042512 001401 BEQ 25 ; BIT IS NOT GOING TO SET
6042 042514 000770 BR 195
6043 042516 25:
6044 042516 017737 140606 003420 MOV @RHCS1, CS1 ; SAVE RHCS1
6045 042524 017737 140602 003444 MOV @RHWC, WC ; SAVE WORD COUNT
6046 042532 017737 140576 003414 MOV @RHBA, BA ; SAVE BUS ADDRESS
6047 042540 005701 TST R1 ; IS IT AN RH11
6048 042542 001406 BEQ 875 ; NO IT'S A 70
6049 042544 005037 003416 CLR BAE ; CLEAR BAE
6050 042550 005037 003424 CLR CS3 ; CLEAR CS3
6051 042554 000137 042574 JMP 865 ; CONTINUE
6052 042560 017737 140574 003416 875: MOV @RHBAE, BAE ; SAVE BUS ADDRESS EXTENSION
6053 042566 017737 140570 003424 MOV @RHCS3, CS3 ; SAVE RHCS3
6054 042574 017737 140540 003422 865: MOV @RHCS2, CS2 ; SAVE CS2
6055 042602 017737 140534 003432 MOV @RHST, DS1 ; SAVE TESTER STATUS
6056 042610 017737 140530 003436 MOV @RHER, ER1 ; SAVE ERROR REGISTER
6057 042616 017737 140526 003442 MOV @RHTDB, TDR ; SAVE TESTER DATA REG.
6058 042624 017737 140506 003440 MOV @RHMR2, TC ; SAVE MR2 TESTER REG.
6059 042632 017737 140512 001162 MOV @RHTDB, $REGO ; GET DATA
6060 042640 032777 000200 140462 BIT @RDY, @RHCS1 ; IS OR SET
6061 042646 001003 BNE 35 ; YES RDY IS SET
6062 042650 104102 ERROR 102 ; READY DID NOT SET
6063 042652 004737 007234 JSR R7, WHYFO ; ARE ANY ERRORS SET
6064 042656 023777 004100 140464 35: CMP @RBUF, @RHTDB ; DID INFO GET WRITTEN OR READ
6065 042664 001407 BEQ 45 ; INFO GOT LOADED
6066 042666 005777 140456 TST @RHTDB ; DOES @RHTDB = 0
6067 042672 001403 BEQ 55 ; YES INFO DID NOT LOAD
6068 042674 104151 ERROR 151 ; ALL BITS DID NOT LOAD DURING
6069 ; AN WRITE4 OPERATION
6070 042676 000137 042704 JMP 45 ; EXIT TEST

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6071 042702 104152          5$:  ERROR 152          ;WRITE4 OPERATION DID NOT WORK
6072                                     ;NO BITS WERE LOADED TO DRHTDB
6073 042704 004737 007234    4$:  JSR    R7,WHYFO      ;ANY ERRORS SET
6074 042710 105737 001103      TSTB   $ERFLG        ;ANY ERRORS ?
6075 042714 001402              BEQ     6$           ;NO EXIT TEST
6076 042716 104146              ERROR 146           ;PRINT REGISTERS
6077 042720 104170              ERROR 170
6078 042722 004737 006602    6$:  JSR    R7,CLEER      ;CLEAR ERRORS
6079 042726 004737 050130      JSR    R7,ERRTST
6080                                     ;*****
6081                                     ;*TEST 73      RH OPERATIONAL WRITE TEST #4
6082                                     ;*THESE TESTS VERIFY ALL READ AND WRITE CODES
6083                                     ;*WHETHER IT BE A READ REV. OR FWD OR A WRITE REV. OR FWD
6084                                     ;*DURING THESE TESTS THE TESTER TIMING IS MARGINED AND
6085                                     ;*NO ERRORS SHOULD OCCUR
6086                                     ;*****
6087 042732 000004          TST73: SCOPE
6088 042734 012777 000007 140376  MOV    #7,DRHCS2      ;SETUP UNIT SEVEN
6089 042742 012737 125252 004000  MOV    #0AB,EVENAD    ;SETUP INFORMATION
6090 042750 012777 000003 140376  MOV    #DMD!MCLK,DRHMR1 ;SETUP DIAG. MODE
6091 042756 012777 177777 140346  MOV    #-1,DRHWC      ;FOR ONE WORD
6092 042764 005701          TST     R1              ;IS IT A 11 OR 70
6093 042766 100403          BMI     1$              ;IT'S AN 11
6094 042770 012777 000000 140362  MOV    #ZERO,DRHBAE    ;ZERO BAE
6095 042776 012777 004000 140330  1$:  MOV    #EVENAD,DRHBA   ;SETUP BA
6096 043004 012777 000067 140316  MOV    #WRITE6,DRHCS1  ;TELL IT TO WRITETO
6097 043012 012777 000001 140334  MOV    #DMD,DRHMR1    ;MANIPULATE CLOCK
6098 043020 005037 003446          CLR     BITCNT      ;CLEAR LOOP COUNTER
6099 043024 005237 003446    2$:  INC     BITCNT      ;INCREMENT LOOP COUNTER
6100 043030 022737 000015 003446  CMP     #15,BITCNT    ;IS IT THIRD LOOP FOR SUSEC WAIT
6101 043036 001372          BNE     2$              ;NO LOOP AGAIN
6102 043040 012777 000003 140306  MOV    #DMD!MCLK,DRHMR1 ;START CHANGING CLOCK
6103 043046 012777 000001 140300  MOV    #DMD,DRHMR1    ;CHANGE CLOCK AGAIN
6104 043054 012777 000003 140272  MOV    #DMD!MCLK,DRHMR1 ;CHANGE CLOCK AGAIN
6105 043062 012777 000001 140264  MOV    #DMD,DRHMR1    ;CHANGE CLOCK AGAIN
6106 043070 012777 000000 140256  MOV    #ZERO,DRHMR1  ;GET OUT OF DIAG MODE
6107 043076 005037 003446          CLR     BITCNT      ;CLEAR BIT COUNTER
6108 043102 032777 000200 140220  18$: BIT     #RDY,DRHCS1  ;IS RDY SET
6109 043110 001015          BNE     7$              ;BIT IS SET
6110 043112 005237 003446          INC     BITCNT      ;COUNT UP
6111 043116 001371          BNE     18$             ;NOT FINISHED COUNTING
6112 043120 005037 003446          CLR     BITCNT      ;GET READY TO DO IT AGAIN
6113 043124 032777 000200 140176  19$: BIT     #RDY,DRHCS1  ;IS IT SET YET?
6114 043132 001004          BNE     7$              ;YES
6115 043134 005237 003446          INC     BITCNT      ;COUNT UP
6116 043140 001401          BEQ     7$              ;BIT IS NOT GOING TO SET
6117 043142 000770          BR      19$
6118 043144          7$:  MOV    DRHCS1,CS1      ;SAVE RHCS1
6119 043144 017737 140160 003420  MOV    DRHWC,WC      ;SAVE WORD COUNT
6120 043152 017737 140154 003444  MOV    DRHBA,BA      ;SAVE BUS ADDRESS
6121 043160 017737 140150 003414  TST     R1              ;IS IT AN RH11
6122 043166 005701          BEQ     87$             ;NO IT'S A 70
6123 043170 001406          CLR     BAE            ;CLEAR BAE
6124 043172 005037 003416          CLR     CS3        ;CLEAR CS3
6125 043176 005037 003424          CLR     CS3
6126 043202 000137 043222          JMP     86$        ;CONTINUE

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6127 043206 017737 140146 003416 87$: MOV      2RHBAE,BAE      ;SAVE BUS ADDRESS EXTENSION
6128 043214 017737 140142 003424      MOV      2RHCS3,CS3      ;SAVE RHCS3
6129 043222 017737 140112 003422 86$: MOV      2RHCS2,CS2      ;SAVE CS2
6130 043230 017737 140106 003432      MOV      2RHST,DS1      ;SAVE TESTER STATUS
6131 043236 017737 140102 003436      MOV      2RHER,ER1      ;SAVE ERROR REGISTER
6132 043244 017737 140100 003442      MOV      2RHTDB,TDR      ;SAVE TESTER DATA REG.
6133 043252 017737 140060 003440      MOV      2RHMR2,TC      ;SAVE MR2 TESTER REG.
6134 043260 017737 140064 001162      MOV      2RHTDB,$REG0      ;GET DATA
6135 043266 032777 000200 140034      BIT      2RDY,2RHCS1      ;IS READY SET
6136 043274 001001      BNE      8$      ;YES,CONTINUE TEST
6137 043276 104102      ERROR    102      ;READY DID NOT SET
6138 043300 022777 177777 140024 8$:  CMP      #-1,2RHWC      ;DID WC INCREMENT
6139 043306 001001      BNE      3$      ;YES,CONT TEST
6140 043310 104140      ERROR    140      ;WRITETO OPERATION DID NOT INC WC
6141 043312 022777 003776 140014 3$:  CMP      2EVENAD-2,2RHBA      ;DID BA INCREMENT
6142 043320 001401      BEQ      4$      ;YES,CONT TEST
6143 043322 104141      ERROR    141      ;BA DID NOT INCREMENT AFTER AN WRITETO OPERATION
6144 043324 023777 004000 140016 4$:  CMP      2EVENAD,2RHTDB      ;DID INFO WRITETO TESTER
6145 043332 001401      BEQ      5$      ;YES,CONT
6146 043334 104142      ERROR    142      ;INFO DID NOT WRITETO TESTER
6147 043336 004737 007234 5$:  JSR      R7,WHYFO      ;ARE ANY ERROR BITS SET
6148 043342 105737 001103      TSTB     2ERFLG      ;WAS THER AN ERROR
6149 043346 001402      BEQ      6$      ;NO EXIT TEST
6150 043350 104146      ERROR    146      ;THESE ARE THE CONTENTS OF ALL RH70 REG.
6151 043352 104170      ERROR    170      ;THIS IS TO COMPLETE ERROR PRINTOUT
6152 043354 004737 006602 6$:  JSR      R7,CLEER      ;CLEER ERRORS IF ANY
6153 043360 004737 050130      JSR      R7,ERRTST
6154 *****
6155 ;*TEST 74 WRITE OPERATIONAL TEST (NORMAL) #4
6156 ;*THESE TESTS VERIFY ALL READ AND WRITE CODES
6157 ;*WHETHER IT BE A READ REV. OR FWD OR A WRITE REV. OR FWD
6158 ;*DURING THESE TESTS THE TESTER TIMING IS MARGINED AND
6159 ;*NO ERRORS SHOULD OCCUR
6160 *****
6161 043364 000004 74ST74: SCOPE
6162 043366 012777 000007 137744      MOV      27,2RHCS2      ;SETUP UNIT SEVEN
6163 043374 012777 177777 137730      MOV      #-1,2RHWC      ;FOR ONE WORD
6164 043402 012777 004100 137724      MOV      2RBUF,2RHBA      ;SATUP BA
6165 043410 012737 125252 004100      MOV      2OAB,2RBUF      ;SETUP DATA
6166 043416 012777 000000 137724      MOV      2ZERO,2RHTDB      ;SETUP TESTER DB
6167 043424 005701      TST      R1      ;IS IT AN 11 OR A 70
6168 043426 100403      EMI      1$      ;IT'S AN RH11
6169 043430 012777 000000 137722      MOV      2ZERO,2RHBAE      ;ZERO BAE
6170 043436 012777 000067 137664 1$:  MOV      2WRITE6,2RHCS1      ;TELL IT TO WRITE6
6171 043444 005037 003446      CLR      BITCNT      ;CLEAR BIT COUNTER
6172 043450 032777 000200 137652 18$:  BIT      2RDY,2RHCS1      ;IS RDY SET
6173 043456 001015      BNE      2$      ;BIT IS SET
6174 043460 005237 003446      INC      BITCNT      ;COUNT UP
6175 043464 001371      BNE      18$      ;NOT FINISHED COUNTING
6176 043466 005037 003446      CLR      BITCNT      ;GET READY TO DO IT AGAIN
6177 043472 032777 000200 137630 19$:  BIT      2RDY,2RHCS1      ;IS IT SET YET?
6178 043500 001004      BNE      2$      ;YES
6179 043502 005237 003446      INC      BITCNT      ;COUNT UP
6180 043506 001401      BEQ      2$      ;BIT IS NOT GOING TO SET
6181 043510 000770      BR       19$
6182 043512 2$:

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

;*****
 ;*TEST 75 RH OPERATIONAL READ 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
 ;******
 ;*ST75: SCOPE
 ;*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 READFROM
 ;*MANIPULATE CLOCK
 ;*CLEAR LOOP COUNTER
 ;*INCREMENT LOOP COUNTER

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022733 000015 003446 CMP      815,BITCNT      :IS IT THIRD LOOP FOR ELSEC WAIT
022734 001372 BNE      28          :NO LOOP AGAIN
022735 012777 000003 137312 MOV      8DMD,MCLK,2RHMR1 :START CHANGING CLOCK
022736 012777 000001 137304 MOV      8DMD,2RHMR1      :CHANGE CLOCK AGAIN
022737 012777 000003 137276 MOV      8DMD,MCLK,2RHMR1 :CHANGE CLOCK AGAIN
022738 012777 000001 137270 MOV      8DMD,2RHMR1      :CHANGE CLOCK AGAIN
022739 012777 000000 137262 MOV      8ZERO,2RHMR1     :GET OUT OF DIAG MODE
022740 005037 003446 CLR      BITCNT      :CLEAR BIT COUNTER
022741 032777 000200 137224 185: BIT      8RDY,2RHCS1     :IS RDY SET
022742 001015 BNE      75          :BIT IS SET
022743 005237 003446 INC      BITCNT      :COUNT UP
022744 001371 BNE      185         :NOT FINISHED COUNTING
022745 005037 003446 CLR      BITCNT      :GET READY TO DO IT AGAIN
022746 032777 000200 137202 195: BIT      8RDY,2RHCS1     :IS IT SET YET?
022747 001004 BNE      75          :YES
022748 005237 003446 INC      BITCNT      :COUNT UP
022749 001401 BEQ      75          :BIT IS NOT GOING TO SET
022750 000770 BR       195
022751 001140 75:
022752 017737 137164 003420 MOV      2RHCS1,CS1      :SAVE RHCS1
022753 017737 137160 003444 MOV      2RHWC,WC       :SAVE WORD COUNT
022754 017737 137154 003414 MOV      2RHBA,BA       :SAVE BUS ADDRESS
022755 005701 TST      R1          :IS IT AN RH11
022756 001406 BEQ      875         :NO IT'S A 70
022757 005037 003416 CLR      BAE          :CLEAR BAE
022758 005037 003424 CLR      CS3          :CLEAR CS3
022759 000137 044216 JMP      865         :CONTINUE
022760 017737 137152 003416 875: MOV      2RHBAE,BAE      :SAVE BUS ADDRESS EXTENSION
022761 017737 137146 003424 865: MOV      2RHCS3,CS3     :SAVE RHCS3
022762 017737 137116 003422 MOV      2RHCS2,CS2     :SAVE CS2
022763 017737 137112 003432 MOV      2RHST,DS1      :SAVE TESTER STATUS
022764 017737 137106 003436 MOV      2RHER,ERI      :SAVE ERROR REGISTER
022765 017737 137104 003442 MOV      2RHTDB,TDR      :SAVE TESTER DATA REG.
022766 017737 137064 003440 MOV      2RHMR2,TC       :SAVE MR2 TESTER REG.
022767 017737 137070 001162 MOV      2RHTDB,$REGO    :GET DATA
022768 032777 000200 137040 BIT      8RDY,2RHCS1     :IS READY SET
022769 001001 BNE      85          :YES,CONTINUE TEST
022770 104102 ERROR      102        :READY DID NOT SET
022771 022777 177777 137030 85: CMP      8-1,2RHWC      :DID WC INCREMENT
022772 001001 BNE      35          :YES,CONT TEST
022773 104143 ERROR      143        :READFROM OPERATION DID NOT INC WC
022774 022777 003776 137020 35: CMP      8EVENAD-2,2RHBA :DID BA INCREMENT
022775 001401 BEQ      45          :YES,CONT TEST
022776 104144 ERROR      144        :BA DID NOT INCREMENT AFTER AN READFROM OPERATIO
022777 023777 004000 137022 45: CMP      EVENAD,2RHTDB  :DID INFO READFROM TESTER
022778 001401 BEQ      55          :YES,CONT
022779 104145 ERROR      145        :INFO DID NOT READFROM TESTER
022780 004737 007234 55: JSR      R7,WHYFC      :ARE ANY ERROR BITS SET
022781 105737 001103 TSTB     8ERFLG        :WAS THERE AN ERROR
022782 001402 BEQ      65          :NO EXIT TEST
022783 104146 ERROR      146        :THESE ARE THE CONTENTS OF ALL RH70 REG.
022784 104170 ERROR      170        :THIS IS TO COMPLETE ERROR PRINTOUT
022785 004737 006602 65: JSR      R7,CLEER      :CLEAR ERRORS IF ANY
022786 004737 050130 JSR      R7,ERRTST
022787 *****
022788 :*TEST 76 LARGE TRANSFER TEST

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6295                                     :THIS TEST DOES A 4K (OCTAL) WORD TRANSFER
6296                                     :THE SECOND TIME THROUGH THE TEST SYNC CLOCK
6297                                     :IS MARGINED TO MAKE SURE NO ERRORS OCCUR
6298                                     :*****
6299 044360 000004 1576: SCOPE
6300
6301
6302 044362 012777 000007 136750 MOV 87,2RHCS2
6303 044370 005037 177776 CLR 28PSW
6304 044374 005037 003452 CLR PASS
6305 044400 005037 003450 BLITZ: CLR LOOCNT ;CLEAR THE LOOP COUNTER
6306 044404 005701 IN: ST R1 ;IS IT AN 11 OR 70
6307 044406 100403 IS ;IT IS AN 11
6308 044410 012777 000000 136742 MOV 8ZERO,2RHBAE ;IT'S A 70 ZERO THE BAE
6309 044416 012777 005000 136710 15: MOV 85000,2RHBA ;SET THE BUS ADDRESS
6310 044424 012777 174000 136700 MOV 8-4000,2RHWC
6311 044432 012777 050254 136746 MOV 8BLKTST,2VECAD ;USE IT IN INTERRUPT MODE
6312
6313 044440 005701 TST R1
6314 044442 001412 BEQ BLIP
6315 044444 005737 003452 TST PASS
6316 044450 001407 BEQ BLIP
6317 044452 032737 000002 177570 BIT 8BIT1,28177570
6318 044460 001171 BNE BOTTOM
6319 044462 004737 047544 JSR R7,DUPORT
6320 044466 000434 BR RHNINT
6321 044470 012777 000161 136632 BLIP: MOV 8WRITED!IE,2RHCS1 ;SET INTERRUPT AND TELL IT TO WRITE
6322
6323 044476 005037 003446 CLR BITCNT ;CLEAR BIT COUNTER
6324 044502 032777 000200 136620 185: BIT 8RDY,2RHCS1 ;IS RDY SET
6325 044510 001015 BNE 25 ;BIT IS SET
6326 044512 005237 003446 INC BITCNT ;COUNT UP
6327 044516 001371 BNE 185 ;NOT FINISHED COUNTING
6328 044520 005037 003446 CLR BITCNT ;GET READY TO DO IT AGAIN
6329 044524 032777 000200 136576 195: BIT 8RDY,2RHCS1 ;IS IT SET YET?
6330 044532 001004 BNE 25 ;YES
6331 044534 005237 003446 INC BITCNT ;COUNT UP
6332 044540 001401 BEQ 25 ;BIT IS NOT GOING TO SET
6333 044542 000770 BR 195
6334 044544
6335 044544 032777 000200 136556 25: BIT 8RDY,2RHCS1 ;DID READY SET
6336 044552 001001 BNE 255 ;YES READY SET
6337 044554 104102 ERROR 102 ;READY DID NOT SET
6338 044556 104205 255: ERROR 205 ;IT DID NOT INTERRUPT
6339 044560 RHNINT:
6340 044560 017737 136544 003420 MOV 2RHCS1,CS1 ;SAVE RHCS1
6341 044566 017737 136540 003444 MOV 2RHWC,WC ;SAVE WORD COUNT
6342 044574 017737 136534 003414 MOV 2RHBA,BA ;SAVE BUS ADDRESS
6343 044602 005701 TST R1 ;IS IT AN RH11
6344 044604 001406 BEQ B75 ;NO IT'S A 70
6345 044606 005037 003416 CLR BAE ;CLEAR BAE
6346 044612 005037 003424 CLR CS3 ;CLEAR CS3
6347 044616 000137 044636 JMP B65 ;CONTINUE
6348 044622 017737 136532 003416 B75: MOV 2RHBAE,BAE ;SAVE BUS ADDRESS EXTENSION
6349 044630 017737 136526 003424 MOV 2RHCS3,CS3 ;SAVE RHCS3
6350 044636 017737 136476 003422 B65: MOV 2RHCS2,CS2 ;SAVE CS2

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6351 044644 017737 136472 003432      MOV      2RHST,DS1      ;SAVE TESTER STATUS
6352 044652 017737 136466 003436      MOV      2RHER,ERI     ;SAVE ERROR REGISTER
6353 044660 017737 136464 003442      MOV      2RHDOB,TDR    ;SAVE TESTER DATA REG.
6354 044666 017737 136444 003440      MOV      2RHMR2,TC     ;SAVE MR2 TESTER REG.
6355 044674 032777 140000 136440 95:  BIT      2ATA!ERR,2RHST ;IS ATTN OR ERROR SET
6356 044702 001033 35      BNE      35            ;YES THERE WAS A PROBLEM
6357 044704 032777 000200 136416      BIT      2RDY,2RHCS1   ;DID RDY SET
6358 044712 001001 45      BNE      45            ;YES IT SET
6359 044714 104102 102     ERROR      102          ;RDY DID NOT SET
6360 044716 022777 015000 136410 45:  CMP      25000+(4000*2),2RHBA ;DID BA INC PROPERLY
6361 044724 001401 55      BEQ      55            ;YES
6362 044726 104203 203     ERROR      203          ;BA DID NOT INC PROPERLY
6363 044730 022777 015006 136412 55:  CMP      25006,2RHDOB ;WAS CORRECT INFO WRITTEN
6364 044736 001401 65      BEQ      65            ;YES
6365 044740 104204 204     ERROR      204          ;CORRECT INFO NOT IN RH'DE
6366 044742 005777 136364 65:  TST      2RHWC            ;IS WC 0
6367 044746 001401 75      BEQ      75            ;YES
6368 044750 104206 206     ERROR      206          ;RHWC IS NOT ZERO
6369 044752 105737 001103 75:  TSTB     2SERFLG        ;WAS THERE ANY ERRORS
6370 044756 001407 85      BEQ      85            ;NO
6371 044760 032777 002000 136342      BIT      2PSEL,2RHCS1
6372 044766 001401 35      BEQ      35            ;YES
6373 044770 104207 207     ERROR      207          ;OUTPUT THE REGISTERS
6374 044772 104146 146     ERROR      146
6375 044774 104170 170     ERROR      170
6376 044776 005737 003450 85:  TST      2LOOCNT        ;IS IT FIRST PASS IN TEST
6377 045002 001007 115     BNE      115          ;NO
6378 045004 005237 003450      INC      2LOOCNT        ;MAKE IT SECOND PASS
6379 045010 012777 000017 136320      MOV      2SCLK!7,2RHMR2
6380      ;SET THE SYNC CLOCK BIT AND 441 BLK SIZE
6381 045016 000137 044404      JMP      IN
6382 045022 005037 003450 115:  CLR      2LOOCNT        ;DO THE TEST AGAIN
6383 045026 005737 003452      TST      2PASS
6384 045032 001004      BNE      2BOTTOM
6385 045034 005237 003452      INC      2PASS
6386 045040 000137 044400      JMP      2BLITZ
6387 045044 004737 007234      JSR      R7,WHYFO     ;TO SEE WHY IT DIED
6388 045050 004737 006602      JSR      R7,CLEER     ;CLEAR THE REGISTERS
6389 045054 004737 050130      JSR      R7,ERRST     ;UNDERLINE ERROR MESSAGES
6390      ;IF NEEDED
6391      ;*****
6392      ;*TEST 77      HERE IS WHERE I HANDLE 4 RH'S
6393      ;*THIS IS THE ROUTINE THAT ALLOWS THE
6394      ;*THE DIAGNOSTIC TO TEST FOUR RH'S
6395      ;*****
6396 045060 000004      TST77:  SCOPE
6397
6398 045062 005237 003376      ENDPAS:  INC      2DEVCNT        ;INCREMENT THE DEVICE COUNT
6399 045066 022737 000001 003376      CMP      21,2DEVCNT   ;IS IT DEVICE 2
6400 045074 001552      BEQ      2CLEVER        ;YES
6401 045076 022737 000002 003376      CMP      22,2DEVCNT   ;IS IT DEVICE 3
6402 045104 001002      BNE      15
6403 045106 000137 045524      JMP      2ROTEEN      ;YES
6404 045112 022737 000003 003376 15:  CMP      23,2DEVCNT   ;IS IT DEVICE 4
6405 045120 001002      BNE      25
6406 045122 000137 045630      JMP      15          ;NO, CONTINUE SEARCH
6406      ;YES

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E10

MASSBUS RMTD AND RMT: DIAGNOSTIC
CZRMBC.P11

T77

HERE IS WHERE I

MACY11 27(732)
HANDLE 4 RH'S

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6407 045126 022737 000004 003376 25:    CMP    #4,DEVCONT    ;HAVE WE TESTED ALL 4 RH'S
6408 045134 001470          BEQ     RESTAT        ;YES
6409 045136 104401 045144          TYPE    655          ;:TYPE ASCII STRING
6410 045142 000421          BR      645          ;:GET OVER THE ASCIIZ
6411          ;:655: .ASCIIZ <15><12>/PROGRAM ERROR ON TESTING 4 RH'S/
6412 045206          ;:645:
6413 045206 104401 045214          TYPE    675          ;:TYPE ASCII STRING
6414 045212 000426          BR      665          ;:GET OVER THE ASCIIZ
6415          ;:675: .ASCIIZ <15><12>/RESTARTING TO TEST RH #1 AT BASE ADDRESS /
6416          ;:665:
6417 045270          MOV     DEVIC1,-(SP)    ;:SAVE DEVIC1 FOR TYPEOUT
6418 045274 104402          TYPOC          ;:GO TYPE--OCTAL ASCII(ALL DIGITS,
6419 045276 013737 003366 003400      MOV     DEVIC1,DEVIC5    ;:FOR REG. ADDRESS CREATION
6420 045304 012777 005260 136076      MOV     #GIGO,ARETAIN    ;:GET ADDRESS ERROR RETURN
6421 045312 000137 045734          JMP     CORREG        ;:CORRECT REG. ADDRESSES
6422 045316 005037 003376          RESTAT: CLR    DEVCONT    ;:CLEAR DEVICE COUNTER
6423 045322 005726          TST    (SP)+    ;:CORRECT STACK
6424 045324 013737 003366 003400      MOV     DEVIC1,DEVIC5    ;:SET UP TO CREATE ADDRESSES
6425 045332 104401 045340          TYPE    655          ;:TYPE ASCII STRING
6426 045336 000421          BR      645          ;:GET OVER THE ASCIIZ
6427          ;:655: .ASCIIZ <15><12>/TESTING RH #1 AT BASE ADDRESS /
6428          ;:645:
6429 045402          MOV     DEVIC1,-(SP)    ;:SAVE DEVIC1 FOR TYPEOUT
6430 045406 104402          TYPOC          ;:GO TYPE--OCTAL ASCII(ALL DIGITS,
6431 045410 012777 005260 135772      MOV     #GIGO,ARETAIN    ;:SAVE RETURN ADDRESS
6432 045416 000137 045734          JMP     CORREG        ;:GO CREATE ADDRESSES
6433 045422 005737 003370          CLEVER: TST    DEVIC2    ;:IS IT 0
6434 045426 001733          BEQ     RESTAT    ;:YES,END PASS
6435 045430 012737 003370 003400      MOV     DEVIC2,DEVIC5    ;:GET READY TO CONSTRUCT
6436 045436 012746 005434          MOV     #GIGO1,-(SP)    ;:SAVE RETURN ERROR ADDRESS
6437 045442 104401 045450          TYPE    655          ;:TYPE ASCII STRING
6438 045446 000421          BR      645          ;:GET OVER THE ASCIIZ
6439          ;:655: .ASCIIZ <15><12>/TESTING RH #2 AT BASE ADDRESS /
6440          ;:645:
6441 045512          MOV     DEVIC2,-(SP)    ;:SAVE DEVIC2 FOR TYPEOUT
6442 045516 104402          TYPOC          ;:GO TYPE--OCTAL ASCII(ALL DIGITS)
6443 045520 000137 045734          JMP     CORREG        ;:CREATE REG. ADDRESSES
6444 045524 005737 003372          ROTEEN: TST    DEVIC3    ;:IS IT 0
6445 045530 001672          BEQ     RESTAT    ;:YES,END PASS
6446 045532 013737 003372 003400      MOV     DEVIC3,DEVIC5    ;:GET BASE ADDRESS
6447 045540 012777 005574 135642      MOV     #GIGO2,ARETAIN    ;:SAVE RETURN ADDRESS
6448 045546 104401 045554          TYPE    655          ;:TYPE ASCII STRING
6449 045552 000421          BR      645          ;:GET OVER THE ASCIIZ
6450          ;:655: .ASCIIZ <15><12>/TESTING RH #3 AT BASE ADDRESS /
6451          ;:645:
6452 045616          MOV     DEVIC3,-(SP)    ;:SAVE DEVIC3 FOR TYPEOUT
6453 045622 104402          TYPOC          ;:GO TYPE--OCTAL ASCII(ALL DIGITS)
6454 045624 000137 045734          JMP     CORREG        ;:CORRECT REG. ADDRESSES
6455 045630 005737 003374          IS:    TST    DEVIC4    ;:IS IT 0
6456 045634 001630          BEQ     RESTAT    ;:YES,END PASS
6457 045636 013737 003374 003400      MOV     DEVIC4,DEVIC5    ;:GET BASE ADDRESS
6458 045644 012777 005734 135536      MOV     #GIGO3,ARETAIN    ;:SAVE RETURN ADDRESS
6459 045652 104401 045660          TYPE    655          ;:TYPE ASCII STRING
6460 045656 000421          BR      645          ;:GET OVER THE ASCIIZ
6461          ;:655: .ASCIIZ <15><12>/TESTING RH #4 AT BASE ADDRESS /
6462          ;:645:
045722

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F10

MASSBUS RMT0 AND RMT1 DIAGNOSTIC
CZRMBC.F11

MACY11 27(732)
HERE IS WHERE I HANDLE 4 RH'S

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6463 045722 013746 003374      MOV    DEVICH,-(SP)      ;;SAVE DEVICH FOR TYPEOUT
6464 045726 104402      TYPDC      ;;GO TYPE--OCTAL ASCII(ALL DIGITS)
6465 045730 000137 045734      JMP     CORREG      ;;CORRECT REG. ADDRESSES
6466 045734 013737 003400 003402 CORREG: MOV    DEVIC5,OFF11      ;;GET BASE ADDRESS
6467 045742 012702 003330      MOV    RHCS1,R2      ;;GET ADDRESS TO START STORING
6468 045746 013722 003402      BEHIND: MOV   OFF11,(R2)+      ;;STORE ADDRESS
6469 045752 022702 003360      CMP     RHBAE,R2      ;;WAS IT LAST ADDRESS
6470 045756 001405      BEQ     AHEAD      ;;YES
6471 045760 062737 000002 003402      ADD     #TWO,OFF11      ;;CREATE NEXT ADDRESS
6472 045766 000137 045746      JMP     BEHIND      ;;GO STORE IT
6473 045772 013737 003400 003402 AHEAD: MOV    DEVIC5,#OFF11      ;;SETUP BAE ADDRESS
6474 046000 063737 003404 003402      RCD     REGEN0,OFF11      ;;STORE ADDRESS
6475 046006 013737 003402 003360      MOV     OFF11,RHBAE      ;;SETUP CS3 ADDRESS
6476 046014 062737 000002 003402      ADD     #2,OFF11      ;;SAVE THE ADDRESS
6477 046022 013737 003402 003362      MOV     OFF11,RHCS3      ;;SETUP HIGH BYTE
6478 046030 013737 003330 003364      MOV     RHCS1,RHCS1B      ;;FOR RHCS1
6479 046036 005237 003364      INC     RHCS1B      ;;CLEAR TEST NUMBER
6480 046042 005037 001102      CLR     $STNM      ;;SET TO TEST 1
6481 046046 005237 001102      INC     $STNM      ;;FOR ONE ITERATION
6482 046052 012737 000001 001212      MOV     #1,$TIMES      ;;ARE WE AT END OF PASS
6483 046060 005737 003376      TST     DEVCNT      ;;YES DO END OF PASS
6484 046064 001402      BEQ     $EOP      ;;NO,SEE IF RH IS PRESENT
6485 046066 000137 006264      JMP     TSTADD
6486      .SBTTL_ END OF PASS ROUTINE

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

$EOP:
        SCOPE
        CLR     $STNM      ;;ZERO THE TEST NUMBER
        CLR     $TIMES      ;;ZERO THE NUMBER OF ITERATIONS
        INC     $PASS      ;;INCREMENT THE PASS NUMBER
        BIC     #100000,$PASS      ;;DON'T ALLOW A NEG. NUMBER
        DEC     (PC)+      ;;LOOP?
$EOPCT: .WORD    1
        BGT     $DOAGN      ;;YES
        MOV     (PC)+,$(PC)+      ;;RESTORE COUNTER
$ENDCT: .WORD    1
        $EOPCT
        TYPE     65$      ;;TYPE ASCII STRING
        BR       64$      ;;GET OVER THE ASCII
;;65$: .ASCIIZ  <12><15>END PASS #/
64$:
        MOV     $PASS,-(SP)      ;;SAVE $PASS FOR TYPEOUT
        TYPDS      ;;TYPE PASS NUMBER
        TYPE     67$      ;;GO TYPE--DECIMAL ASCII WITH SIGN
        BR       66$      ;;TYPE ASCII STRING
;;67$: .ASCIIZ  / TOTAL ERRORS SINCE LAST REPORT /
66$:
        MOV     $ERTTL,-(SP)      ;;SAVE $ERTTL FOR TYPEOUT

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G10

MESSBUS RPTD AND RMI: DIAGNOSTIC
 02RMB0.F11 ENC OF PASS ROUTINE

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6519                                     ;; TOTAL NUMBER OF ERRORS
6520 046240 104405                                ;; GO TYPE--DECIMAL ASCII WITH SIGN
6521 046242 104401 001223                        TYPE SCRLF
6522 046246 005037 001112                        CLR $ERTTL
6523 046252 013700 000042                        $GET42: MOV 2#42,RO
6524 046256 001405                                BEQ SDOAGN
6525 046260 000005                                RESET
6526 046262 004710                                $END42: JSR PC,(RO)
6527 046264 000240                                NOP
6528 046266 000240                                NOP
6529 046270 000240                                NOP
6530 046272                                SDOAGN:
6531 046272 000137                                JMP 2(PC)+
6532 046274 004166                                $RTN42: .WORD BEGIN2
6533 046276 377 000                                $ENJLL: .BYTE -1,-1,0
6534 046302                                .EVEN
6535
6536                                     ;;*****
6537                                     ;THIS IS THE WATBIT PROGRAM
6538                                     ;;*****
6539
6540 046302 032737 020000 177570 WATBIT: BIT 2SW13,2#177570 ;SKIP ERROR PRINTOUT ?
6541 046310 001155                                BNE RITURN ;YES
6542 046312 033737 000400 177570                BIT 2#177570
6543 046320 001151                                BNE RITURN
6544 046322 033737 000001 177570                BIT 2#177570
6545 046330 001145                                BNE RITURN
6546 046332 005037 003446                        CLR BITCNT ;CLEAR BIT COUNTER
6547 046336 013737 001162 001202                MOV $REGO,$TMP2 ;SAVE GOOD DATA IN $REGO
6548 046344 013737 001200 001204                MOV $TMP1,$TMP3 ;SAVE CONTENTS OF BAD DATA
6549 046352 043737 001162 001204                BIC $REGO,$TMP3 ;WHERE EXTRA BITS SET ?
6550 046360 005737 001204                        TST $TMP3 ;FIND OUT
6551 046364 001447                                BEQ NEXTST ;NO,FIND OUT WHAT BITS WHERE NOT SET
6552 046366 104401 046374                        TYPE 655 ;TYPE ASCII STRING
6553 046372 000427                                BR 645 ;GET OVER THE ASCII
6554
6555                                     ;;655: .ASCIIZ <15><12>/THESE ARE THE BIT NO. OF THE EXTRA BITS./<15><12>
6556 046452                                645:
6557 046452 032737 000001 001204 MOAR: BIT 2ONE,$TMP3 ;FIND THE EXTRA
6558 046460 001076                                BNE PRIBIT ;GO TO PRINT BIT NO.
6559 046462 006037 001204 MOOR: ROR $TMP3 ;SETUP FOR NEXT BIT
6560 046466 022737 000017 003446                CMP 2#17,BITCNT ;IS IT BIT 15 LAST TESTED
6561 046474 001403                                BEQ NEXTST ;YES,SEE IF ANY BITS WHERE NOT SET
6562 046476 005237 003446                        INC BITCNT ;NO NOT LAST BIT YET
6563 046502 000763                                BR MOAR ;GO TO TEST NEXT BIT
6564 046504 005037 003446 NEXTST: CLR BITCNT ;ZERO BIT COUNTER
6565 046510 043737 001200 001202                BIC $TMP1,$TMP2 ;FIND WHAT BITS WHERE NOT SET
6566 046516 005737 001202                        TST $TMP2 ;WAS ALL BITS SET THAT SHOULD HAVE BEEN
6567 046524 104401 046532                        BEQ RETURN ;YES,AND TEST FINISHED
6568 046530 000426                                TYPE 655 ;TYPE ASCII STRING
6569                                     ;;655: .ASCIIZ <15><12>/BIT NO. OF THE BITS THAT WHERE NOT SET/<15><12>
6570                                     645:
6571 046606 032737 000001 001202 MORE2: BIT 2ONE,$TMP2 ;FIND BIT NOT SET
6572 046614 001014                                BNE PRIBIT ;ERROR BIT FOUND
6573 046616 006037 001202 MCORE: ROR $TMP2 ;SETUP TO FIND MORE
6574 046622 022737 000017 003446                CMP 2#17,BITCNT ;WAS LAST BIT BIT 15

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MASSBUS RMTD AND RMT1 DIAGNOSTIC
CZMBC.P11 END OF PASS ROUTINE

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6575 046630 001403
6576 046632 005237 003446
6577 046636 000763
6578 046640 104401 001223
6579 046644 000207
6580 046646
6581 046646 013746 003446
6582 046652 104405
6583 046654 000760
6584 046656
6585 046656 013746 003446
6586 046662 104405
6587 046664 000676
6588
6589
6590
6591
6592 046666
6593 046666 104401 046674
6594 046672 000434
6595
6596 046764
6597 046764 104401 046772
6598 046770 000422
6599
6600 047036
6601 047036 012637 001206
6602 047042 162737 000002 001206
6603 047050 013746 001206
6604 047054 104402
6605 047056 104401 047064
6606 047062 000406
6607
6608 047100
6609 047100 012637 001206
6610 047104 013746 001206
6611 047110 104402
6612 047112 013716 001106
6613 047116 000002
6614
6615
6616
6617
6618
6619 047120
6620 047120 104401 047126
6621 047124 000422
6622
6623 047172
6624 047172 104401 047200
6625 047176 000420
6626
6627 047240
6628 047240 012637 004100
6629 047244 162737 000002 004100
6630 047252 013746 004100

```

BEQ      RETURN      ;YES AND TEST FINISHED
INC      BITCNT      ;NO SETUP FOR NEXT BIT
BR       MORE2       ;CONTINUE TEST

RETURN:   TYPE        ;
RTS      R7          ;RETURN TO MAIN PROG.
PRIBIT:   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$:   .ASCIIZ      <15><12><12>/PROGRAM INSTRUCTION OR ADDRESS HAS CREATED A TIMEOUT/
64$:      TYPE        67$          ;;TYPE ASCII STRING
          BR         66$          ;;GET OVER THE ASCII
;;67$:   .ASCIIZ      <15><12>/ADDRESS WHICH CAUSED TIMEOUT WAS /
66$:      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$:   .ASCIIZ      <15><12>/PSW WAS /
68$:      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$:   .ASCIIZ      <15><12>/PARITY TRAP TO VECTOR ADDRESS 114/
64$:      TYPE        67$          ;;TYPE ASCII STRING
          BR         66$          ;;GET OVER THE ASCII
;;67$:   .ASCIIZ      <15><12>/ADDRESS THAT CAUSED TRAP WAS /
66$:      MOV         (SP)+, RBUF   ;GET PC+2
          SUB        $TWO, RBUF    ;CORRECT PC
          MOV        RBUF, -(SP)  ;;SAVE RBUF FOR TYPEOUT

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MASSBUS RH70 AND RH11 DIAGNOSTIC
DZRHC.P11 END OF PASS ROUTINE

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6631 047256 104402
6632 047260 104401 047266
6633 047264 000406
6634
6635 047302
6636 047302 012637 004100
6637 047306 013746 004100
6638 047312 104402
6639 047314 005701
6640 047316 100507
6641 047320 104401 047326
6642 047324 000417
6643
6644 047364
6645 047364 013737 177742 004100
6646 047372 013746 004100
6647 047376 104402
6648 047400 104401 047406
6649 047404 000416
6650
6651 047442
6652 047442 013737 177740 004100
6653 047450 013746 004100
6654 047454 104402
6655 047456 104401 047464
6656 047462 000417
6657
6658 047522
6659 047522 013737 177744 004100
6660 047530 013746 004100
6661 047534 104402
6662 047536 013716 001106
6663 047542 000002
6664
6665
6666
6667
6668 047544 012777 002161 133556
6669 047552 005037 003446
6670 047556 032777 000200 133544
6671 047564 001015
6672 047566 005237 003446
6673 047572 001371
6674 047574 005037 003446
6675 047600 032777 000200 133522
6676 047606 001004
6677 047610 005237 003446
6678 047614 001401
6679 047616 000770
6680 047620
6681 047620 032777 000200 133502
6682 047626 001401
6683 047630 104102
6684 047632 000207
6685
6686

TYP0C                                ::GO TYPE--OCTAL ASCII(ALL DIGITS)
TYPE                                ::TYPE ASCIIZ STRING
BR                                ::GET OVER THE ASCIIZ
::69$: .ASCIIZ <15><12>/PSW WAS /
69$:
MOV (SP)+,RBUF                      :GET OLD PSW
MOV RBUF,-(SP)                      ::SAVE RBUF FOR TYPEOUT
TYP0C                                ::GO TYPE--OCTAL ASCII(ALL DIGITS)
TST R1                              :ARE WE ON AN 11/70
BMI TRAPED                          :NO, ITS A 11/05-11/45
TYPE                                ::TYPE ASCIIZ STRING
BR                                ::GET OVER THE ASCIIZ
::71$: .ASCIIZ <15><12>/HIGH ERROR ADDRESS REG. = /
71$:
MOV HERADD,RBUF
MOV RBUF,-(SP)                      ::SAVE RBUF FOR TYPEOUT
TYP0C                                ::GO TYPE--OCTAL ASCII(ALL DIGITS)
TYPE                                ::TYPE ASCIIZ STRING
BR                                ::GET OVER THE ASCIIZ
::73$: .ASCIIZ <15><12>/LOW ERROR ADDRESS REG. = /
73$:
MOV LERADD,RBUF
MOV RBUF,-(SP)                      ::SAVE RBUF FOR TYPEOUT
TYP0C                                ::GO TYPE--OCTAL ASCII(ALL DIGITS)
TYPE                                ::TYPE ASCIIZ STRING
BR                                ::GET OVER THE ASCIIZ
::75$: .ASCIIZ <15><12>/MEMORY SYSTEM ERROR REG. = /
75$:
MOV MEMERR,RBUF
MOV RBUF,-(SP)                      ::SAVE RBUF FOR TYPEOUT
TYP0C                                ::GO TYPE--OCTAL ASCII(ALL DIGITS)
TRAPED: MOV $LPADR,(SP)              :FAKE RETURN
RTI                                :RETURN WHERE LEFT OFF

;;*****
;THIS IS THE DUAL PORT ROUTINE
;;*****
DUPORT: MOV #WRITED!PSEL!IE,0RHCS1
CLR BITCNT                          :CLEAR BIT COUNTER
BIT #RDY,0RHCS1                     :IS RDY SET
BNE BULL                             :BIT IS SET
INC BITCNT                          :COUNT UP
BNE 18$                             :NOT FINISHED COUNTING
CLR BITCNT                          :GET READY TO DO IT AGAIN
BIT #RDY,0RHCS1                     :IS IT SET YET?
BNE BULL                             :YES
INC BITCNT                          :COUNT UP
BEQ BULL                             :BIT IS NOT GOING TO SET
BR 19$

BULL:
BIT #RDY,0RHCS1
BEQ CUTE
ERROR 102
CUTE: RTS PC

;;*****
;THESE ARE THE CLEARS ROUTINES

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6687      ;*****
6688
6689 047634 012737 000000 001162 FINDIT: MOV    #0,$REG0          ;GET READY TO FIND EPROP
6690 047642 017737 133462 001200      MOV    @RHCS1,$TMP1      ;GET COMPARE READY
6691 047650 042737 007777 001200      BIC     @READ6!GO!IE!RDY!A16!A17!PSEL!DVA,$TMP1
6692      ;CLEAR BITS NOT NEEDED
6693 047656 000207      RTS     R7          ;RETURN TO PROGRAM
6694 047650 012737 000000 001162 LOOKFO: MOV    #0,$REG0          ;GET READY TO FIND ERROR
6695 047656 017737 133446 001200      MOV    @RHCS2,$TMP1      ;GET COMPARE READY
6696 047674 042737 000377 001200      BIC     @US1!US2!US4!BAI!PAT!CLR!IR!OR,$TMP1
6697      ;CLEAR BITS NOT NEEDED
6698 047702 000207      RTS     R7          ;RETURN TO PROGRAM
6699 047704 012737 000000 001162 LOCKED: MOV    #0,$REG0          ;GET READY TO FIND ERROR
6700 047712 017737 133426 001200      MOV    @RHER,$TMP1      ;GET COMPARE READY
6701 047720 042737 000000 001200      BIC     @ZERO,$TMP1
6702      ;CLEAR BITS NOT NEEDED
6703 047726 000207      RTS     R7          ;RETURN TO PROGRAM
6704 047730 012737 000000 001162 FIND:   MOV    #0,$REG0          ;GET READY TO FIND ERROR
6705 047736 017737 133400 001200      MOV    @RHST,$TMP1      ;GET COMPARE READY
6706 047744 042737 030600 001200      BIC     @DRY!DPR!MOL!PIP,$TMP1
6707      ;CLEAR BITS NOT NEEDED
6708 047752 000207      RTS     R7          ;RETURN TO PROGRAM
6709 047754 012737 000007 001162 FOUND:  MOV    #7,$REG0          ;GET READY TO FIND ERROR
6710 047762 017737 133352 001200      MOV    @RHCS2,$TMP1      ;GET COMPARE READY
6711 047770 042737 177770 001200      BIC     @BAI!PAT!CLR!IR!OR!MPE!MXF!PGE!NEM!NED!UPE!WCE!DLT,$TMP1
6712      ;CLEAR BITS NOT NEEDED
6713 047776 000207      RTS     R7          ;RETURN TO PROGRAM
6714 050000 012737 000000 001162 CS3ERR: MOV    #0,$REG0          ;GET READY TO FIND ERROR
6715 050006 017737 133350 001200      MOV    @RHCS3,$TMP1      ;GET COMPARE READY
6716 050014 042737 000117 001200      BIC     @IE3!IPCK0!IPCK1!IPCK2!IPCK3,$TMP1
6717      ;CLEAR BITS NOT NEEDED
6718 050022 000207      RTS     R7          ;RETURN TO PROGRAM
6719
6720      ;*****
6721      ;* THIS ROUTINE IS THE TEST NUMBER CORRECTION ROUTINE
6722      ;*****
6723
6724 050024 013737 001102 003454 TSTNMB: MOV    $TSTNM,$TSTNM      ;GET THE TEST NUMBER
6725 050032 105037 003455      CLR     TSTNM+1      ;CLEAR UPPER BYTE
6726 050036 032737 020000 177570      BIT     @SW13,@177570      ;INHIBIT TYPEOUT
6727 050044 001026      BNE     TSTNMA      ;YES
6728 050046 122737 000001 001103      CMP     #1,$SERFLG      ;IS IT FIRST ERROR
6729 050054 001022      BNE     TSTNMA      ;NO
6730 050056 013737 003454 003456      MOV     TSTNM,OFFSET      ;GET TEST NUMBER
6731 050064 006137 003456      ROL     OFFSET      ;CREATE OFFSET
6732 050070 012737 072332 003460      MOV     @HEADER,HEDDAD      ;GET BEGINING OF TABLE
6733 050076 063737 003456 003460      ADD     OFFSET,HEDDAD      ;CREATE MES ADDRESS
6734 050104 017737 133350 050120      MOV     @HEDDAD,HEDADD      ;SET UP FOR MESSAGE
6735 050112 104401 001223      TYPE    ,$CRLF
6736 050116 104401      TYPE
6737 050120 000000      HEDADD: 0
6738 050122 004737 074050      TSTNMA: JSR    R7,@$SERRTYP      ;GO TO ERROR TYPE ROUTINE
6739 050126 000207      RTS     R7          ;RETURN TO ERROR ROUTINE
6740
6741      ;*****
6742      ;THIS PROGRAM WHILL DEVIDE THE ERROR

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K10

MASSBUS RM70 AND RM11 DIAGNOSTIC
DZRMBC.P11 END OF PASS ROUTINE

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6743                                     :PRINTOUT BETWEEN TESTS
6744                                     ::*****
6745
6746 050130 105737 001103 ERRST: TSTB SERFLG ;WAS THERE AN ERROR FOUND
6747 050134 001446          SEQ      OUTOF ;NO GO TO NEXT TEST
6748 050136 032737 020000 177570      BIT  #SW13,2#177570 ;INHIBIT TYPEOUT ?
6749 050144 001042          BNE      OUTOF ;YES
6750 050146 013737 001102 003454      MOV  STSTNM,TSTNM ;GET TEST NO.
6751 050154 105037 003455          CLRB  TSTNM+1 ;CLEAR UPPER BYTE
6752 050160 104401 050166          TYPE  ,65$ ;:TYPE ASCII STRING
6753 050164 000406          BR      ,64$ ;:GET OVER THE ASCIIZ
6754                                     ::65$: .ASCIIZ <15><12>/++++TEST /
6755                                     64$:
6756 050202 013746 003454          MOV  TSTNM,-(SP) ;:SAVE TSTNM FOR TYPEOUT
6757 050206 104402          TYP0C ;:GO TYPE--OCTAL ASCII(ALL DIGITS)
6758 050210 104401 050216          TYPE  ,67$ ;:TYPE ASCII STRING
6759 050214 000416          BR      ,66$ ;:GET OVER THE ASCIIZ
6760                                     ::67$: .ASCIIZ / ERROR MESSAGE(5) +++++/15><12><12><12>
6761                                     66$:
6762 050252 000207          OUTOF: RTS      R7
6763
6764                                     ;;*****
6765                                     ;THIS IS THE INTERRUPT ROUTINE
6766                                     ;FOR THE LARGE TRANSFER TEST
6767                                     ::*****
6768
6769 050254 012716 044560          BLKTST: MOV  #RHNINT,(SP) ;SET THE CORRET RETURN
6770 050260 000002          RTI      ;AND RETURN

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L10

MASSBUS RH70 AND RH1: DIAGNOSTIC
DZRMBC.P11 END OF PASS ROUTINE

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6771
6772
6773
6774
6775 050262 044122 040440 042104
6776 050270 042522 051523 042040
6777 050276 041505 042117 020105
6778 050304 042524 052123 024040
6779 050312 042524 052123 030440
6780 050320 000051
6781 050322 046103 040505 020122
6782 050330 052040 051505 020124
6783 050336 052050 051505 020124
6784 050344 024462 000
6785 050347 124 051505 042524
6786 050354 020122 047503 047116
6787 050362 041505 042524 020104
6788 050370 042524 052123 024040
6789 050376 042524 052123 031440
6790 050404 000051
6791 050406 047527 042122 041440
6792 050414 052517 052116 041440
6793 050422 042514 051101 052040
6794 050430 051505 020124 052050
6795 050436 051505 020124 024464
6796 050444 000
6797 050445 122 041110 020101
6798 050452 046103 040505 020122
6799 050460 042524 052123 024040
6800 050466 042524 052123 032440
6801 050474 000051
6802 050476 044122 040502 020105
6803 050504 046103 040505 020122
6804 050512 042524 052123 024040
6805 050520 042524 052123 033040
6806 050526 000051
6807 050530 044122 041104 041440
6808 050536 042514 051101 052040
6809 050544 051505 020124 052050
6810 050552 051505 020124 024467
6811 050560 000
6812 050561 120 047522 020115
6813 050566 042522 044507 052123
6814 050574 051105 042040 041505
6815 050602 042117 020105 042524
6816 050610 052123 024040 042524
6817 050616 052123 030440 024460
6818 050624 000
6819 050625 122 041510 031523
6820 050632 041040 052111 052040
6821 050640 051505 020124 052050
6822 050646 051505 020124 030461
6823 050654 000051
6824 050656 044122 041527 041040
6825 050664 052111 052040 051505
6826 050672 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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MASSBUS RH70 AND RH11 DIAGNOSTIC
DZRHBC.P11 END OF PASS ROUTINE

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6827	050700	020124	031061	000051	
6828	050706	044122	040502	020105	HED13: .ASCIZ/RHBAE BIT TEST (TEST 13)/
6829	050714	044502	020124	042524	
6830	050722	052123	024040	042524	
6831	050730	052123	030440	024463	
6832	050736	000			
6833	050737	122	041110	020101	HED14: .ASCIZ/RHBA BIT TEST (TEST 14)/
6834	050744	044502	020124	042524	
6835	050752	052123	024040	042524	
6836	050760	052123	030440	024464	
6837	050766	000			
6838	050767	122	042110	020102	HED15: .ASCIZ/RHDB BIT TEST (TEST 15)/
6839	050774	044502	020124	042524	
6840	051002	052123	024040	042524	
6841	051010	052123	030440	024465	
6842	051016	000			
6843	051017	122	053510	020103	HED16: .ASCIZ/RHWC OPERATIONAL TEST (TEST 16)/
6844	051024	050117	051105	052101	
6845	051032	047511	040516	020114	
6846	051040	042524	052123	024040	
6847	051046	042524	052123	030440	
6848	051054	024466	000		
6849	051057	122	041110	020101	HED17: .ASCIZ/RHBA OPERATIONAL TEST (TEST 17)/
6850	051064	050117	051105	052101	
6851	051072	047511	040516	020114	
6852	051100	042524	052123	024040	
6853	051106	042524	052123	030440	
6854	051114	024467	000		
6855	051117	116	046505	052054	HED20: .ASCIZ/NEM,TRE AND SC BIT TEST (TEST 20)/
6856	051124	042522	040440	042116	
6857	051132	051440	020103	044502	
6858	051140	020124	042524	052123	
6859	051146	024040	042524	052123	
6860	051154	031040	024460	000	
6861	051161	127	042503	052054	HED21: .ASCIZ/WCE,TRE AND SC BIT TEST (TEST 21)/
6862	051166	042522	040440	042116	
6863	051174	051440	020103	044502	
6864	051202	020124	042524	052123	
6865	051210	024040	042524	052123	
6866	051216	031040	024461	000	
6867	051223	115	050104	026105	HED22: .ASCIZ/MDPE,TRE AND SC BIT TEST (TEST 22)/
6868	051230	051124	020105	047101	
6869	051236	020104	041523	041040	
6870	051244	052111	052040	051505	
6871	051252	020124	052050	051505	
6872	051260	020124	031062	000051	
6873	051266	050125	026105	051124	HED23: .ASCIZ/UPE,TRE AND SC BIT TEST (TEST 23) RH11 ONLY/
6874	051274	020105	047101	020104	
6875	051302	041523	041040	052111	
6876	051310	052040	051505	020124	
6877	051316	052050	051505	020124	
6878	051324	031462	020051	044122	
6879	051332	030461	047440	046116	
6880	051340	000131			
6881	051342	050125	026105	051124	HED24: .ASCIZ/UPE,TRE AND SC BIT TEST (TEST 24)/
6882	051350	020105	047101	020104	

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MASSBUS RH70 AND RH11 DIAGNOSTIC
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6883	051356	041523	041040	052111	
6884	051364	052040	051505	020124	
6885	051372	052050	051505	020124	
6886	051400	032062	000051		
6887	051404	042516	026104	051124	HED25: .ASCIZ/NED,TRE AND SC BIT TEST (TEST 25)/
6888	051412	020105	047101	020104	
6889	051420	041523	041040	052111	
6890	051426	052040	051505	020124	
6891	051434	052050	051505	020124	
6892	051442	032462	000051		
6893	051446	054115	026106	051124	HED26: .ASCIZ/MXF,TRE AND SC BIT TEST (TEST 26)/
6894	051454	020105	047101	020104	
6895	051462	041523	041040	052111	
6896	051470	052040	051505	020124	
6897	051476	052050	051505	020124	
6898	051504	033062	000051		
6899	051510	043520	020105	051124	HED27: .ASCIZ/PGE TRE AND SC BIT TEST (TEST 27)/
6900	051516	020105	047101	020104	
6901	051524	041523	041040	052111	
6902	051532	052040	051505	020124	
6903	051540	052050	051505	020124	
6904	051546	033462	000051		
6905	051552	054115	026106	051124	HED30: .ASCIZ/MXF,TRE AND SC BIT TEST (TEST 30)/
6906	051560	020105	047101	020104	
6907	051566	041523	041040	052111	
6908	051574	052040	051505	020124	
6909	051602	052050	051505	020124	
6910	051610	030063	000051		
6911	051614	041515	042520	040440	HED31: .ASCIZ/MCPE AND SC ERROR BIT TEST (TEST 31)/
6912	051622	042116	051440	020103	
6913	051630	051105	047522	020122	
6914	051636	044502	020124	042524	
6915	051644	052123	024040	042524	
6916	051652	052123	031440	024461	
6917	051660	000			
6918	051661	104	046102	052040	HED32: .ASCIZ/DBL TEST,1 WORD FROM A BASE 4 ADDRESS (TEST 32)/
6919	051666	051505	026124	020061	
6920	051674	047527	042122	043040	
6921	051702	047522	020115	020101	
6922	051710	040502	042523	032040	
6923	051716	040440	042104	042522	
6924	051724	051523	024040	042524	
6925	051732	052123	031440	024462	
6926	051740	000			
6927	051741	104	046102	052040	HED33: .ASCIZ/DBL TEST,2 WORD FROM A BASE 4 ADD. (TEST 33)/
6928	051746	051505	026124	020062	
6929	051754	047527	042122	043040	
6930	051762	047522	020115	020101	
6931	051770	040502	042523	032040	
6932	051776	040440	042104	020056	
6933	052004	052050	051505	020124	
6934	052012	031463	000051		
6935	052016	041104	020114	042524	HED34: .ASCIZ/DBL TEST,3 WORD FROM A BASE 4 ADD. (TEST 34)/
6936	052024	052123	031454	053440	
6937	052032	051117	020104	051106	
6938	052040	046517	040440	041040	

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0000	00000000	00000000	00000000	00000000
0001	00000001	00000001	00000001	00000001
0002	00000002	00000002	00000002	00000002
0003	00000003	00000003	00000003	00000003
0004	00000004	00000004	00000004	00000004
0005	00000005	00000005	00000005	00000005
0006	00000006	00000006	00000006	00000006
0007	00000007	00000007	00000007	00000007
0008	00000008	00000008	00000008	00000008
0009	00000009	00000009	00000009	00000009
0010	00000010	00000010	00000010	00000010
0011	00000011	00000011	00000011	00000011
0012	00000012	00000012	00000012	00000012
0013	00000013	00000013	00000013	00000013
0014	00000014	00000014	00000014	00000014
0015	00000015	00000015	00000015	00000015
0016	00000016	00000016	00000016	00000016
0017	00000017	00000017	00000017	00000017
0018	00000018	00000018	00000018	00000018
0019	00000019	00000019	00000019	00000019
0020	00000020	00000020	00000020	00000020
0021	00000021	00000021	00000021	00000021
0022	00000022	00000022	00000022	00000022
0023	00000023	00000023	00000023	00000023
0024	00000024	00000024	00000024	00000024
0025	00000025	00000025	00000025	00000025
0026	00000026	00000026	00000026	00000026
0027	00000027	00000027	00000027	00000027
0028	00000028	00000028	00000028	00000028
0029	00000029	00000029	00000029	00000029
0030	00000030	00000030	00000030	00000030
0031	00000031	00000031	00000031	00000031
0032	00000032	00000032	00000032	00000032
0033	00000033	00000033	00000033	00000033
0034	00000034	00000034	00000034	00000034
0035	00000035	00000035	00000035	00000035
0036	00000036	00000036	00000036	00000036
0037	00000037	00000037	00000037	00000037
0038	00000038	00000038	00000038	00000038
0039	00000039	00000039	00000039	00000039
0040	00000040	00000040	00000040	00000040
0041	00000041	00000041	00000041	00000041
0042	00000042	00000042	00000042	00000042
0043	00000043	00000043	00000043	00000043
0044	00000044	00000044	00000044	00000044
0045	00000045	00000045	00000045	00000045
0046	00000046	00000046	00000046	00000046
0047	00000047	00000047	00000047	00000047
0048	00000048	00000048	00000048	00000048
0049	00000049	00000049	00000049	00000049
0050	00000050	00000050	00000050	00000050
0051	00000051	00000051	00000051	00000051
0052	00000052	00000052	00000052	00000052
0053	00000053	00000053	00000053	00000053
0054	00000054	00000054	00000054	00000054
0055	00000055	00000055	00000055	00000055
0056	00000056	00000056	00000056	00000056
0057	00000057	00000057	00000057	00000057
0058	00000058	00000058	00000058	00000058
0059	00000059	00000059	00000059	00000059
0060	00000060	00000060	00000060	00000060
0061	00000061	00000061	00000061	00000061
0062	00000062	00000062	00000062	00000062
0063	00000063	00000063	00000063	00000063
0064	00000064	00000064	00000064	00000064
0065	00000065	00000065	00000065	00000065
0066	00000066	00000066	00000066	00000066
0067	00000067	00000067	00000067	00000067
0068	00000068	00000068	00000068	00000068
0069	00000069	00000069	00000069	00000069
0070	00000070	00000070	00000070	00000070
0071	00000071	00000071	00000071	00000071
0072	00000072	00000072	00000072	00000072
0073	00000073	00000073	00000073	00000073
0074	00000074	00000074	00000074	00000074
0075	00000075	00000075	00000075	00000075
0076	00000076	00000076	00000076	00000076
0077	00000077	00000077	00000077	00000077
0078	00000078	00000078	00000078	00000078
0079	00000079	00000079	00000079	00000079
0080	00000080	00000080	00000080	00000080
0081	00000081	00000081	00000081	00000081
0082	00000082	00000082	00000082	00000082
0083	00000083	00000083	00000083	00000083
0084	00000084	00000084	00000084	00000084
0085	00000085	00000085	00000085	00000085
0086	00000086	00000086	00000086	00000086
0087	00000087	00000087	00000087	00000087
0088	00000088	00000088	00000088	00000088
0089	00000089	00000089	00000089	00000089
0090	00000090	00000090	00000090	00000090
0091	00000091	00000091	00000091	00000091
0092	00000092	00000092	00000092	00000092
0093	00000093	00000093	00000093	00000093
0094	00000094	00000094	00000094	00000094
0095	00000095	00000095	00000095	00000095
0096	00000096	00000096	00000096	00000096
0097	00000097	00000097	00000097	00000097
0098	00000098	00000098	00000098	00000098
0099	00000099	00000099	00000099	00000099

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)/

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6995	052550	041040	051501	020105
6996	052556	020064	042101	027104
6997	052564	024040	042524	052123
6998	052572	032040	024463	000
6999	052577	104	046102	052040
7000	052604	051505	026124	020063
7001	052612	047527	042122	026040
7002	052620	047516	020124	020101
7003	052626	040502	042523	032040
7004	052634	040440	042104	026056
7005	052642	051127	052111	020105
7006	052650	042522	020126	052050
7007	052656	051505	020124	032064
7008	052664	000051		
7009	052666	041104	020114	042524
7010	052674	052123	031054	053440
7011	052702	051117	020104	042522
7012	052710	042101	043040	042127
7013	052716	024040	042524	052123
7014	052724	032040	024465	000
7015	052731	104	046102	052040
7016	052736	051505	026124	020062
7017	052744	047527	042122	051040
7018	052752	040505	020104	053506
7019	052760	026104	047516	020124
7020	052766	020101	040502	042523
7021	052774	032040	040440	042104
7022	053002	020056	052050	051505
7023	053010	020124	033064	000051
7024	053016	041104	020114	042524
7025	053024	052123	031054	053440
7026	053032	051117	020104	042522
7027	053040	042101	051040	053105
7028	053046	041054	051501	020105
7029	053054	020064	042101	027104
7030	053062	024040	042524	052123
7031	053070	032040	024467	000
7032	053075	104	046102	052040
7033	053102	051505	026124	020062
7034	053110	047527	042122	051040
7035	053116	040505	020104	042522
7036	053124	026126	047516	020124
7037	053132	020101	040502	042523
7038	053140	032040	040440	042104
7039	053146	020056	052050	051505
7040	053154	020124	030065	000051
7041	053162	041104	020114	042524
7042	053170	052123	031454	053440
7043	053176	051117	020104	042522
7044	053204	042101	043040	042127
7045	053212	041054	051501	020105
7046	053220	020064	042101	027104
7047	053226	024040	042524	052123
7048	053234	032440	024461	000
7049	053241	104	046102	052040
7050	053246	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)/

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7051	053254	047527	042122	051040
7052	053262	040505	020104	042522
7053	053270	026126	040502	042523
7054	053276	032240	040440	042104
7055	053304	020056	052050	051505
7056	053312	020124	031065	000051
7057	053320	041527	020105	053505
7058	053326	042440	051122	051117
7059	053334	052040	051505	020124
7060	053342	053442	042503	047514
7061	053350	020042	052050	051505
7062	053356	020124	031465	000051
7063	053364	041527	020105	053517
7064	053372	042440	051122	051117
7065	053400	052040	051505	020124
7066	053406	053442	042503	044510
7067	053414	020042	052050	051505
7068	053422	020124	032065	000051
7069	053430	047111	042524	052522
7070	053436	052120	042440	042516
7071	053444	046102	020105	042524
7072	053452	052123	024040	042524
7073	053460	052123	032440	024465
7074	053466	000		
7075	053467	122	040505	020104
7076	053474	050117	051105	052101
7077	053502	047511	040516	020114
7078	053510	042524	052123	024040
7079	053516	047516	046522	046101
7080	053524	021440	024461	024040
7081	053532	042524	052123	032440
7082	053540	024466	000	
7083	053543	122	020110	050117
7084	053550	051105	052101	047511
7085	053556	040516	020114	051127
7086	053564	052111	020105	042524
7087	053572	052123	021440	020061
7088	053600	052050	051505	020124
7089	053606	033465	000051	
7090	053612	042522	042101	047440
7091	053620	042520	040522	044524
7092	053626	047117	046101	052040
7093	053634	051505	020124	047050
7094	053642	051117	040515	020114
7095	053650	031043	024051	042524
7096	053656	052123	033040	024460
7097	053664	000		
7098	053665	122	020110	050117
7099	053672	051105	052101	047511
7100	053700	040516	020114	042522
7101	053706	042101	052040	051505
7102	053714	020124	030443	024040
7103	053722	042524	052123	033040
7104	053730	024461	000	
7105	053733	122	040505	020104
7106	053740	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)/

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MASSBUS RMTD AND RMT1: DIAGNOSTIC
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7107	053746	047511	040516	020114
7108	053754	042524	052123	024040
7109	053762	047516	046522	046101
7110	053770	021440	024463	052050
7111	053776	051505	020124	031066
7112	054004	000051		
7113	054006	044122	047440	042520
7114	054014	040522	044524	047117
7115	054022	046101	053440	044522
7116	054030	042524	052040	051505
7117	054036	020124	031043	024040
7118	054044	042524	052123	033040
7119	054052	024463	000	
7120	054055	122	040505	020104
7121	054062	050117	051105	052101
7122	054070	047511	040516	020114
7123	054076	042524	052123	024040
7124	054104	047516	046522	046101
7125	054112	021440	024464	052050
7126	054120	051505	020124	032066
7127	054126	000051		
7128	054130	044122	047440	042520
7129	054136	040522	044524	047117
7130	054144	046101	051040	040505
7131	054152	020104	042524	052123
7132	054160	021440	020062	052050
7133	054166	051505	020124	032466
7134	054174	000051		
7135	054176	051127	052111	020105
7136	054204	050117	051105	052101
7137	054212	047511	040516	020114
7138	054220	042524	052123	024040
7139	054226	047516	046522	046101
7140	054234	021440	024461	052050
7141	054242	051505	020124	033066
7142	054250	000051		
7143	054252	044122	047440	042520
7144	054260	040522	044524	047117
7145	054266	046101	053440	044522
7146	054274	042524	052040	051505
7147	054302	020124	031443	024040
7148	054310	042524	052123	033040
7149	054316	024467	000	
7150	054321	127	044522	042524
7151	054326	047440	042520	040522
7152	054334	044524	047117	046101
7153	054342	052040	051505	020124
7154	054350	047050	051117	040515
7155	054356	020114	031443	024051
7156	054364	042524	052123	033440
7157	054372	024460	000	
7158	054375	122	020110	050117
7159	054402	051105	052101	047511
7160	054410	040516	020114	042522
7161	054416	042101	052040	051505
7162	054424	020124	031443	024040

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

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

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

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

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

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

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

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MASSBUS RMTD AND RMTD DIAGNOSTIC
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7163	054432	042524	052123	033440	
7164	054440	024461	000		
7165	054443	127	044522	042524	HED72: .ASCIZ/WRITE OPERATIONAL TEST (NORMAL #3)(TEST 72)/
7166	054450	047440	042520	040522	
7167	054456	044524	047117	046101	
7168	054464	052040	051505	020124	
7169	054472	047050	051117	040515	
7170	054500	020114	031443	024051	
7171	054506	042524	052123	033440	
7172	054514	024462	000		
7173	054517	122	020110	050117	HED73: .ASCIZ/RH OPERATIONAL WRITE TEST #4 (TEST 73)/
7174	054524	051105	052101	047511	
7175	054532	040516	020114	051127	
7176	054540	052111	020105	042524	
7177	054546	052123	021440	020064	
7178	054554	052050	051505	020124	
7179	054562	031467	000051		
7180	054566	051127	052111	020105	HED74: .ASCIZ/WRITE OPERATIONAL TEST (NORMAL #4)(TEST 74)/
7181	054574	050117	051105	052101	
7182	054602	047511	040516	020114	
7183	054610	042524	052123	024040	
7184	054616	047516	046522	046101	
7185	054624	021440	024464	052050	
7186	054632	051505	020124	032067	
7187	054640	000051			
7188	054642	044122	047440	042520	HED75: .ASCIZ/RH OPERATIONAL READ TEST #4 (TEST 75)/
7189	054650	040522	044524	047117	
7190	054656	046101	051040	040505	
7191	054664	020104	042524	052123	
7192	054672	021440	020064	052050	
7193	054700	051505	020124	032467	
7194	054706	000051			
7195	054710	040514	043522	020105	HED76: .ASCIZ/LARGE TRANSFER TEST 671 WORDS (TEST 76)/
7196	054716	051124	047101	043123	
7197	054724	051105	052040	051505	
7198	054732	020124	033466	020061	
7199	054740	047527	042122	020123	
7200	054746	052050	051505	020124	
7201	054754	033067	000051		

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7202
7203
7204
7205
7206
7207
7208 054760 047503 051122 041505
7209 054766 020124 044502 020124
7210 054774 044504 020104 047516
7211 055002 020124 042523 020124
7212 055010 047111 051040 053510
7213 055016 020103
7214 055020 047503 051122 041505
7215 055026 020124 044502 020124
7216 055034 044504 020104 047516
7217 055042 020124 042523 020124
7218 055050 047111 051040 041110
7219 055056 000101
7220 055060 047503 051122 041505
7221 055066 020124 044502 020124
7222 055074 044504 020104 047516
7223 055102 020124 042523 020124
7224 055110 047111 041040 051525
7225 055116 040440 042104 042522
7226 055124 051523 051040 043505
7227 055132 000056
7228 055134 047503 051122 041505
7229 055142 020124 044502 020124
7230 055150 044504 020104 047516
7231 055156 020124 042523 020124
7232 055164 047111 051040 042110
7233 055172 000102
7234 055174 047516 026516 054105
7235 055202 051511 040524 052116
7236 055210 046440 046505 051117
7237 055216 020131 044504 020104
7238 055224 047516 020124 042523
7239 055232 020124 047111 051040
7240 055240 041510 031123 000
7241 055245 040 047514 044507
7242 055252 020103 047524 051440
7243 055260 052105 052040 042522
7244 055266 041040 052111 044440
7245 055274 020116 044122 051503
7246 055302 020061 042522 044507
7247 055310 052123 051105 005015
7248 055316 051511 047040 052117
7249 055324 053440 051117 044513
7250 055332 043516 043454 020117
7251 055340 047524 024040 051503
7252 055346 041122 020051 051120
7253 055354 047111 051524 044440
7254 055362 020106 044122 030461
7255 055370 005015
7256 055372 051117 024040 051503
7257 055400 041124 020051 051120

;*****
;ERROR MESSAGES
;*****

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

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

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

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

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

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

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

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

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MASSBUS RH70 AND RH11 DIAGNOSTIC
DZRHBC.P11 END OF PASS ROUTINE

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7258	055406	047111	051524	044440	
7259	055414	020106	044122	030067	
7260	055422	044440	020116	047514	
7261	055430	040503	044524	047117	
7262	055436	041040	020067	047117	
7263	055444	041040	052117	020110	
7264	055452	051120	047111	051524	
7265	055460	000			
7266	055461	116	046505	041040	EM7: .ASCIZ/NEM BIT DOES NOT READ AS SET IN RHCS2/
7267	055466	052111	042040	042517	
7268	055474	020123	047516	020124	
7269	055502	042522	042101	040440	
7270	055510	020123	042523	020124	
7271	055516	047111	051040	041510	
7272	055524	031123	000		
7273	055527	116	046505	040440	EM10: .ASCIZ/NEM AND SC NOT SET IN RHCS1/
7274	055534	042116	051440	020103	
7275	055542	047516	020124	042523	
7276	055550	020124	047111	051040	
7277	055556	041510	030523	000	
7278	055563	123	020103	044502	EM11: .ASCIZ/SC BIT SET BY ATTN OR MCPE ERROR/
7279	055570	020124	042523	020124	
7280	055576	054502	040440	052124	
7281	055604	020116	051117	046440	
7282	055612	050103	020105	051105	
7283	055620	047522	000122		
7284	055624	051440	020103	044504	EM12: .ASCIZ/ SC DID NOT SET/
7285	055632	020104	047516	020124	
7286	055640	042523	000124		
7287	055644	051124	020105	044502	EM13: .ASCIZ/TRE BIT IS SET BUT SC READS AS CLEARED/
7288	055652	020124	051511	051440	
7289	055660	052105	041040	052125	
7290	055666	051440	020103	042522	
7291	055674	042101	020123	051501	
7292	055702	041440	042514	051101	
7293	055710	042105	000		
7294	055713	127	042503	041040	EM14: .ASCIZ/WCE BIT DID NOT SET/
7295	055720	052111	042040	042111	
7296	055726	047040	052117	051440	
7297	055734	052105	000		
7298	055737	127	042503	041040	EM15: .ASCIZ/WCE BIT DID NOT SET/
7299	055744	052111	042040	042111	
7300	055752	047040	052117	051440	
7301	055760	052105	000		
7302	055763	124	042522	041040	EM16: .ASCIZ/TRE BIT NOT SET/
7303	055770	052111	047040	052117	
7304	055776	051440	052105	000	
7305	056003	127	042503	040440	EM17: .ASCIZ/WCE AND TRE ARE SET BUT SC BIT NOT SET/
7306	056010	042116	052040	042522	
7307	056016	040440	042522	051440	
7308	056024	052105	041040	052125	
7309	056032	051440	020103	044502	
7310	056040	020124	047516	020124	
7311	056046	042523	000124		
7312	056052	050125	020105	044504	EM20: .ASCIZ/UPE DID NOT SET IN RHCS2/
7313	056060	020104	047516	020124	

MASSBUS RH70 AND RH11 DIAGNOSTIC
DZRHC.P11 END OF PASS ROUTINE

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7314	056066	042523	020124	047111	
7315	056074	051040	041510	031123	
7316	056102	000			
7317	056103	124	042522	040440	EM21: .ASCII/TRE AND SC BITS ARE SET/
7318	056110	042116	051440	020103	
7319	056116	044502	051524	040440	
7320	056124	042522	051440	052105	
7321	056132	050125	020105	047101	EM22: .ASCIZ/UPE AND SC BIT DID NOT SET/
7322	056140	020104	041513	041040	
7323	056146	052111	042040	042111	
7324	056154	047040	052117	051440	
7325	056162	052105	000		
7326	056165	123	020103	044502	EM23: .ASCIZ/SC BIT NOT SET/
7327	056172	020124	047516	020124	
7328	056200	042523	000124		
7329	056204	042516	020104	044504	EM24: .ASCIZ/NED DID NOT SET IN RHCS2/
7330	056212	020104	047516	020124	
7331	056220	042523	020124	047111	
7332	056226	051040	041510	031123	
7333	056234	000			
7334	056235	124	042522	040440	EM25: .ASCIZ/TRE AND SC SHOULD NOT SET/
7335	056242	042116	051440	020103	
7336	056250	044123	052517	042114	
7337	056256	047040	052117	051440	
7338	056264	052105	000		
7339	056267	124	042522	051440	EM26: .ASCIZ/TRE SHOULD NOT BE SET/
7340	056274	047510	046125	020104	
7341	056302	047516	020124	042502	
7342	056310	051440	052105	000	
7343	056315	124	042522	041040	EM27: .ASCIZ/TRE BIT WAS NOT SET BY NED/
7344	056322	052111	053440	051501	
7345	056330	047040	052117	051440	
7346	056336	052105	041040	020131	
7347	056344	042516	000104		
7348	056350	054115	020106	044502	EM30: .ASCIZ/MXF BIT DID NOT SET IN RHCS2/
7349	056356	020124	044504	020104	
7350	056364	047516	020124	042523	
7351	056372	020124	047111	051040	
7352	056400	041510	031123	000	
7353	056405	115	043130	041040	EM31: .ASCIZ/MXF BIT SHOULD BE SET IN RHCS2/
7354	056412	052111	051440	047510	
7355	056420	046125	020104	042502	
7356	056426	051440	052105	044440	
7357	056434	020116	044122	051503	
7358	056442	000062			
7359	056444	054115	020106	047101	EM32: .ASCIZ/MXF AND SC ARE NOT SET/
7360	056452	020104	041523	040440	
7361	056460	042522	047040	052117	
7362	056466	051440	052105	000	
7363	056473	124	042522	051040	EM33: .ASCIZ/TRE READS AS CLEARED, MXF AND SC ARE SET/
7364	056500	040505	051504	040440	
7365	056506	020123	046103	040505	
7366	056514	042522	026104	054115	
7367	056522	020106	047101	020104	
7368	056530	041523	040440	042522	
7369	056536	051440	052105	000	

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MASSBUS R470 AND RH1: DIAGNOSTIC
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7370	056543	124	051505	042524
7371	056550	020122	047504	051505
7372	056556	047040	052117	051040
7373	056564	040505	020104	051501
7374	056572	041040	044505	043516
7375	056600	041440	047117	042516
7376	056606	052103	042105	000
7377	056613	102	052111	044440
7378	056620	020116	044122	051503
7379	056626	020063	044527	046114
7380	056634	047040	052117	051440
7381	056642	052105	000	
7382	056645	122	020110	044504
7383	056652	020104	047516	020124
7384	056660	042522	050123	047117
7385	056666	020104	047524	040440
7386	056674	042104	042522	051523
7387	056702	000		
7388	056703	104	052114	042040
7389	056710	042111	047040	052117
7390	056716	051440	052105	044440
7391	056724	020116	044122	051503
7392	056732	000062		
7393	056734	046104	020124	051511
7394	056742	047040	052117	051440
7395	056750	052105	044440	020116
7396	056756	044122	051503	026062
7397	056764	052502	020124	051124
7398	056772	020105	047101	020104
7399	057000	041523	040440	042522
7400	057006	051440	052105	005015
7401	057014	051124	020105	047101
7402	057022	020104	041523	041440
7403	057030	052517	042114	044040
7404	057036	053101	020105	042502
7405	057044	047105	051440	052105
7406	057052	041040	020131	047101
7407	057060	052117	042510	020122
7408	057066	051105	047522	000122
7409	057074	052517	050124	052125
7410	057102	051040	040505	054504
7411	057110	042040	042111	047040
7412	057116	052117	051440	052105
7413	057124	053440	042510	020116
7414	057132	047111	047506	053440
7415	057140	051501	046040	040517
7416	057146	042504	020104	047111
7417	057154	047524	052040	042510
7418	057162	042040	052101	020101
7419	057170	052502	043106	051105
7420	057176	000		
7421	057177	101	046114	041040
7422	057204	052111	020123	044504
7423	057212	020104	047516	020124
7424	057220	047514	042101	044440
7425	057226	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).

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MASSBUS RH70 AND RH11 DIAGNOSTIC
CZRHBC.P11 END OF PASS ROUTINE

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7426	057234	041527	024040	033461	
7427	057242	033467	033467	000051	
7428	057250	044122	041527	042040	EM43: .ASCIZ/RHWC DID NOT LOAD ANY BITS (177777)/
7429	057256	042111	047040	052117	
7430	057264	046040	040517	020104	
7431	057272	047101	020131	044502	
7432	057300	051524	024040	033461	
7433	057306	033467	033467	000051	
7434	057314	047523	042515	041040	EM44: .ASCIZ/SOME BITS CLEARED IN RHWC AFTER CLR WAS LOADED INTO RHCS2/
7435	057322	052111	020123	046103	
7436	057330	040505	042522	020104	
7437	057336	047111	051040	053510	
7438	057344	020103	043101	042524	
7439	057352	020122	046103	020122	
7440	057360	040527	020123	047514	
7441	057366	042101	042105	044440	
7442	057374	052116	020117	044122	
7443	057402	051503	000062		
7444	057406	047516	026516	054105	EM45: .ASCIZ/NON-EXISTANT MEMORY BIT SET IN RHCS2 (NEM)/
7445	057414	051511	040524	052116	
7446	057422	046440	046505	051117	
7447	057430	020131	044502	020124	
7448	057436	042523	020124	047111	
7449	057444	051040	041510	031123	
7450	057452	024040	042516	024515	
7451	057460	000			
7452	057461	122	041110	020101	EM46: .ASCIZ/RHBA DID NOT CLR AFTER CLR WAS LOADED INTO RHCS2/
7453	057466	044504	020104	047516	
7454	057474	020124	046103	020122	
7455	057502	043101	042524	020122	
7456	057510	046103	020122	040527	
7457	057516	020123	047514	042101	
7458	057524	042105	044440	052116	
7459	057532	020117	044122	051503	
7460	057540	000062			
7461	057542	046101	020114	044502	EM47: .ASCIZ/ALL BITS DID NOT LOAD INTO RHBA (177776)/
7462	057550	051524	042040	0 2111	
7463	057556	047040	052117	046040	
7464	057564	040517	020104	047111	
7465	057572	047524	051040	041110	
7466	057600	020101	030450	033467	
7467	057606	033467	024466	000	
7468	057613	114	040517	044504	EM50: .ASCIZ/LOADING TRE AFTER ITS SET DOES NOT CLEAR ERROR/
7469	057620	043516	052040	042522	
7470	057626	040440	052106	051105	
7471	057634	044440	051524	051440	
7472	057642	052105	042040	042517	
7473	057650	020123	047516	020124	
7474	057656	046103	040505	020122	
7475	057664	051105	047522	000122	
7476	057672	043520	020105	044504	EM51: .ASCIZ/PGE DID NOT SET IN RHCS2/
7477	057700	020104	047516	020124	
7478	057706	042523	020124	047111	
7479	057714	051040	041510	031123	
7480	057722	000			
7481	057723	124	042510	050040	EM52: .ASCII/THE PROM WHILE ACCESSING A REGISTER/(15)<12>

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MASSBUS RH70 AND RH11 DIAGNOSTIC
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7482	057730	047522	020115	044127	
7483	057736	046111	020105	041501	
7484	057744	042503	051523	047111	
7485	057752	020107	020101	042522	
7486	057760	044507	052123	051105	
7487	057766	005015			
7488	057770	044127	041511	020110	.ASCII/WHICH YOUR TESTER CANNOT SUPPLY INFORMATION/<15><12>
7489	057776	047531	051125	052040	
7490	060004	051505	042524	020122	
7491	060012	040503	047116	052117	
7492	060020	051440	050125	046120	
7493	060026	020131	047111	047506	
7494	060034	046522	052101	047511	
7495	060042	006516	012		
7496	060045	106	051117	051440	.ASCIZ/FOR SAYS INFO IS PRESENT/
7497	060052	054501	020123	047111	
7498	060060	047506	044440	020123	
7499	060066	051120	051505	047105	
7500	060074	000124			
7501	060076	044122	051503	000061	EM53: .ASCIZ/RHCS1/
7502	060104	044122	041527	000	EM54: .ASCIZ/RHWC/
7503	060111	122	041110	000101	EM55: .ASCIZ/RHBA/
7504	060116	044122	051115	000062	EM56: .ASCIZ/RHMR2/
7505	060124	044122	051503	000062	EM57: .ASCIZ/RHCS2/
7506	060132	044122	052123	000	EM60: .ASCIZ/RHST/
7507	060137	122	042510	000122	EM61: .ASCIZ/RHER/
7508	060144	044122	051501	000	EM62: .ASCIZ/RHAS/
7509	060151	122	052110	041104	EM63: .ASCIZ/RHTDB/
7510	060156	000			
7511	060157	122	042110	000123	EM64: .ASCIZ/RHDS/
7512	060164	044122	051115	000061	EM65: .ASCIZ/RHMR1/
7513	060172	044122	052104	000	EM66: .ASCIZ/RHDT/
7514	060177	122	041110	042501	EM67: .ASCIZ/RHBAE/
7515	060204	000			
7516	060205	122	041510	031523	EM70: .ASCIZ/RHCS3/
7517	060212	000			
7518	060213	104	053105	041511	EM71: .ASCIZ/DEVICE NUMBER IN RHMR2 DOES NOT EQUAL A 7AFTER A CLEAR/
7519	060220	020105	052516	041115	
7520	060226	051105	044440	020116	
7521	060234	044122	051115	020062	
7522	060242	047504	051505	047040	
7523	060250	052117	042440	052521	
7524	060256	046101	040440	033440	
7525	060264	043101	042524	020122	
7526	060272	020101	046103	040505	
7527	060300	000122			
7528	060302	044122	051503	020061	EM72: .ASCIZ/RHCS1 HAS AN ERROR BIT SET/<15><12>
7529	060310	040510	020123	047101	
7530	060316	042440	051122	051117	
7531	060324	041040	052111	051440	
7532	060332	052105	005015	000	
7533	060337	105	051122	051117	EM73: .ASCIZ/ERROR BIT SET IN RHCS2/
7534	060344	041040	052111	051440	
7535	060352	052105	044440	020116	
7536	060360	044122	051503	000062	
7537	060366	051105	047522	020122	EM74: .ASCIZ/ERROR BIT SET IN RHER/

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MASSBUS RH70 AND RH11 DIAGNOSTIC
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7538	060374	044502	020124	042523	
7539	060402	020124	047111	051040	
7540	060410	042510	000122		
7541	060414	051105	047522	020122	EM75: .ASCIZ·ERROR BIT SET IN RHST/<15><12>
7542	060422	044502	020124	042523	
7543	060430	020124	047111	051040	
7544	060436	051510	006524	000012	
7545	060444	044122	040502	044440	EM76: .ASCIZ/RHBA INCREMENTED BUT IT DID NOT CARRY OVER TO RHBAE,RHBAE SHOULD =40/
7546	060452	041516	042522	042515	
7547	060460	052116	042105	041040	
7548	060466	052125	044440	020124	
7549	060474	044504	020104	047516	
7550	060502	020124	040503	051122	
7551	060510	020131	053117	051105	
7552	060516	052040	020117	044122	
7553	060524	040502	026105	044122	
7554	060532	040502	020105	044123	
7555	060540	052517	042114	036440	
7556	060546	030064	000		
7557	060551	122	054504	042040	EM77: .ASCII/RDY DID NOT SET,AND WORD COUNT DID NOT INCREMENT/<15><12>
7558	060556	042111	047040	052117	
7559	060564	051440	052105	040454	
7560	060572	042116	053440	051117	
7561	060600	020104	047503	047125	
7562	060606	020124	044504	020104	
7563	060614	047516	020124	047111	
7564	060622	051103	046505	047105	
7565	060630	006524	012		
7566	060633	104	044517	043516	.ASCIZ/DOING A WRITE OPERATION/
7567	060640	040440	053440	044522	
7568	060646	042524	047440	042520	
7569	060654	040522	044524	047117	
7570	060662	000			
7571	060663	122	041110	042501	EM100: .ASCII/RHBAE DID NOT CLEAR AFTER CLR WAS LOADED/<15><12>
7572	060670	042040	042111	047040	
7573	060676	052117	041440	042514	
7574	060704	051101	040440	052106	
7575	060712	051105	041440	051114	
7576	060720	053440	051501	046040	
7577	060726	040517	042504	006504	
7578	060734	012			
7579	060735	111	052116	020117	.ASCIZ/INTO RHCS2/
7580	060742	044122	051503	000062	
7581	060750	051127	052111	020105	EM101: .ASCIZ/WRITE REVERSE OPERATION DID NOT WORK/
7582	060756	042522	042526	051522	
7583	060764	020105	050117	051105	
7584	060772	052101	047511	020116	
7585	061000	044504	020104	047516	
7586	061006	020124	047527	045522	
7587	061014	000			
7588					
7589	061015	122	054504	042040	EM102: .ASCIZ/RDY DID NOT SET IN RHCS1/
7590	061022	042111	047040	052117	
7591	061030	051440	052105	044440	
7592	061036	020116	044122	051503	
7593	061044	000061			

N11

MASSBUS RH70 AND RH1: DIAGNOSTIC
DZRHBC.F11 END OF PASS ROUTINE

MACY11 27(732) 01-OCT-76 09:03 PAGE 144

7594	061046	052504	044522	043516
7595	061054	040440	053440	044522
7596	061062	042524	047440	042520
7597	061070	040522	044524	047117
7598	061076	051040	054504	042040
7599	061104	042111	047040	052117
7600	061112	051440	052105	005015
7601	061120	047527	042122	041440
7602	061126	052517	052116	042040
7603	061134	042111	047040	052117
7604	061142	044440	041516	042522
7605	061150	042515	052116	041054
7606	061156	052125	044440	043116
7607	061164	051117	040515	044524
7608	061172	047117	005015	
7609	061176	040527	020123	051127
7610	061204	052111	042524	020116
7611	061212	047524	052040	051505
7612	061220	042524	000122	
7613	061224	052504	044522	043516
7614	061232	040440	053440	044522
7615	061240	042524	047440	042520
7616	061246	040522	044524	047117
7617	061254	051040	054504	042040
7618	061262	042111	047040	052117
7619	061270	051440	052105	005015
7620	061276	047527	042122	041440
7621	061304	052517	052116	042040
7622	061312	042111	047040	052117
7623	061320	044440	041516	042522
7624	061326	042515	052116	040454
7625	061334	042116	044440	043116
7626	061342	051117	040515	044524
7627	061350	047117	005015	
7628	061354	040527	020123	047516
7629	061362	020124	051124	047101
7630	061370	043123	051105	042105
7631	061376	052040	020117	044124
7632	061404	020105	042524	052123
7633	061412	051105	000	
7634	061415	102	042501	044440
7635	061422	020123	042515	051523
7636	061430	042105	052440	026120
7637	061436	052111	051440	047510
7638	061444	046125	020104	050505
7639	061452	040525	020114	030064
7640	061460	000054		
7641	061462	040502	020105	044504
7642	061470	020104	047516	020124
7643	061476	047111	051103	046505
7644	061504	047105	000124	
7645	061510	042522	042101	051040
7646	061516	053105	047440	042520
7647	061524	040522	044524	047117
7648	061532	042040	042111	047040
7649	061540	052117	051040	040505

EM103: .ASCII/DURING A WRITE OPERATION ROY 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 ROY 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)/

4558 6 4559 6 4560 6 4561 6 4562 6 4563 6 4564 6 4565 6 4566 6 4567 6 4568 6 4569 6 4570 6 4571 6 4572 6 4573 6 4574 6 4575 6 4576 6 4577 6 4578 6 4579 6 4580 6 4581 6 4582 6 4583 6 4584 6 4585 6 4586 6 4587 6 4588 6 4589 6 4590 6 4591 6 4592 6 4593 6 4594 6 4595 6 4596 6 4597 6 4598 6 4599 6 4600 6 4601 6 4602 6 4603 6 4604 6 4605 6 4606 6 4607 6 4608 6 4609 6 4610 6 4611 6 4612 6 4613 6 4614 6 4615 6 4616 6 4617 6 4618 6 4619 6 4620 6 4621 6 4622 6 4623 6 4624 6 4625 6 4626 6 4627 6 4628 6 4629 6 4630 6 4631 6 4632 6 4633 6 4634 6 4635 6 4636 6 4637 6 4638 6 4639 6 4640 6 4641 6 4642 6 4643 6 4644 6 4645 6 4646 6 4647 6 4648 6 4649 6 4650 6 4651 6 4652 6 4653 6 4654 6 4655 6 4656 6 4657 6 4658 6 4659 6 4660 6 4661 6 4662 6 4663 6 4664 6 4665 6 4666 6 4667 6 4668 6 4669 6 4670 6 4671 6 4672 6 4673 6 4674 6 4675 6 4676 6 4677 6 4678 6 4679 6 4680 6 4681 6 4682 6 4683 6 4684 6 4685 6 4686 6 4687 6 4688 6 4689 6 4690 6 4691 6 4692 6 4693 6 4694 6 4695 6 4696 6 4697 6 4698 6 4699 6 4700 6 4701 6 4702 6 4703 6 4704 6 4705 6 4706 6 4707 6 4708 6 4709 6 4710 6 4711 6 4712 6 4713 6 4714 6 4715 6 4716 6 4717 6 4718 6 4719 6 4720 6 4721 6 4722 6 4723 6 4724 6 4725 6 4726 6 4727 6 4728 6 4729 6 4730 6 4731 6 4732 6 4733 6 4734 6 4735 6 4736 6 4737 6 4738 6 4739 6 4740 6 4741 6 4742 6 4743 6 4744 6 4745 6 4746 6 4747 6 4748 6 4749 6 4750 6 4751 6 4752 6 4753 6 4754 6 4755 6 4756 6 4757 6 4758 6 4759 6 4760 6 4761 6 4762 6 4763 6 4764 6 4765 6 4766 6 4767 6 4768 6 4769 6 4770 6 4771 6 4772 6 4773 6 4774 6 4775 6 4776 6 4777 6 4778 6 4779 6 4780 6 4781 6 4782 6 4783 6 4784 6 4785 6 4786 6 4787 6 4788 6 4789 6 4790 6 4791 6 4792 6 4793 6 4794 6 4795 6 4796 6 4797 6 4798 6 4799 6 4800 6 4801 6 4802 6 4803 6 4804 6 4805 6 4806 6 4807 6 4808 6 4809 6 4810 6 4811 6 4812 6 4813 6 4814 6 4815 6 4816 6 4817 6 4818 6 4819 6 4820 6 4821 6 4822 6 4823 6 4824 6 4825 6 4826 6 4827 6 4828 6 4829 6 4830 6 4831 6 4832 6 4833 6 4834 6 4835 6 4836 6 4837 6 4838 6 4839 6 4840 6 4841 6 4842 6 4843 6 4844 6 4845 6 4846 6 4847 6 4848 6 4849 6 4850 6 4851 6 4852 6 4853 6 4854 6 4855 6 4856 6 4857 6 4858 6 4859 6 4860 6 4861 6 4862 6 4863 6 4864 6 4865 6 4866 6 4867 6 4868 6 4869 6 4870 6 4871 6 4872 6 4873 6 4874 6 4875 6 4876 6 4877 6 4878 6 4879 6 4880 6 4881 6 4882 6 4883 6 4884 6 4885 6 4886 6 4887 6 4888 6 4889 6 4890 6 4891 6 4892 6 4893 6 4894 6 4895 6 4896 6 4897 6 4898 6 4899 6 4900 6 4901 6 4902 6 4903 6 4904 6 4905 6 4906 6 4907 6 4908 6 4909 6 4910 6 4911 6 4912 6 4913 6 4914 6 4915 6 4916 6 4917 6 4918 6 4919 6 4920 6 4921 6 4922 6 4923 6 4924 6 4925 6 4926 6 4927 6 4928 6 4929 6 4930 6 4931 6 4932 6 4933 6 4934 6 4935 6 4936 6 4937 6 4938 6 4939 6 4940 6 4941 6 4942 6 4943 6 4944 6 4945 6 4946 6 4947 6 4948 6 4949 6 4950 6 4951 6 4952 6 4953 6 4954 6 4955 6 4956 6 4957 6 4958 6 4959 6 4960 6 4961 6 4962 6 4963 6 4964 6 4965 6 4966 6 4967 6 4968 6 4969 6 4970 6 4971 6 4972 6 4973 6 4974 6 4975 6 4976 6 4977 6 4978 6 4979 6 4980 6 4981 6 4982 6 4983 6 4984 6 4985 6 4986 6 4987 6 4988 6 4989 6 4990 6 4991 6 4992 6 4993 6 4994 6 4995 6 4996 6 4997 6 4998 6 4999 6 5000 6

EM110: .ASCII/RHBAE EQUALS 0, IT SHOULD EQUAL 40/(15)(12)

.ASCIZ/AFTER A ONE WORD WRITE/

EM111: .ASCIZ/A17 DID NOT SET AFTER BA WAS INCREMENTED/(15)(12)

EM112: .ASCIZ BA DID NOT INCREMENT/

EM113: .ASCII/BA INCREMENTED BUT IT DID NOT CARRY TO/(15)(12)

.ASCIZ/A16 AND A17 IN RHCS1/

EM114: .ASCII/OUTPUT READY WAS NOT NEGATED AFTER CLR WAS/(15)(12)

.ASCIZ/LOADED INTO RHCS2/

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

MASSBUS RMTD AND RMTD: DIAGNOSTIC
CIRCUIT.P11 END OF PASS ROUTINE

MACY11: 27(732) 01-OCT-76 09:03 PAGE 146

7706	062242	042507	046040	041517
7707	062250	020056	051050	052502
7708	062256	024506	042040	051125
7709	062264	047111	020107	020101
7710	062272	042522	042101	051040
7711	062300	053105	020056	050117
7712	062306	051105	052101	047511
7713	062314	000116		
7714	062316	042115	042520	042040
7715	062324	042111	047040	052117
7716	062332	051440	052105	044440
7717	062340	020116	044122	051503
7718	062346	000062		
7719	062350	047111	047506	042040
7720	062356	042111	047040	052117
7721	062364	053440	044522	042524
7722	062372	052040	020117	042524
7723	062400	052123	051105	042040
7724	062406	044517	043516	042440
7725	062414	005015		
7726	062416	051127	052111	020105
7727	062424	042522	042526	051522
7728	062432	020105	050117	051105
7729	062440	052101	047511	000116
7730	062446	051124	020105	047101
7731	062454	020104	041523	053440
7732	062462	042510	042522	047040
7733	062470	052117	051440	052105
7734	062476	041040	020131	042115
7735	062504	042520	000	
7736	062507	124	042522	044440
7737	062514	020123	042523	020124
7738	062522	047111	051040	041510
7739	062530	030523	046454	050104
7740	062536	020105	047101	020104
7741	062544	041523	000	
7742	062547	123	047510	046125
7743	062554	020104	046101	047523
7744	062562	041040	020105	042523
7745	062570	000124		
7746	062572	042115	042520	040440
7747	062600	042116	051440	020103
7748	062606	044123	052517	042114
7749	062614	041040	020105	042523
7750	062622	000124		
7751	062624	051124	020105	047101
7752	062632	020104	041523	040440
7753	062640	042522	051440	052105
7754	062646	020054	043520	020105
7755	062654	044123	052517	042114
7756	062662	040440	051514	020117
7757	062670	042502	051440	052105
7758	062676	000		
7759	062677	104	046102	042040
7760	062704	042111	047040	052117
7761	062712	051440	052105	040440

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

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

.ASCIZ/WRITE REVERSE OPERATION.

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

EM121: .ASCIZ/TRE IS SET IN RHCS1,MOPE AND SC/

.ASCIZ/SHOULD ALSO BE SET/

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

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

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

7762	062720	052106	051105	040440
7763	062726	032040	053440	051117
7764	062734	020104	051127	052111
7765	062742	020105	051106	046517
7766	062750	005015		
7767	062752	047101	042440	042526
7768	062760	020116	042101	051104
7769	062766	051505	000123	
7770	062772	041104	020114	042523
7771	063000	020124	047111	051040
7772	063006	041510	031523	042040
7773	063014	044517	043516	040440
7774	063022	030440	053440	051117
7775	063030	020104	051127	052111
7776	063036	020105	051106	046517
7777	063044	005015		
7778	063046	047101	042440	042526
7779	063054	020116	042101	051104
7780	063062	051505	000123	
7781	063066	041104	020114	042523
7782	063074	020124	047111	051040
7783	063102	041510	031523	047440
7784	063110	020116	020101	020063
7785	063116	047527	042122	053440
7786	063124	044522	042524	043040
7787	063132	047522	006515	012
7788	063137	101	020116	053105
7789	063144	047105	040440	042104
7790	063152	042522	051523	000
7791	063157	104	046102	042040
7792	063164	042111	047040	052117
7793	063172	051440	052105	044440
7794	063200	020116	044122	051503
7795	063206	020063	043101	042524
7796	063214	020122	020101	020062
7797	063222	047527	042122	005015
7798	063230	051106	046517	040440
7799	063236	020116	053105	047105
7800	063244	040440	042104	042522
7801	063252	051523	000	
7802	063255	115	050103	020105
7803	063262	042523	020124	047111
7804	063270	051040	041510	030523
7805	063276	041040	052125	051440
7806	063304	020103	042522	042101
7807	063312	020123	051501	041440
7808	063320	042514	051101	042105
7809	063326	000		
7810	063327	115	050103	020105
7811	063334	044504	020104	047516
7812	063342	020124	042523	020124
7813	063350	047111	051040	041510
7814	063356	030523	000	
7815	063361	127	042503	046040
7816	063366	020117	047111	051040
7817	063374	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/

E12

MASSBUS RMTD AND RMTI DIAGNOSTIC
DZRMBC.P11 END OF PASS ROUTINE

MACY11 27(732) 01-OCT-76 09:03 PAGE 148

7818	063402	042111	047040	052117
7819	063410	051440	052105	000
7820	063415	127	042503	046040
7821	063422	020117	044123	052517
7822	063430	042114	047440	046116
7823	063436	020131	042502	051440
7824	063444	052105	044440	020116
7825	063452	044122	051503	020063
7826	063460	052502	036524	012
7827	063465	127	042503	044040
7828	063472	020111	046101	047523
7829	063500	051040	040505	051504
7830	063506	040440	020123	042523
7831	063514	000124		
7832	063516	041527	020105	047514
7833	063524	051440	052105	044440
7834	063532	020116	044122	051503
7835	063540	020063	052502	020124
7836	063546	041527	020105	044504
7837	063554	020104	047516	020124
7838	063562	042523	020124	047111
7839	063570	051040	041510	031123
7840	063576	000		
7841	063577	127	042503	044040
7842	063604	020111	044504	020104
7843	063612	047516	020124	042523
7844	063620	020124	047111	051040
7845	063626	041510	031523	000
7846	063633	127	042503	044040
7847	063640	020111	042523	020124
7848	063646	047111	051040	041510
7849	063654	031523	041040	052125
7850	063662	033440	042503	042040
7851	063670	042111	047040	052117
7852	063676	051440	052105	044440
7853	063704	020116	044122	051503
7854	063712	000062		
7855	063714	041527	020105	044510
7856	063722	051440	047510	046125
7857	063730	020104	047117	054514
7858	063736	041040	020105	042523
7859	063744	020124	047111	051040
7860	063752	041510	031523	041040
7861	063760	052125	005015	
7862	063764	041527	020105	047514
7863	063772	040440	051514	020117
7864	064000	042522	042101	020123
7865	064006	051501	051440	052105
7866	064014	000		
7867	064015	127	044522	042524
7868	064022	047440	042520	040522
7869	064030	044524	047117	042040
7870	064036	042111	047040	052117
7871	064044	044440	041516	042522
7872	064052	042515	052116	053440
7873	064060	051117	020104	047503

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/

MASSBUS RHTD AND RH11 DIAGNOSTIC
DZRHBC.P11 END OF PASS ROUTINE

MACY11 27(732) 01-OCT-76 09:03 PAGE 149

7874	064066	047125	000124	
7875	064072	052502	020123	042101
7876	064100	051104	051505	020123
7877	064106	044504	020104	047516
7878	064114	020124	047111	051103
7879	064122	046505	047105	020124
7880	064130	043101	042524	020122
7881	064136	020101	051127	052111
7882	064144	000105		
7883	064146	047111	047506	046522
7884	064154	052101	047511	020116
7885	064162	044504	020104	047516
7886	064170	020124	042507	020124
7887	064176	051127	052111	042524
7888	064204	020116	047524	052040
7889	064212	051505	042524	000122
7890	064220	042522	042101	047440
7891	064226	042520	040522	044524
7892	064234	047117	042040	042111
7893	064242	047040	052117	044440
7894	064250	041516	042522	042515
7895	064256	052116	053440	051117
7896	064264	020104	047503	047125
7897	064272	000124		
7898	064274	052502	020123	042101
7899	064302	051104	051505	020123
7900	064310	044504	020104	047516
7901	064316	020124	047111	051103
7902	064324	046505	047105	020124
7903	064332	043101	042524	020122
7904	064340	020101	042522	042101
7905	064346	005015		
7906	064350	050117	051105	052101
7907	064356	047511	000116	
7908	064362	047111	047506	046522
7909	064370	052101	047511	020116
7910	064376	044504	020104	047516
7911	064404	020124	042522	042101
7912	064412	043040	047522	020115
7913	064420	042524	052123	051105
7914	064426	000		
7915	064427	124	044510	020123
7916	064434	051511	052040	042510
7917	064442	041440	047117	042524
7918	064450	052116	020123	043117
7919	064456	052040	042510	051040
7920	064464	020110	042522	044507
7921	064472	052123	051105	000123
7922	064500	046101	020114	044502
7923	064506	051524	042040	042111
7924	064514	047040	052117	043440
7925	064522	052105	052040	040522
7926	064530	051516	042506	042522
7927	064536	020104	052504	044522
7928	064544	043516	040440	005015
7929	064552	042522	042101	047440

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/

G12

MASSBUS RMT0 AND RMT1: DIAGNOSTIC
 02RMC.P11 END OF PASS ROUTINE

MAC11 27(732) 01-OCT-76 09:03 PAGE 150

7930	064560	042520	040522	044524
7931	064566	047117	000	
7932	064571	122	040505	020104
7933	064576	050117	051105	052101
7934	064604	047511	020116	044504
7935	064612	020104	047516	020124
7936	064620	042523	046505	052040
7937	064626	020117	047527	045522
7938	064634	047054	020117	005015
7939	064642	047111	047506	046522
7940	064650	052101	047511	020116
7941	064656	040527	020123	051124
7942	064664	047101	043123	051105
7943	064672	042105	052040	020117
7944	064700	052123	051117	043501
7945	064706	020105	047514	027103
7946	064714	051050	052502	024506
7947	064722	000		
7948	064723	101	046114	041040
7949	064730	052111	020123	044127
7950	064736	051105	020105	047516
7951	064744	020124	051124	047101
7952	064752	043123	051105	042105
7953	064760	052040	020117	042524
7954	064766	052123	051105	005015
7955	064774	052504	044522	043516
7956	065002	040440	053440	044522
7957	065010	042524	047440	042520
7958	065016	040522	044524	047117
7959	065024	000		
7960	065025	127	044522	042524
7961	065032	047440	042520	040522
7962	065040	044524	047117	042040
7963	065046	042111	047040	052117
7964	065054	053440	044522	042524
7965	065062	052040	020117	042524
7966	065070	052123	051105	000
7967	065075	104	046102	051440
7968	065102	052105	047440	020116
7969	065110	020101	020062	047527
7970	065116	042122	052040	040522
7971	065124	051516	042506	020122
7972	065132	044527	044124	041040
7973	065140	044501	005015	
7974	065144	042523	020124	047111
7975	065152	051040	041510	031123
7976	065160	000		
7977	065161	104	046102	051440
7978	065166	052105	044440	020116
7979	065174	044122	051503	020063
7980	065202	047117	040440	030440
7981	065210	053440	051117	020104
7982	065216	042522	042101	043040
7983	065224	047522	006515	000012
7984	065232	047101	042440	042526
7985	065240	020116	042101	051104

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

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

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

.ASCIZ DURING A WRITE OPERATION/

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

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

.ASCIZ/SET IN RHCS2/

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

.ASCIZ/AN EVEN ADDRESS/

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MASSBUS RM70 AND RM1: DIAGNOSTIC
CZRMBC.F11 END OF PASS ROUTINE

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7986	065246	051505	000123
7987	065252	041104	020114
7988	065260	020124	047117
7989	065266	031040	053440
7990	065274	020104	051127
7991	065302	020105	042522
7992	065310	053440	052111
7993	065316	040502	020111
7994	065324	006524	012
7995	065327	111	020116
7996	065334	051503	000062
7997	065340	041104	020114
7998	065346	020124	047117
7999	065354	031040	053440
8000	065362	020104	051124
8001	065370	043123	051105
8002	065376	044522	042524
8003	065404	012	
8004	065405	106	047522
8005	065412	047101	047440
8006	065420	040440	042104
8007	065426	051523	000
8008	065431	104	046102
8009	065436	042111	047040
8010	065444	051440	052105
8011	065452	020116	020101
8012	065460	047527	042122
8013	065466	044522	042524
8014	065474	053105	043056
8015	065502	020115	047101
8016	065510	042526	006516
8017	065515	101	042104
8018	065522	051523	000
8019	065525	104	046102
8020	065532	052105	047440
8021	065540	020101	020062
8022	065546	042122	053440
8023	065554	042524	051040
8024	065562	051105	042523
8025	065570	051106	046517
8026	065576	020116	042117
8027	065604	042101	051104
8028	065612	000123	
8029	065614	041104	020114
8030	065622	020124	047117
8031	065630	031440	053440
8032	065636	020104	051127
8033	065644	020105	042522
8034	065652	051522	006505
8035	065657	106	047522
8036	065664	047101	047440
8037	065672	040440	042104
8038	065700	051523	000
8039	065703	104	046102
8040	065710	042111	047040
8041	065716	051440	052105

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

.ASCIZ/IN RMCS2/

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>

MASSBUS RHT0 AND RH1: DIAGNOSTIC
DZRHBC.P11 END OF PASS ROUTINE

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8042	065724	020116	020101	020062
8043	065732	047527	042122	051040
8044	065740	040505	020104	051106
8045	065746	046517	040440	006516
8046	065754	012		
8047	065755	105	042526	020116
8048	065762	042101	051104	051505
8049	065770	000123		
8050	065772	041104	020114	042523
8051	066000	020124	047117	040440
8052	066006	031040	053440	051117
8053	066014	020104	042522	042101
8054	066022	043040	047522	006515
8055	066030	012		
8056	066031	101	020116	042117
8057	066036	020104	042101	051104
8058	066044	051505	000123	
8059	066050	041104	020114	042523
8060	066056	020124	047117	040440
8061	066064	031040	053440	051117
8062	066072	020104	042522	042101
8063	066100	051040	053105	051105
8064	066106	042523	005015	
8065	066112	051106	046517	040440
8066	066120	020116	053105	047105
8067	066126	040440	042104	042522
8068	066134	051523	000	
8069	066137	104	046102	042040
8070	066144	042111	047040	052117
8071	066152	051440	052105	047440
8072	066160	020116	020101	020062
8073	066166	047527	042122	051040
8074	066174	040505	020104	042522
8075	066202	042526	051522	006505
8076	066210	012		
8077	066211	106	047522	020115
8078	066216	047101	047440	042104
8079	066224	040440	042104	042522
8080	066232	051523	000	
8081	066235	104	046102	051440
8082	066242	052105	047440	020116
8083	066250	020101	020063	047527
8084	066256	042122	051040	040505
8085	066264	020104	051106	046517
8086	066272	005015		
8087	066274	047101	042440	042526
8088	066302	020116	042101	051104
8089	066310	051505	000123	
8090	066314	041104	020114	044504
8091	066322	020104	047516	020124
8092	066330	042523	020124	047117
8093	066336	040440	031440	053440
8094	066344	051117	020104	042522
8095	066352	042101	051040	053105
8096	066360	051105	042523	005015
8097	066366	051106	046517	040440

.ASCIZ/EVEN ADDRESS/

EM163: .ASCII/DBL SET ON A 2 WORD READ FROM/<15><12>

.ASCIZ/AN ODD ADDRESS/

EM164: .ASCII/DBL SET ON A 2 WORD READ REVERSE/<15><12>

.ASCIZ/FROM AN EVEN ADDRESS/

EM165: .ASCII/DBL DID NOT SET ON A 2 WORD READ REVERSE/<15><12>

.ASCIZ/FROM AN ODD ADDRESS/

EM166: .ASCII/DBL SET ON A 3 WORD READ FROM/<15><12>

.ASCIZ/AN EVEN ADDRESS/

EM167: .ASCII/DBL DID NOT SET ON A 3 WORD READ REVERSE/<15><12>

.ASCIZ/FROM AN EVEN ADDRESS/

MASSBUS RH70 AND RH11 DIAGNOSTIC
C2RHBC.P11 END OF PASS ROUTINE

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

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MASSBUS RHO AND RHI: DIAGNOSTIC
CZRHBC.P11 END OF PASS ROUTINE

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8154	067052	020105	046054	041117
8155	067060	052131	020105	040507
8156	067066	042524	043040	051117
8157	067074	051040	042110	020102
8158	067102	047516	020124	047527
8159	067110	045522	047111	020107
8160	067116	051120	050117	051105
8161	067124	054514	000	
8162	067127	110	041111	052131
8163	067134	020105	046054	041117
8164	067142	052131	020105	040507
8165	067150	042524	043040	051117
8166	067156	051040	041110	020101
8167	067164	047516	020124	047527
8168	067172	045522	047111	020107
8169	067200	051120	050117	051105
8170	067206	054514	000	
8171	067211	124	042510	041040
8172	067216	051525	040440	042104
8173	067224	042522	051523	044440
8174	067232	020123	047111	047503
8175	067240	051122	041505	020124
8176	067246	052111	051440	047510
8177	067254	046125	020104	042502
8178	067262	030440	030065	030060
8179	067270	000		
8180	067271	124	051505	042524
8181	067276	020122	040504	040524
8182	067304	041040	043125	042506
8183	067312	020122	047504	051505
8184	067320	047040	052117	041440
8185	067326	047117	040524	047111
8186	067334	052040	042510	041440
8187	067342	051117	042522	052103
8188	067350	044440	043116	000117
8189	067356	044122	042040	042111
8190	067364	047040	052117	044440
8191	067372	052116	051105	050125
8192	067400	020124	047514	045517
8193	067406	040440	020124	051503
8194	067414	020061	047524	051440
8195	067422	042505	044440	020106
8196	067430	042511	044440	020123
8197	067436	042523	000124	
8198	067442	044122	041527	051440
8199	067450	047510	046125	020104
8200	067456	042502	055040	051105
8201	067464	000117		
8202				
8203	067466	051124	047101	043123
8204	067474	051105	053440	051501
8205	067502	042040	047117	020105
8206	067510	047117	050040	051117
8207	067516	020124	000102	
8208	067522	041520	020040	020040
8209	067530	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 CSI 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\

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MASSBUS RMTD AND RMT: DIAGNOSTIC
DZRHBC.P11 END OF PASS ROUTINE

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8210	067536	020040	020040	044122
8211	067544	041527	020040	020040
8212	067552	047503	052116	047105
8213	067560	051524	051040	053510
8214	067566	006503	012	
8215	067571	040	020040	020040
8216	067576	020040	047040	027117
8217	067604	020040	020040	020040
8218	067612	020040	020040	020040
8219	067620	051440	047510	046125
8220	067626	020104	040510	042526
8221	067634	041040	042505	000116
8222	067642	041520	020040	020040
8223	067650	020040	042524	052123
8224	067656	020040	020040	044122
8225	067664	040502	020105	020040
8226	067672	047503	052116	047105
8227	067700	051524	051040	041110
8228	067706	042501	005015	
8229	067712	020040	020040	020040
8230	067720	020040	047516	020056
8231	067726	020040	020040	020040
8232	067734	020040	020040	020040
8233	067742	044123	052517	042114
8234	067750	044040	053101	020105
8235	067756	042502	047105	000
8236	067763	120	020103	020040
8237	067770	020040	052040	051505
8238	067776	020124	020040	051040
8239	070004	041110	020101	020040
8240	070012	041440	047117	042524
8241	070020	052116	020123	044122
8242	070026	040502	005015	
8243	070032	020040	020040	020040
8244	070040	020040	047516	020056
8245	070046	020040	020040	020040
8246	070054	020040	020040	020040
8247	070062	044123	052517	042114
8248	070070	044040	053101	020105
8249	070076	042502	047105	000
8250	070103	120	020103	020040
8251	070110	020040	052040	051505
8252	070116	020124	020040	051040
8253	070124	042110	020102	020040
8254	070132	041440	047117	042524
8255	070140	052116	020123	044122
8256	070146	041104	005015	
8257	070152	020040	020040	020040
8258	070160	020040	047516	020056
8259	070166	020040	020040	020040
8260	070174	020040	020040	020040
8261	070202	044123	052517	042114
8262	070210	044040	053101	020105
8263	070216	042502	047105	000
8264	070223	120	020103	020040
8265	070230	020040	052040	051505

.ASCIZ/ NO. SHOULD HAVE BEEN/

DH2: .ASCII/PC TEST RHBAE CONTENTS RHBAE/(15)<12>

.ASCIZ/ NO. SHOULD HAVE BEEN/

DH3: .ASCII/PC TEST RHBA CONTENTS RHBA/(15)<12>

.ASCIZ/ NO. SHOULD HAVE BEEN/

DH4: .ASCII/PC TEST RHDB CONTENTS RHDB/(15)<12>

.ASCIZ/ NO. SHOULD HAVE BEEN/

DH5: .ASCII/PC TEST RHCS2 TRE AND SC/(15)<12>

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MASSBUS RH70 AND RH11 DIAGNOSTIC
DZRHBC.P11 END OF PASS ROUTINE

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8266	070236	020124	020040	051040
8267	070244	041510	031123	020040
8268	070252	052040	042522	040440
8269	070260	042116	051440	006503
8270	070266	012		
8271	070267	040	020040	020040
8272	070274	020040	047040	027117
8273	070302	020040	020040	020040
8274	070310	020040	020040	020040
8275	070316	020040	020040	041040
8276	070324	052111	000123	
8277	070330	041520	020040	020040
8278	070336	020040	042524	052123
8279	070344	020040	020040	047503
8280	070352	052116	047105	051524
8281	070360	047440	006506	012
8282	070365	040	020040	020040
8283	070372	020040	047040	027117
8284	070400	020040	020040	020040
8285	070406	020040	044122	051503
8286	070414	000062		
8287	070416	041520	020040	020040
8288	070424	020040	042524	052123
8289	070432	020040	020040	042504
8290	070440	044526	042503	005015
8291	070446	020040	020040	020040
8292	070454	020040	047516	020056
8293	070462	020040	020040	047503
8294	070470	042504	000	
8295	070473	120	000103	
8296	070476	041520	020040	020040
8297	070504	020040	042524	052123
8298	070512	020040	020040	040506
8299	070520	046111	047111	006507
8300	070526	012		
8301	070527	040	020040	020040
8302	070534	020040	047040	027117
8303	070542	020040	020040	040440
8304	070550	042104	042522	051523
8305	070556	000		
8306	070557	120	020103	020040
8307	070564	020040	052040	051505
8308	070572	020124	052516	041115
8309	070600	051105	000	
8310	070603	120	020103	020040
8311	070610	020040	052040	051505
8312	070616	020124	020040	040440
8313	070624	042104	042522	051523
8314	070632	020040	040504	040524
8315	070640	020040	051040	040510
8316	070646	006523	012	
8317	070651	040	020040	020040
8318	070656	020040	047040	027117
8319	070664	020040	020040	041440
8320	070672	047117	042524	052116
8321	070700	000123		

.ASCIZ/ NO. BITS/

DH11: .ASCII/PC TEST CONTENTS OF<15><12>

.ASCIZ/ NO. RHCS2/

DH34: .ASCII/PC TEST DEVICE<15><12>

.ASCIZ/ NO. CODE/

DH35: .ASCIZ/PC/
DH36: .ASCII/PC TEST FAILING<15><12>

.ASCIZ/ NO. ADDRESS/

DH41: .ASCIZ/PC TEST NUMBER/

DH52: .ASCII/PC TEST ADDRESS DATA RHAS<15><12>

.ASCIZ/ NO. CONTENTS/

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MASSBUS RHTD AND RHI: DIAGNOSTIC
DZRHBC.P11 END OF PASS ROUTINE

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8322	070702	041520	020040	020040	DH71:	.ASCII/PC	TEST	DEVICE/	<15><12>
8323	070710	020040	042524	052123					
8324	070716	020040	020040	042504					
8325	070724	044526	042503	005015					
8326	070732	020040	020040	020040		.ASCIZ/	NO.	NUMBER/	
8327	070740	020040	047516	020056					
8328	070746	020040	020040	052516					
8329	070754	041115	051105	000					
8330	070761	120	020103	020040	DH72:	.ASCII/PC	TEST	CONTENTS OF/	<15><12>
8331	070766	020040	052040	051505					
8332	070774	020124	020040	041440					
8333	071002	047117	042524	052116					
8334	071010	020123	043117	005015					
8335	071016	020040	020040	020040		.ASCIZ/	NO.	REGISTER/	
8336	071024	020040	047516	020056					
8337	071032	020040	020040	051040					
8338	071040	043505	051511	042524					
8339	071046	000122							
8340	071050	041520	020040	020040	DH76:	.ASCIZ/PC	TEST NO.	RHBAE	RHBA/
8341	071056	052040	051505	020124					
8342	071064	047516	020056	051040					
8343	071072	041110	042501	020040					
8344	071100	051040	041110	000101					
8345	071106	041520	020040	020040	DH105:	.ASCIZ/PC	TEST NO.	RHBAE	RHBA RHWC/
8346	071114	052040	051505	020124					
8347	071122	047516	020056	044122					
8348	071130	040502	020105	020040					
8349	071136	044122	040502	020040					
8350	071144	020040	044122	041527					
8351	071152	000							
8352	071153	120	020103	020040	DH111:	.ASCIZ/PC	TEST NO.	RHCS1	RHBA RHWC/
8353	071160	020040	042524	052123					
8354	071166	047040	027117	051040					
8355	071174	041510	030523	020040					
8356	071202	051040	041110	020101					
8357	071210	020040	051040	053510					
8358	071216	000103							
8359	071220	041520	020040	020040	DH121:	.ASCIZ/PC	TEST NO.	RHCS1	RHCS2/
8360	071226	052040	051505	020124					
8361	071234	047516	020056	044122					
8362	071242	051503	020061	020040					
8363	071250	044122	051503	000062					
8364	071256	041520	020040	020040	DH130:	.ASCIZ/PC	TEST NO.	RHCS1/	
8365	071264	052040	051505	020124					
8366	071272	047516	020056	044122					
8367	071300	051503	000061						
8368	071304	041520	020040	020040	DH132:	.ASCIZ/PC	TEST NO.	RHBAE	RHBA RHCS2 RHCS3/
8369	071312	052040	051505	020124					
8370	071320	047516	020056	044122					
8371	071326	040502	020105	020040					
8372	071334	044122	040502	020040					
8373	071342	020040	044122	051503					
8374	071350	020062	020040	044122					
8375	071356	051503	000063						
8376	071362	041520	020040	020040	DH142:	.ASCIZ/PC	TEST NO.	EVENAD	RHTDB/
8377	071370	052040	051505	020124					

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***** RMC PC RMC PC DIAGNOSTIC

 END OF PASS ROUTINE

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071376	020056	053105
071377	042101	020040
071378	042124	000102
071379	020040	020040
071380	051505	020124
071381	020056	044122
071382	051503	020040
071383	044122	020062
071384	020040	044122
071385	000	041527
071386	120	020103
071387	020040	020040
071388	042524	052123
071389	047040	027117
071390	052502	051040
071391	020106	020040
071392	052110	041104
071393	000	
071394	122	041110
071395	020040	042501
071396	051040	041110
071397	020101	051040
071398	041510	031523
071399	120	000
071400	020103	020040
071401	042524	052123
071402	047040	027117
071403	041510	051040
071404	120	031523
071405	020103	020040
071406	052040	051505
071407	020124	042040
071408	053105	041511
071409	051040	020105
071410	005015	031123
071411	020040	020040
071412	020040	047516
071413	020040	052516
071414	041115	020040
071415	000	
071416	071670	
071417	001116	003454
071418	001162	003444
071419	001116	000000
071420	001116	003454
071421	001162	000000
071422	001116	003454
071423	001162	000000
071424	001116	003454
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071696	001116	003454
071697	001162	000000

0434	072030	001116	003454	004100	DT71:	.WORD	SERRPC,TSTNM,RBUF,0
0435	072036	000000					
0436	072040	001116	003454	003416	DT76:	.WORD	SERRPC,TSTNM,BAE,BA,0
0437	072046	003414	000300				
0438	072052	001116	003454	003416	DT105:	.WORD	SERRPC,TSTNM,BAE,BA,WC,0
0439	072060	003414	003444	000000			
0440	072066	001116	003454	003420	DT111:	.WORD	SERRPC,TSTNM,CS1,BA,WC,0
0441	072074	003414	003444	000000			
0442	072102	001116	003454	003420	DT121:	.WORD	SERRPC,TSTNM,CS1,CS2,0
0443	072110	003422	000000				
0444	072114	001116	003454	003420	DT130:	.WORD	SERRPC,TSTNM,CS1,0
0445	072122	000000					
0446	072124	001116	003454	003416	DT132:	.WORD	SERRPC,TSTNM,BAE,BA,CS2,CS3,0
0447	072132	003414	003422	003424			
0448	072140	000000					
0449	072142	001116	003454	004000	DT142:	.WORD	SERRPC,TSTNM,EVENAD,SREGO,0
0450	072150	001162	000000				
0451	072154	001116	003454	003420	DT146:	.WORD	SERRPC,TSTNM,CS1,CS2,WC,0
0452	072162	003422	003444	000000			
0453	072170	001116	003454	004100	DT147:	.WORD	SERRPC,TSTNM,RBUF,SREGO,0
0454	072176	001162	000000				
0455	072202	003416	003414	003424	DT170:	.WORD	BAE,BA,CS3,0
0456	072210	000000					
0457	072212	001116	003454	003424	DT171:	.WORD	SERRPC,TSTNM,CS3,0
0458	072220	000000					
0459	072222	001116	003454	004100	DT172:	.WORD	SERRPC,TSTNM,RBUF,CS2,0
0460	072230	003422	000000				
0461					.EVEN		
0462	072234	000	000	000	DF1:	.BYTE	0,0,0,0
0463	072237	000					
0464	072240	000	000	000	DF2:	.BYTE	0,0,0,0
0465	072243	000					
0466	072244	000	000	000	DF3:	.BYTE	0,0,0,0
0467	072247	000					
0468	072250	000	000	000	DF4:	.BYTE	0,0,0,0
0469	072253	000					
0470	072254	000	000	000	DF5:	.BYTE	0,0,0,0
0471	072257	000					
0472	072260	000	000	000	DF11:	.BYTE	0,0,0
0473	072263	000	000	000	DF34:	.BYTE	0,0,0
0474	072266	000			DF35:	.BYTE	0
0475	072267	000	000	000	DF36:	.BYTE	0,0,0
0476	072272	000	000		DF41:	.BYTE	0,0
0477	072274	000	000	000	DF52:	.BYTE	0,0,0,0,0
0478	072277	000	000				
0479	072301	000	000	000	DF71:	.BYTE	0,0,0
0480	072304	000	000	000	DF76:	.BYTE	0,0,0,0
0481	072307	000					
0482	072310	000	000	000	DF105:	.BYTE	0,0,0,0,0
0483	072313	000	000				
0484	072315	000	000	000	DF132:	.BYTE	0,0,0,0,0,0
0485	072320	000	000	000			
0486	072323	000	000	000	DF170:	.BYTE	0,0,0
0487	072326	000	000	000	DF172:	.BYTE	0,0,0,0
0488	072331	000			.EVEN		

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HED1
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HEDC10
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E13

MASSBUS RWD AND RHL: DIAGNOSTIC
CIRMB.C.FI: END OF PASS ROUTINE

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8546	072510	054252
8547	072512	054321
8548	072514	054379
8549	072516	054433
8550	072520	054517
8551	072522	054566
8552	072524	054612
8553	072526	054651

HED067
HED070
HED071
HED072
HED073
HED074
HED075
HED076

.SBTTL SCOPE HANDLER ROUTINE

```

*****

```

```

THIS ROUTINE CONTROLS THE LOOPING OF SUBTESTS. IT WILL INCREMENT
AND LOAD THE TEST NUMBER($TSTNM) INTO THE DISPLAY REG.(DISPLAY<7:C>)
AND LOAD THE ERROR FLAG ($ERFLG) INTO DISPLAY<15:08>
THE SWITCH OPTIONS PROVIDED BY THIS ROUTINE ARE:

```

```

*SW14=1      LOOP ON TEST
*SW11=1      INHIBIT ITERATIONS
*SWC9=1      LOOP ON ERROR
*SWC8=1      LOOP ON TEST IN SWR<7:0>

```

```

*CALL

```

```

*      SCOPE      ::SCOPE=10T

```

```

$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

```

```

      MOV     $ERRVEC, -(SP)   ;;THIS INSTRUCTION TO A "NOP" (NOP=240,

```

```

      MOV     $SS,$ERRVEC     ;;SAVE THE CONTENTS OF THE ERROR VECTOR

```

```

      TST     $177060         ;;SET FOR TIMEOUT

```

```

      MOV     (SP)+,$ERRVEC    ;;TIME OUT ON XOR?

```

```

      BR      $SVLAD          ;;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?

```

```

      BEQ     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

```

```

1$:  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

```

```

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8568 072530
8569 072530 032777 040000 106402
8570 072536 001111
8571
8572 072540 000416
8573
8574 072542 013746 000004
8575 072546 012737 072566 000004
8576 072554 005737 177060
8577 072560 012637 000004
8578 072564 000463
8579 072566 022626
8580 072570 012637 000004
8581 072574 000423
8582 072576
8583 072576 032777 000400 106334
8584 072604 001404
8585 072606 127737 106326 001102
8586 072614 001462
8587 072616 105737 001103
8588 072622 001421
8589 072624 123737 001115 001103
8590 072632 101015
8591 072634 032777 001000 106276
8592 072642 001404
8593 072644 013737 001110 001106
8594 072652 000443
8595 072654 105037 001103
8596 072660 005037 001212
8597 072664 000415
8598 072666 032777 004000 106244
8599 072674 001011
8600 072676 005737 001100
8601 072702 001406
8602 072704 005237 001104
8603 072710 023737 001212 001104
8604 072716 002021
8605 072720 012737 000001 001104
8606 072726 013737 072776 001212
8607 072734 105237 001102
8608 072740 011637 001106
8609 072744 011637 001110

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MASSBUS RMTD AND RMTD DIAGNOSTIC
CIRCUIT.P11 SCOPE HANDLER ROUTINE

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```

8610 072750 005037 001214          CLR      $ESCAPE          ;; CLEAR THE ESCAPE FROM ERROR ADDRESS
8611 072754 112737 000001 001115    MOV      #1,$ERMAX          ;; ONLY ALLOW ONE(1) ERROR ON NEXT TEST
8612 072762 013777 001102 106152    $COVER: MOV      $STNM,$DISPLAY      ;; DISPLAY TEST NUMBER
8613 072770 013716 001106          MOV      $LPADR,$SP          ;; FUDGE RETURN ADDRESS
8614 072774 000002          RTI              ;; FIXES PS
8615 072776 000100    $MXCNT: 100          ;; MAX. NUMBER OF ITERATIONS
8616          .SBTTL POWER DOWN AND UP ROUTINES

```

```

8617          ;;*****
8618          :POWER DOWN ROUTINE
8619          :*****

```

```

8620 073000 012737 073140 000024    $PWRDN: MOV      $SILLUP,$PWRVEC      ;; SET FOR FAST UP
8621 073006 012737 000340 000026    MOV      #340,$PWRVEC+2      ;; PRI0:7
8622 073014 010046          MOV      RC,-($P)          ;; PUSH R0 ON STACK
8623 073016 010146          MOV      R1,-($P)          ;; PUSH R1 ON STACK
8624 073020 010246          MOV      R2,-($P)          ;; PUSH R2 ON STACK
8625 073022 010346          MOV      R3,-($P)          ;; PUSH R3 ON STACK
8626 073024 010446          MOV      R4,-($P)          ;; PUSH R4 ON STACK
8627 073026 010546          MOV      R5,-($P)          ;; PUSH R5 ON STACK
8628 073030 017746 106104          MOV      $SWR,-($P)          ;; PUSH $SWR ON STACK
8629 073034 010637 073144          MOV      SP,$SAVR6          ;; SAVE SP
8630 073040 012737 073052 000024    MOV      $PWRUP,$PWRVEC      ;; SET UP VECTOR
8631 073046 000000          HALT
8632 073050 000776          BR      .-2              ;; HANG JP
8633
8634          ;;*****
8635          :POWER UP ROUTINE
8636          :*****

```

```

8637 073052 012737 073140 000024    $PWRUP: MOV      $SILLUP,$PWRVEC      ;; SET FOR FAST DOWN
8638 073060 013706 073144          MOV      $SAVR6,$P          ;; GET SP
8639 073064 005037 073144          CLR      $SAVR6          ;; WAIT LOOP FOR THE TTY
8640 073070 005237 073144    1$: INC      $SAVR6          ;; WAIT FOR THE INC
8641 073076 012677 106036          BNE      1$              ;; OF WORD
8642 073102 012605          MOV      (SP)+,$SWR          ;; POP STACK INTO $SWR
8643 073104 012604          MOV      (SP)+,R5          ;; POP STACK INTO R5
8644 073106 012603          MOV      (SP)+,R4          ;; POP STACK INTO R4
8645 073110 012602          MOV      (SP)+,R3          ;; POP STACK INTO R3
8646 073112 012601          MOV      (SP)+,R2          ;; POP STACK INTO R2
8647 073114 012600          MOV      (SP)+,R1          ;; POP STACK INTO R1
8648 073116 012737 073000 000024    MOV      (SP)+,R0          ;; POP STACK INTO R0
8649 073124 012737 000340 000026    MOV      $PWRDN,$PWRVEC      ;; SET UP THE POWER DOWN VECTOR
8650 073132 104401          MOV      #340,$PWRVEC+2      ;; PRI0:7
8651 073134 073146          TYPE      $POWER          ;; REPORT THE POWER FAILURE
8652 073136 000002          $PWRMG: .WORD      $POWER          ;; POWER FAIL MESSAGE POINTER
8653 073140 000000          RTI
8654 073142 000776          $SILLUP: HALT          ;; THE POWER UP SEQUENCE WAS STARTED
8655 073144 000000          BR      .-2              ;; BEFORE THE POWER DOWN WAS COMPLETE
8656 073146 005015 047520 042527    $SAVR6: 0          ;; PUT THE SP HERE
8657 073154 000122          $POWER: .ASCIZ  (15)<(12)"POWER"
8658          .EVEN

```

.SBTTL TYPE ROUTINE

```

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

```

```

:CALL:
:1) USING A TRAP INSTRUCTION
: TYPE .MESADR ;;MESADR IS FIRST ADDRESS OF AN ASCIZ STRING
:CR
: TYPE
: MESADR
:

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8676 073156 105737 001157
8677 073162 100002
8678 073154 000000
8679 073166 000407
8680 073170 010046
8681 073172 017600 000002
8682 073176 112046
8683 073200 001005
8684 073202 005726
8685 073204 012600
8686 073206 062716 000002
8687 073212 000002
8688 073214 122716 000011
8689 073220 001430
8690 073222 122716 000200
8691 073226 001006
8692 073230 005726
8693 073232 104401
8694 073234 001223
8695 073236 105037 073372
8696 073242 000755
8697 073244 004737 073326
8698 073250 123726 001156
8699 073254 001350
8700 073256 013746 001154
8701
8702 073262 105366 000001
8703 073266 002770
8704 073270 004737 073326
8705 073274 105337 073372
8706 073300 000770
8707
8708
8709
8710 073302 112716 000040
8711 073306 004737 073326
8712 073312 132737 000007 073372
8713 073320 001372
8714 073322 005726

```

```

$TYPE: TSTB $TPFLG ;; IS THERE A TERMINAL?
BPL 1$ ;; BR IF YES
HALT ;; HALT HERE IF NO TERMINAL
BR 3$ ;; LEAVE
1$: MOV RO, -(SP) ;; SAVE RO
MOV 22(SP), RO ;; GET ADDRESS OF ASCIZ STRING
2$: MOV8 (RO)+, -(SP) ;; PUSH CHARACTER TO BE TYPED ONTO STACK
BNE 4$ ;; BR IF IT ISN'T THE TERMINATOR
TST (SP)+ ;; IF TERMINATOR POP IT OFF THE STACK
60$: MOV (SP)+, RO ;; RESTORE RO
3$: ADD #2, (SP) ;; ADJUST RETURN PC
RTI ;; RETURN
4$: CMPB #HT, (SP) ;; BRANCH IF <HT>
BEQ 8$
CMPB #CRLF, (SP) ;; BRANCH IF NOT <CRLF>
BNE 5$
TST (SP)+ ;; POP <CR><LF> EQUIV
TYPE ;; 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$: MOV8 #' (SP) ;; REPLACE TAB WITH SPACE
9$: JSR PC, $TYPEC ;; TYPE A SPACE
BITB #7, $CHARCNT ;; BRANCH IF NOT AT
BNE 9$ ;; TAB STOP
TST (SP)+ ;; POP SPACE OFF STACK

```

MASSBUS RH70 AND RH11 DIAGNOSTIC
DZRHBC.P11 TYPE ROUTINE

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8715	073324	000724			BR	25	::GET NEXT CHARACTER
8716	073326	105777	105616		\$TYPEC: TSTB	\$STPS	::WAIT UNTIL PRINTER IS READY
8717	073332	100375			BPL	\$TYPEC	
8718	073334	116677	000002	105610	MOVB	2(SP), \$STPB	::LOAD CHAR TO BE TYPED INTO DATA REG.
8719	073342	122766	000015	000002	CMPB	\$CR, 2(SP)	::IS CHARACTER A CARRIAGE RETURN?
8720	073350	001003			BNE	IS	::BRANCH IF NO
8721	073352	105037	073372		CLRB	\$CHARCNT	::YES--CLEAR CHARACTER COUNT
8722	073356	000406			BR	\$TYPEX	::EXIT
8723	073360	122766	000012	000002	IS: CMPB	\$LF, 2(SP)	::IS CHARACTER A LINE FEED?
8724	073366	001402			BEQ	\$TYPEX	::BRANCH IF YES
8725	073370	105227			INCB	(PC)+	::COUNT THE CHARACTER
8726	073372	000000			\$CHARCNT: .WORD	0	::CHARACTER COUNT STORAGE
8727	073374	000207			\$TYPEX: RTS	PC	
8728							

```

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

```

K13

MASSBUS RMT0 AND RMT1 DIAGNOSTIC MACY11 27(732) 01-OCT-76 09:03 PAGE 167
 DZRHBC.F11 BINARY TO OCTAL (ASCII) AND TYPE

8785	073540	005204		45:	INC	R4	::DON'T SUPPRESS ANYMORE 0'S
8786	073542	052703	000060		BIS	#'0,R3	::MAKE THIS DIGIT ASCII
8787	073546	052703	000040	55:	BIS	#',R3	::MAKE ASCII IF NOT ALREADY
8788	073552	110337	073616		MOVB	R3,B5	::SAVE FOR TYPING
8789	073556	104401	073616		TYPE	B5	::GO TYPE THIS DIGIT
8790	073562	105337	073620	75:	DECB	\$OCNT	::COUNT BY 1
8791	073566	003347			BGT	25	::BR IF MORE TO DO
8792	073570	002402			BLT	65	::BR IF DONE
8793	073572	005204			INC	R4	::INSURE LAST DIGIT ISN'T A BLANK
8794	073574	000744			BR	25	::GO DO THE LAST DIGIT
8795	073576	012605		65:	MOV	(SP)+,R5	::RESTORE R5
8796	073600	012604			MOV	(SP)+,R4	::RESTORE R4
8797	073602	012603			MOV	(SP)+,R3	::RESTORE R3
8798	073604	016666	000002 000004		MOV	2(SP),4(SP)	::SET THE STACK FOR RETURNING
8799	073612	012616			MOV	(SP)+,(SP)	
8800	073614	000002			RTI		::RETURN
8801	073616	000		85:	.BYTE	0	::STORAGE FOR ASCII DIGIT
8802	073617	000			.BYTE	0	::TERMINATOR FOR TYPE ROUTINE
8803	073620	000		\$OCNT:	.BYTE	0	::OCTAL DIGIT COUNTER
8804	073621	000		\$ZFILL:	.BYTE	0	::ZERO FILL SWITCH
8805	073622	000000		\$OMODE:	.WORD	0	::NUMBER OF DIGITS TO TYPE

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8806 .SBTTL CONVERT BINARY TO DECIMAL AND TYPE ROUTINE
8807
8808 ;*****
8809 ;THIS ROUTINE IS USED TO CHANGE A 16-BIT BINARY NUMBER TO A 5-DIGIT
8810 ;SIGNED DECIMAL (ASCII) NUMBER AND TYPE IT. DEPENDING ON WHETHER THE
8811 ;NUMBER IS POSITIVE OR NEGATIVE A SPACE OR A MINUS SIGN WILL BE TYPED
8812 ;BEFORE THE FIRST DIGIT OF THE NUMBER. LEADING ZEROS WILL ALWAYS BE
8813 ;REPLACED WITH SPACES.
8814 ;CALL:
8815 ;* MOV NUM,-(SP) ;PUT THE BINARY NUMBER ON THE STACK
8816 ;* TYPDS ;GO TO THE ROUTINE
8817
8818 $TYPDS:
8819 MOV R0,-(SP) ;PUSH R0 ON STACK
8820 MOV R1,-(SP) ;PUSH R1 ON STACK
8821 MOV R2,-(SP) ;PUSH R2 ON STACK
8822 MOV R3,-(SP) ;PUSH R3 ON STACK
8823 MOV R5,-(SP) ;PUSH R5 ON STACK
8824 MOV #20200,-(SP) ;SET BLANK SWITCH AND SIGN
8825 MOV 20(SP),R5 ;GET THE INPUT NUMBER
8826 BPL 1$ ;BR IF INPUT IS POS.
8827 NEG R5 ;MAKE THE BINARY NUMBER POS.
8828 MOV #'-,1(SP) ;MAKE THE ASCII NUMBER NEG.
8829 CLR R0 ;ZERO THE CONSTANTS INDEX
8830 MOV #SDBLK,R3 ;SETUP THE OUTPUT POINTER
8831 MOV #',(R3)+ ;SET THE FIRST CHARACTER TO A BLANK
8832 CLR R2 ;CLEAR THE BCD NUMBER
8833 MOV $DTBL(R0),R1 ;GET THE CONSTANT
8834 SUB R1,R5 ;FORM THIS BCD DIGIT
8835 BLT 4$ ;BR IF DONE
8836 INC R2 ;INCREASE THE BCD DIGIT BY 1
8837 BR 3$
8838 4$: ADD R1,R5 ;ADD BACK THE CONSTANT
8839 TST R2 ;CHECK IF BCD DIGIT=0
8840 BNE 5$ ;FALL THROUGH IF 0
8841 TSTB (SP) ;STILL DOING LEADING 0'S?
8842 BMI 7$ ;BR IF YES
8843 ASLB (SP) ;MSD?
8844 BCC 6$ ;BR IF NO
8845 MOVB 1(SP),-1(R3) ;YES--SET THE SIGN
8846 BIS #'0,R2 ;MAKE THE BCD DIGIT ASCII
8847 BIS #' ,R2 ;MAKE IT A SPACE IF NOT ALREADY A DIGIT
8848 MOVB R2,(R3)+ ;PUT THIS CHARACTER IN THE OUTPUT BUFFER
8849 TST (R0)+ ;JUST INCREMENTING
8850 CMP R0,#10 ;CHECK THE TABLE INDEX
8851 BLT 2$ ;GO DO THE NEXT DIGIT
8852 BGT 8$ ;GO TO EXIT
8853 MOV R5,R2 ;GET THE LSD
8854 BR 6$ ;GO CHANGE TO ASCII
8855 8$: TSTB (SP)+ ;WAS THE LSD THE FIRST NON-ZERO?
8856 BPL 9$ ;BR IF NO
8857 MOVB -1(SP),-2(R3) ;YES--SET THE SIGN FOR TYPING
8858 CLRB (R3) ;SET THE TERMINATOR
8859 MOV (SP)+,R5 ;POP STACK INTO R5
8860 MOV (SP)+,R3 ;POP STACK INTO R3
8861 MOV (SP)+,R2 ;POP STACK INTO R2

```

M13

MASSBUS RH70 AND RH1: DIAGNOSTIC MACY11 27(732) 01-OCT-76 09:03 PAGE 169
DZRHBC.P11 CONVERT BINARY TO DECIMAL AND TYPE ROUTINE

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

```

8873 .SBTTL ERROR MESSAGE TYPEOUT ROUTINE
8874
8875 ;*****
8876 ;THIS ROUTINE USES THE "ITEM CONTROL BYTE" ($ITEMB) TO DETERMINE WHICH
8877 ;*ERROR IS TO BE REPORTED. IT THEN OBTAINS, FROM THE "ERROR TABLE" ($ERRTB),
8878 ;*AND REPORTS THE APPROPRIATE INFORMATION CONCERNING THE ERROR.
8879
8880 $ERRTYP:
8881 074050 104401 001223 TYPE $CRLF ;"CARRIAGE RETURN" & "LINE FEED"
8882 074054 010046 MOV RO,-(SP) ;SAVE RO
8883 074056 005000 CLR RO ;PICKUP THE ITEM INDEX
8884 074060 153700 BISB 2,$ITEMB,RO ;IF ITEM NUMBER IS ZERO, JUST
8885 074064 001004 BNE 1$ ;TYPE THE PC OF THE ERROR
8886
8887 074066 013746 MOV $ERRPC,-(SP) ;SAVE $ERRPC FOR TYPEOUT
8888
8889 074072 104402 TYP0C ;ERROR ADDRESS
8890 074074 000426 BR 6$ ;GO TYPE--OCTAL ASCII(ALL DIGITS)
8891 074076 005300 1$: DEC RO ;GET OUT
8892 074100 006300 ASL RO ;ADJUST THE INDEX SO THAT IT WILL
8893 074102 006300 ASL RO ;WORK FOR THE ERROR TABLE
8894 074104 006300 ASL RO
8895 074106 062700 ADD $ERRTB,RO ;FORM TABLE POINTER
8896 074112 012037 MOV (RO)+,2$ ;PICKUP "ERROR MESSAGE" POINTER
8897 074116 001404 BEQ 3$ ;SKIP TYPEOUT IF NO POINTER
8898 074120 104401 TYPE ;TYPE THE "ERROR MESSAGE"
8899 074122 000000 2$: .WORD 0 ;"ERROR MESSAGE" POINTER GOES HERE
8900 074124 104401 TYPE $CRLF ;"CARRIAGE RETURN" & "LINE FEED"
8901 074130 012037 MOV (RO)+,4$ ;PICKUP "DATA HEADER" POINTER
8902 074134 001404 BEQ 5$ ;SKIP TYPEOUT IF 0
8903 074136 104401 TYPE ;TYPE THE "DATA HEADER"
8904 074140 000000 4$: .WORD 0 ;"DATA HEADER" POINTER GOES HERE
8905 074142 104401 TYPE $CRLF ;"CARRIAGE RETURN" & "LINE FEED"
8906 074146 011000 MOV (RO),RO ;PICKUP "DATA TABLE" POINTER
8907 074150 001004 BNE 7$ ;GO TYPE THE DATA
8908 074152 012600 MOV (SP)+,RO ;RESTORE RO
8909 074154 104401 001223 TYPE $CRLF ;"CARRIAGE RETURN" & "LINE FEED"
8910 074160 000207 RTS PC ;RETURN
8911 074162
8912 074162 013046 MOV 2(RO)+,-(SP) ;SAVE 2(RO)+ FOR TYPEOUT
8913 074164 104402 TYP0C ;GO TYPE--OCTAL ASCII(ALL DIGITS)
8914 074166 005710 TST (RO) ;IS THERE ANOTHER NUMBER?
8915 074170 001770 BEQ 6$ ;BR IF NO
8916 074172 104401 074200 TYPE 2$ ;TYPE TWO(2) SPACES
8917 074176 000771 BR 7$ ;LOOP
8918 074200 020040 000 8$: .ASCIZ / / ;TWO(2) SPACES
8919 074204 .EVEN

```

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MACRO: 27.732 31-007-75 09:03 PAGE 171

.SETTL ERROR HANDLER ROUTINE

```

*****
* THIS ROUTINE WILL INCREMENT THE ERROR FLAG AND THE ERROR COUNT.
* SAVE THE ERROR ITEM NUMBER AND THE ADDRESS OF THE ERROR CALL
* AND GO TO TSTNMB ON ERROR
* THE SWITCH OPTIONS PROVIDED BY THIS ROUTINE ARE:
* SW15=1    HALT ON ERROR
* SW13=1    INHIBIT ERROR TYPEOUTS
* SW10=1    BELL ON ERROR
* SW09=1    LOOP ON ERROR
* CALL
* ERROR N    :: ERROR=EMT AND N=ERROR ITEM NUMBER

```

```

ERROR:
7S:  INCB  SERFLG    :: SET THE ERROR FLAG
    BEQ  7S      :: DO NOT LET THE FLAG GO TO ZERO
    MOV  $TSTNM,2DISP  :: DISPLAY EST NUMBER AND ERROR FLAG
    BIT  $BIT10,$SWR  :: BELL ON ERROR?
    BEQ  1S      :: NO - SKIP
    TYPE $BELL      :: RING BELL
    INC  $ERTTL      :: COUNT THE NUMBER OF ERRORS
    MOV  (SP), $ERRPC  :: GET ADDRESS OF ERROR INSTRUCTION
    SUB  $2, $ERRPC
    MOVB $ERRPC, $ITEMB  :: STRIP AND SAVE THE ERROR ITEM CODE
    BIT  $BIT13,$SWR  :: SKIP TYPEOUT IF SET
    BNE  20S      :: SKIP TYPEOUTS
    JSR  EC, TSTNMB  :: GO TO USER ERROR ROUTINE
    TYPE $SCRLF

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

4S:
5S:  RTI          :: RETURN

```

```

074204 105237 001103
074204 001775
074210 013777 001102 104722
074212 032777 002000 104712
074220 001402
074226 104401 001216
074230 005237 001112
074234 011637 001116
074240 162737 000002 001116
074244 117737 104640 001114
074252 032777 020000 104652
074260 001004
074266 004737 050024
074270 104401 001223
074274 005777 104634
074300 100001
074304 000000
074306 032777 001000 104622
074310 001402
074316 013716 001110
074320 005737 001214
074324 001402
074330 013716 001214
074332 000002
074336

```

.SBTTL TTY INPUT ROUTINE

```

*****
:ENABL LSB

```

```

:DSABL LSB

```

```

*****
:THIS ROUTINE WILL INPUT A SINGLE CHARACTER FROM THE TTY

```

```

:CALL:

```

```

:RDCHR
:RETURN HERE

```

```

:INPUT A SINGLE CHARACTER FROM THE TTY
:CHARACTER IS ON THE STACK
:WITH PARITY BIT STRIPPED OFF

```

```

8977 074340 011646
8978 074342 016666 000004 000002
8979 074350 105777 104570
8980 074354 100375
8981 074356 117766 104564 000004
8982 074364 042766 177600 000004
8983 074372 026627 000004 000023
8984 074400 001013
8985 074402 105777 104536
8986 074406 100375
8987 074410 117746 104532
8988 074414 042716 177600
8989 074420 022627 000021
8990 074424 001366
8991 074426 000750
8992 074430 026627 000004 000140
8993 074436 002407
8994 074440 026627 000004 000175
8995 074446 003003
8996 074450 042766 000040 000004
8997 074456 000002

```

```

$RDCHR: MOV (SP),-(SP)      :PUSH DOWN THE PC
:MOV 4(SP),2(SP)          :SAVE THE PS
1$: TSTB 2$TKS             :WAIT FOR
:BPL 1$                   :A CHARACTER
:MOVB 2$TKB,4(SP)         :READ THE TTY
:BIC 4(SP),#177,4(SP)     :GET RID OF JUNK IF ANY
:CMPL 4(SP),#23           :IS IT A CONTROL-S?
:BNE 3$                   :BRANCH IF NO
2$: TSTB 2$TKS            :WAIT FOR A CHARACTER
:BPL 2$                   :LOOP UNTIL ITS THERE
:MOVB 2$TKB,-(SP)         :GET CHARACTER
:BIC 4(SP),#177,4(SP)     :MAKE IT 7-BIT ASCII
:CMPL (SP)+,#21           :IS IT A CONTROL-Q?
:BNE 2$                   :IF NOT DISCARD IT
:BR 1$                    :YES, RESUME
3$: CMPL 4(SP),#140        :IS IT UPPER CASE?
:BLT 4$                   :BRANCH IF YES
:CMPL 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
:RETURN HERE

```

```

:INPUT A STRING FROM THE TTY
:ADDRESS OF FIRST CHARACTER WILL BE ON THE STACK
:TERMINATOR WILL BE A BYTE OF ALL 0'S

```

```

9005 074460 010346
9006 074462 012703 074566
9007 074466 022703 074576
9008 074472 101405
9009 074474 104406
9010 074476 112613
9011 074500 122713 000177
9012 074504 001003
9013 074506 104401 001222
9014 074512 000763
9015 074514 111337 074564
9016 074520 104401 074564

```

```

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

```

D14

MASSBUS RMTD AND RMT: DIAGNOSTIC
 CTRMBC.F11 TTY INPUT ROUTINE

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9017	074524	122723	000015			CMPB	#15,(R3)+	::CHECK FOR RETURN
9018	074530	001356				BNE	25	::LOOP IF NOT RETURN
9019	074532	105063	177777			CLRB	-1(R3)	::CLEAR RETURN (THE 15)
9020	074536	104401	001224			TYPE	\$LF	::TYPE A LINE FEED
9021	074542	012603				MOV	(SP)+,R3	::RESTORE R3
9022	074544	011646				MOV	(SP),-(SP)	::ADJUST THE STACK AND PUT ADDRESS OF THE
9023	074546	016666	000004	000002		MOV	4(SP),2(SP)	::FIRST ASCII CHARACTER ON IT
9024	074554	012766	074566	000004		MOV	#TTYIN,4(SP)	
9025	074562	000002				RTI		::RETURN
9026	074564	000			95:	.BYTE	0	::STORAGE FOR ASCII CHAR. TO TYPE
9027	074565	000				.BYTE	0	::TERMINATOR
9028	074566	000010			TTYIN:	.BLKB	8.	::RESERVE 8 BYTES FOR TTY INPUT
9029	074576	052536	005015	000	SCNTLU:	.ASCIZ	/U<15><12>	::CONTROL "U"
9030	074603	136	006507	000012	SCNTLG:	.ASCIZ	/G<15><12>	::CONTROL "G"
9031	074610	005015	053523	020122	SMWR:	.ASCIZ	<15><12>/SWR =	
9032	074616	020075	000					
9033	074621	040	047040	053535	SMNEW:	.ASCIZ	/NEW =	
9034	074626	036440	000040					

E14

MASSBUS RMTD AND RMT: DIAGNOSTIC MACY11 27(732) 01-OCT-75 09:03 PAGE 174
 C2RHC.P11 READ AN OCTAL NUMBER FROM THE TTY

```

9035 .SBTTL READ AN OCTAL NUMBER FROM THE TTY
9036
9037 ::*****
9038 ::THIS ROUTINE WILL READ AN OCTAL (ASCII) NUMBER FROM THE TTY AND
9039 ::CHANGE IT TO BINARY.
9040 ::CALL:
9041 ::      RDOCT      ::READ AN OCTAL NUMBER
9042 ::      RETURN HERE ::LOW ORDER BITS ARE ON TOP OF THE STACK
9043 ::
9044 ::      HIGH ORDER BITS ARE IN SHIOCT
9045 074632 011646 000004 000002 SRDOCT: MOV      (SP),-(SP)      ::PROVIDE SPACE FOR THE
9046 074634 016666 000004 000002      MOV      4(SP),2(SP)      ::INPUT NUMBER
9047 074642 010046      MOV      R0,-(SP)      ::PUSH R0 ON STACK
9048 074644 010146      MOV      R1,-(SP)      ::PUSH R1 ON STACK
9049 074646 010246      MOV      R2,-(SP)      ::PUSH R2 ON STACK
9050 074650 104407 1S:      RDLIN      ::READ AN ASCII LINE
9051 074652 012600      MOV      (SP)+,R0      ::GET ADDRESS OF 1ST CHARACTER
9052 074654 005001      CLR      R1      ::CLEAR DATA WORD
9053 074656 005002      CLR      R2
9054 074660 112046 2S:      MOVB      (R0)+,-(SP)      ::PICKUP THIS CHARACTER
9055 074662 001412      BEQ      3S      ::IF ZERO GET OUT
9056 074664 006301      ASL      R1      ::*2
9057 074666 006102      ROL      R2
9058 074670 006301      ASL      R1      ::*4
9059 074672 006102      ROL      R2
9060 074674 006301      ASL      R1      ::*8
9061 074676 006102      ROL      R2
9062 074700 042716 177770      BIC      #1C7,(SP)      ::STRIP THE ASCII JUNK
9063 074704 062601      ADD      (SP)+,R1      ::ADD IN THIS DIGIT
9064 074706 000764      BR      2S      ::LOOP
9065 074710 005726 3S:      TST      (SP)+      ::CLEAN TERMINATOR FROM STACK
9066 074712 010166 000012      MOV      R1,12(SP)      ::SAVE THE RESULT
9067 074716 010237 074732      MOV      R2,SHIOCT
9068 074722 012602      MOV      (SP)+,R2      ::POP STACK INTO R2
9069 074724 012601      MOV      (SP)+,R1      ::POP STACK INTO R1
9070 074726 012600      MOV      (SP)+,R0      ::POP STACK INTO R0
9071 074730 000002      RTI      ::RETURN
9072 074732 000000      SHIOCT: .WORD      0      ::HIGH ORDER BITS GO HERE

```

.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    RD, -(SP)          ;;SAVE RD
        MOV    2(SP), RD         ;;GET TRAP ADDRESS
        TST    -(RD)             ;;BACKUP BY 2
        MOVB   (RD), RD          ;;GET RIGHT BYTE OF TRAP
        ASL    RD                ;;POSITION FOR INDEXING
        MOV    $TRPAD(RD), RD    ;;INDEX TO TABLE
        RTS    RD                ;;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          TRAP+1(104401)  TTY TYPEOUT ROUTINE
        .TYPE  ;;CALL=TYPE
        .STYPOC ;;CALL=TYPOC  TRAP+2(104402)  TYPE OCTAL NUMBER (WITH LEADING ZEROS)
        .STYPOS ;;CALL=TYPOS  TRAP+3(104403)  TYPE OCTAL NUMBER (NO LEADING ZEROS)
        .STYPON ;;CALL=TYPON  TRAP+4(104404)  TYPE OCTAL NUMBER (AS PER LAST CALL)
        .STYPDS ;;CALL=TYPDS  TRAP+5(104405)  TYPE DECIMAL NUMBER (WITH SIGN)

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

```

.END

AB	=	052525	1654#	2497	2638	2770	3145	5394	5672	5950	6223						
ABLE		013436	2718	2723	2725	2727#											
ADDER		006350	1992	1998	2002	2005#											
AD01		003320	1593#	1860													
AD02		003322	1594#	1862	1863												
AD03		003324	1595#	1865	1866												
AD04		003326	1596#	1868	1869												
AD1ERR		005100	1838	1860#													
AD2ERR		005200	1861	1872#													
AD3ERR		005220	1864	1876#													
AD4ERR		005240	1867	1680#													
AD-HEAD		045772	6470	6473#													
ALRIGHT		012242	2554	2556#													
APPE	=	100000	1511#	2072	3056	3091	3176	3213	3284	3319	3375	3483	3519	3589	3624		
			3693	3795	3897												
AROUND		004560	1804	1813#													
AS		003412	1635#	2368#	8432												
ATA	=	100000	1540#	2096	6355												
AT0	=	000001	1570#														
AT1	=	000002	1571#														
AT2	=	000004	1572#														
AT3	=	000010	1573#														
AT4	=	000020	1574#														
AT5	=	000040	1575#														
AT6	=	000100	1576#														
AT7	=	000200	1577#														
AT8	=	000400	1524#	2946	3004	3040	3055	3177	3283	3374	3492	3588	3692	3794	3896		
			6691														
AT17	=	001000	1525#	2979	3040	3055	3177	3283	3374	3482	3588	3692	3794	3896	6691		
BA		003414	1636#	2174#	2221#	2261#	2308#	2444#	2479#	2506#	2530#	2579#	2613#	2616	2619#		
			2641#	2644	2647#	2664#	2667	2671#	2730#	2786#	2825#	2880#	2964#	3060#	3182#		
			3298#	3379#	3487#	3593#	3697#	3799#	3901#	3997#	4062#	4111#	4161#	4211#	4266#		
			4319#	4372#	4425#	4478#	4531#	4584#	4637#	4690#	4743#	4796#	4849#	4902#	4957#		
			4992#	5054#	5089#	5154#	5212#	5287#	5351#	5426#	5490#	5565#	5629#	5704#	5768#		
			5843#	5907#	5982#	6046#	6121#	6185#	6260#	6342#	6418	6436	6438	6440	6446		
			8455														
BAE		003416	1637#	2177#	2180#	2224#	2227#	2264#	2267#	2311#	2314#	2366#	2447#	2450#	2482#		
			2485#	2509#	2512#	2533#	2536#	2572#	2575	2582#	2595#	2622#	2625#	2650#	2653#		
			2674#	2677#	2733#	2736#	2789#	2792#	2828#	2831#	2883#	2886#	2967#	2970#	3063#		
			3066#	3195#	3188#	3291#	3294#	3382#	3385#	3490#	3493#	3596#	3599#	3700#	3703#		
			3802#	3805#	3904#	3907#	4000#	4003#	4065#	4068#	4114#	4117#	4164#	4167#	4214#		
			4217#	4269#	4272#	4322#	4325#	4375#	4378#	4428#	4431#	4481#	4484#	4534#	4537#		
			4587#	4590#	4640#	4643#	4693#	4696#	4746#	4749#	4799#	4802#	4852#	4855#	4905#		
			4908#	4960#	4963#	4995#	4998#	5057#	5060#	5092#	5095#	5157#	5160#	5215#	5219#		
			5290#	5293#	5354#	5357#	5429#	5432#	5493#	5496#	5569#	5571#	5632#	5635#	5707#		
			5710#	5771#	5774#	5846#	5849#	5910#	5913#	5985#	5988#	6049#	6052#	6124#	6127#		
			6188#	6191#	6263#	6266#	6345#	6348#	8416	8432	8436	8438	8446	8455			
			2571#	2596													
BAETST		012274	1485#	4303	4356	6696	6711										
BAI	=	000010	3577	3582	3584	3586#											
BAKER		021346	2612#	2637													
BATST		012506	2635	2638#													
BATSTA		012676	5068	5071#													
BEAU		033556	1738#	2067	2076	2083	2091	2098	3094#	3096#	3216#	3218#	3322#	3324#	3413#		
BEFORE		004122	3415#	3521#	3523#	3627#	3629#	3731#	3733#	3833#	3835#	3935#	3937#	4020#	4022#		
BEGIN		004144	451	1750#													

449	1760*
1757*	6532
453	1753*
6468*	6472
1706*	2294*
2721*	2724*
2874*	2950*
3163*	3166*
3578*	3580*
3888*	3891*
4105*	4147*
4305*	4308*
4467*	4469*
4628*	4631*
4790*	4835*
4978*	4981*
5143*	5145*
5281*	5337*
5479*	5481*
5623*	5681*
5821*	5822
5968*	5971*
6112*	6115*
6323*	6326*
6672*	6674*
2297*	2299*
2772*	2775*
2953*	2955*
3168*	3171*
3583*	3679*
3983*	3986*
4150*	4152*
4310*	4313*
4472*	4517*
4676*	4679*
4838*	4840*
4983*	4986*
5148*	5198*
5340*	5342*
5484*	5542*
5682*	5683
5829*	5832*
5973*	5976*
6171*	6174*
6328*	6331*
6677*	
2302*	2325*
2777*	2780*
2958*	3041*
3270*	3273*
3682*	3684*
3988*	3991*
4155*	4197*
4358*	4361*
4520*	4522*
4681*	4684*
4843*	4888*
5040*	5043*
5201*	5203*
5345*	5403*
5543*	5544
5690*	5693*
5834*	5837*
6032*	6035*
6176*	6179*
6546*	6559
2328*	2330*
2810*	2813*
3044*	3046*
3275*	3278*
3687*	3781*
4048*	4051*
4200*	4202*
4363*	4366*
4525*	4570*
4729*	4732*
4891*	4893*
5045*	5048*
5206*	5264*
5404*	5405
5551*	5554*
5695*	5698*
5893*	5896*
6037*	6040*
6237*	6238*
6561*	6563*
2333*	2338*
2815*	2818*
3049*	3147*
3469*	3472*
3784*	3786*
4053*	4056*
4205*	4252*
4411*	4414*
4573*	4575*
4734*	4737*
4896*	4943*
5075*	5078*
5265*	5266
5412*	5415*
5556*	5559*
5754*	5757*
5898*	5901*
6098*	6099*
6239	6246*
6574	6576*
2341*	2716*
2866*	2969*
3150*	3152*
3474*	3477*
3789*	3883*
4097*	4100*
4255*	4257*
4416*	4419*
4578*	4623*
4782*	4785*
4946*	4948*
5080*	5083*
5273*	5276*
5417*	5420*
5615*	5618*
5759*	5762*
5959*	5960*
6100	6107*
6249*	6251*
6581	6585
2719*	2719*
2871*	2871*
3155*	3155*
3575*	3575*
3886*	3886*
4102*	4102*
4260*	4260*
4464*	4464*
4626*	4626*
4787*	4787*
4951*	4951*
5140*	5140*
5278*	5278*
5476*	5476*
5620*	5620*
5820*	5820*
5961	5961
6110*	6110*
6254*	6254*
6669*	6669*

424#	6544		
414#	424		
413#	423		
412#	422		
411#	421		
410#	420		
409#	419		
408#	418		
407#	417		
406#	416	8583	
405#	415	8591	8953
423#	6317		
404#	8938		
403#	8598		
402#			
401#	8945		
400#	8569		
399#			
422#			
421#			
420#			
419#			
418#			
417#			
416#	6542		
415#			
6314	6316	6321#	
6305#	6386		
6311	6769#		
1587#			
1588#			

[illegible]

J14

MASSBUS RHTO AND RH1: DIAGNOSTIC MACY11 27(732) 01-OCT-76 09:03 PAGE 180
 DZRHBC.P11 CROSS REFERENCE TABLE -- USER SYMBOLS

DEVONT	003376	1618*	6398*	6399	6401	6404	6407	6422*	6483					
DEVIC1	003366	1613*	1845*	1860*	1887	1896*	1899	1902	1905	1969	1975	2356	6417	6419
		6424	6429											
DEVIC2	003370	1614*	1863*	1872*	1917*	1920	1923	1926	6433	6435	6441			
DEVIC3	003372	1615*	1866*	1876*	1938*	1941	1944	1947	6444	6446	6452			
DEVIC4	003374	1616*	1869*	1880*	1959*	1962	1966	6455	6457	6463				
DEVIC5	003400	1619*	1905*	1926*	1947*	1966*	1969*	1977	1984	6419*	6424*	5435*	5446*	6457*
		6466	6473											
DF1	072234	580	1062	1085	8462*									
DF105	072310	1100	1105	1121	1126	1132	1280	8482*						
DF11	072260	630	815	1160	8472*									
DF132	072315	1217	1223	1229	1234	1239	1244	8484*						
DF170	072323	1384	8486*											
DF172	072326	1015	8487*											
DF2	072240	587	1068	1073	8464*									
DF3	072244	593	8466*											
DF34	072263	807	8473*											
DF35	072266	833	842	8474*										
DF36	072267	824	1207	8475*										
DF4	072250	599	8468*											
DF41	072272	852	1428	1433	1438	1443	1448	1453	1458	8476*				
DF5	072254	605	612	617	623	637	647	655	664	675	687	694	704	713
		723	730	740	753	760	768	778	786	797	8470*			
DF52	072274	921	8477*											
DF71	072301	1025	1034	1042	1050	8479*								
DF76	072304	1056	1154	1166	1171	1259	1274	1286	1291	1296	1302	1418	1423	8480*
DH1	067522	578	1060	1083	8208*									
DH105	071106	1098	1103	9345*										
DH11	070330	628	1158	8277*										
DH111	071153	1119	1124	1130	8352*									
DH121	071220	1164	1169	1416	1421	8359*								
DH130	071256	1205	1210	8364*										
DH132	071304	1215	1221	1227	1232	1237	1242	8368*						
DH142	071362	1257	1272	8376*										
DH146	071420	1278	8381*											
DH147	071465	1152	1284	1289	1294	1300	8388*							
DH170	071523	1382	8394*											
DH171	071551	813	8398*											
DH172	071577	1011	8402*											
DH2	067642	585	1066	1071	8222*									
DH3	067763	591	8236*											
DH34	070416	803	8287*											
DH35	070473	829	840	8295*										
DH36	070476	820	1212	8296*										
DH4	070103	597	8250*											
DH41	070557	848	1426	1431	1436	1441	1446	1451	1456	9306*				
DH5	070223	603	610	615	621	635	645	653	662	673	685	692	702	711
		721	728	738	751	758	766	776	784	795	8264*			
DH52	070603	917	9310*											
DH71	070702	8322*												
DH72	070761	1021	1031	1040	1048	8330*								
DH76	071050	1054	8340*											
DISPLA	001142	529*	1792*	1800*	8612*	8937*								
DISPRE	000174	446*	1800											
DLT	= 100000	1497*	2088	3090	3212	3318	3409	3517	3623	3727	3829	3931	4019	6711
DMD	= 000001	1554*	5256	5263	5268	5269	5270	5271	5395	5402	5407	5408	5409	5410

DIAGNOSTIC CROSS REFERENCE TABLE -- USER SYMBOLS

		5534	5541	5546	5547	5548	5549	5673	5680	5685	5686	5687	5688	5812
		5819	5824	5825	5826	5827	5951	5958	5963	5964	5965	5966	6090	6097
		6102	6103	6104	6105	6229	6236	6241	6242	6243	6244			
DND	=	000001	1581#											
DN1	=	000002	1582#											
DN2	=	000004	1583#											
DOCC	=	000400	1562#											
DCIT	=	007606	2189	2201	2207#									
DPCA	=	000040	1559#											
DPE	=	000020	1546#	2103	3093	3730	3832							
DPEHI	=	040000	1510#	2072	3091	3213	3319	3624						
DPELO	=	020000	1509#	2072	3091	3213	3319	3518	3624					
DPR	=	000400	1536#	6706										
DR	=	003430	1642#											
DRCLR	=	000011	1695#											
DRY	=	000200	1535#	6706										
DSWR	=	177570	345#	528	1791									
DSI	=	003432	1643#	2183#	2230#	2270#	2317#	2453#	2488#	2515#	2539#	2588#	2628#	2656#
			2739#	2795#	2834#	2889#	2973#	3069#	3191#	3297#	3388#	3496#	3602#	3706#
			3910#	4006#	4071#	4120#	4170#	4220#	4275#	4328#	4381#	4434#	4487#	4540#
			4646#	4699#	4752#	4805#	4858#	4911#	4966#	5001#	5063#	5098#	5163#	5221#
			5360#	5435#	5499#	5574#	5638#	5713#	5777#	5852#	5916#	5991#	6055#	6130#
			6269#	6351#										
DT	=	003434	1644#	8426										
DTE	=	010000	1549#	2103	3093	3730	3832							
DTRM	=	000200	1561#											
DT1	=	071670	579	1061	1084	8414#								
DT105	=	072052	1099	1104	8438#									
DT11	=	071752	629	1159	8424#									
DT111	=	072066	1120	1125	1131	8440#								
DT121	=	072102	1165	1170	1417	1422	8442#							
DT130	=	072114	1206	1211	8444#									
DT132	=	072124	1216	1222	1228	1233	1238	1243	8446#					
DT142	=	072142	1258	1273	8449#									
DT146	=	072154	1279	8451#										
DT147	=	072170	1153	1285	1290	1295	1301	8453#						
DT170	=	072202	1383	8455#										
DT171	=	072212	814	8457#										
DT172	=	072222	1013	8459#										
DT2	=	071702	586	1067	1072	8416#								
DT3	=	071714	592	8418#										
DT34	=	071762	805	8426#										
DT35	=	071772	831	841	8428#									
DT36	=	071776	822	8429#										
DT4	=	071726	598	8420#										
DT41	=	072006	850	1427	1432	1437	1442	1447	1452	1457	8431#			
DT5	=	071740	604	611	616	622	636	646	654	663	674	686	693	703
			722	729	739	752	759	767	777	785	796	8422#		712
DT52	=	072014	919	8432#										
DT71	=	072030	1023	1033	1041	1049	8434#							
DT76	=	072040	1055	8436#										
DUPORT	=	047544	6319	6668#										
DVA	=	004000	1527#	3055	3177	3283	3374	3482	3588	3692	3794	3896	6691	
DYNO	=	020570	3471	3476	3478	3480#								
EMTVEC	=	000030	434#	1776#	1777#									
EM1	=	054760	576	7208#										

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MASSBUS RH70 AND RH11 DIAGNOSTIC MACY11 27(732) 01-OCT-76 09:03 PAGE 182
 DZRHBC.P11 CROSS REFERENCE TABLE -- USER SYMBOLS

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

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MASSBUS RH70 AND RH1: DIAGNOSTIC MACY11 27(732) 01-OCT-76 09:03 PAGE 183
 DZRHC.P1: CROSS REFERENCE TABLE -- USER SYMBOLS

EM161	065614	1340	9029#
EM162	065703	1346	8039#
EM163	065772	1351	8050#
EM164	066050	1357	8059#
EM165	066137	1363	8069#
EM166	066235	1369	8081#
EM167	066314	1375	8090#
EM17	056003	677	7305#
EM171	066413	1386	8101#
EM172	066465	1393	8109#
EM173	066506	1399	8112#
EM174	066572	1405	8121#
EM175	066623	1410	8126#
EM176	066663	1415	8132#
EM177	066716	1420	8137#
EM2	055020	582	7214#
EM20	056052	690	7312#
EM200	066763	1425	8144#
EM201	067045	1430	8153#
EM202	067127	1435	8162#
EM203	067211	1440	8171#
EM204	067271	1445	8180#
EM205	067356	1450	8189#
EM206	067442	1455	8198#
EM207	067466	1460	8203#
EM21	056103	697	7317#
EM22	056132	707	7321#
EM23	056165	716	7326#
EM24	056204	726	7329#
EM25	056235	733	7334#
EM26	056267	743	7339#
EM27	056315	756	7343#
EM3	055060	589	7220#
EM30	056350	763	7348#
EM31	056405	771	7353#
EM32	056444	781	7359#
EM33	056473	789	7363#
EM34	056543	800	7370#
EM35	056613	810	7377#
EM36	056645	818	7382#
EM37	056703	827	7388#
EM4	055134	595	7228#
EM40	056734	836	7393#
EM41	057074	845	7409#
EM42	057177	856	7421#
EM43	057250	864	7428#
EM44	057314	870	7434#
EM45	057406	878	7444#
EM46	057461	885	7452#
EM47	057542	892	7461#
EM5	055174	601	7234#
EM50	057613	899	7468#
EM51	057672	906	7476#
EM52	057723	912	7481#
EM53	060076	924	7501#
EM54	060104	930	7502#

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MASSBUS RH70 AND RH1: DIAGNOSTIC MACY11 27(732) 01-OCT-76 09:03 PAGE 184
 DZRHBC.P11 CROSS REFERENCE TABLE -- USER SYMBOLS

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

000001	000002	000003	000004	000005	000006	000007	000008	000009	000010	000011	000012	000013	000014	000015	000016	000017	000018	000019	000020	000021	000022	000023	000024	000025	000026	000027	000028	000029	000030	000031	000032	000033	000034	000035	000036	000037	000038	000039	000040	000041	000042	000043	000044	000045	000046	000047	000048	000049	000050	000051	000052	000053	000054	000055	000056	000057	000058	000059	000060	000061	000062	000063	000064	000065	000066	000067	000068	000069	000070	000071	000072	000073	000074	000075	000076	000077	000078	000079	000080	000081	000082	000083	000084	000085	000086	000087	000088	000089	000090	000091	000092	000093	000094	000095	000096	000097	000098	000099	000100
000101	000102	000103	000104	000105	000106	000107	000108	000109	000110	000111	000112	000113	000114	000115	000116	000117	000118	000119	000120	000121	000122	000123	000124	000125	000126	000127	000128	000129	000130	000131	000132	000133	000134	000135	000136	000137	000138	000139	000140	000141	000142	000143	000144	000145	000146	000147	000148	000149	000150	000151	000152	000153	000154	000155	000156	000157	000158	000159	000160	000161	000162	000163	000164	000165	000166	000167	000168	000169	000170	000171	000172	000173	000174	000175	000176	000177	000178	000179	000180	000181	000182	000183	000184	000185	000186	000187	000188	000189	000190	000191	000192	000193	000194	000195	000196	000197	000198	000199	000200
000201	000202	000203	000204	000205	000206	000207	000208	000209	000210	000211	000212	000213	000214	000215	000216	000217	000218	000219	000220	000221	000222	000223	000224	000225	000226	000227	000228	000229	000230	000231	000232	000233	000234	000235	000236	000237	000238	000239	000240	000241	000242	000243	000244	000245	000246	000247	000248	000249	000250	000251	000252	000253	000254	000255	000256	000257	000258	000259	000260	000261	000262	000263	000264	000265	000266	000267	000268	000269	000270	000271	000272	000273	000274	000275	000276	000277	000278	000279	000280	000281	000282	000283	000284	000285	000286	000287	000288	000289	000290	000291	000292	000293	000294	000295	000296	000297	000298	000299	000300
000301	000302	000303	000304	000305	000306	000307	000308	000309	000310	000311	000312	000313	000314	000315	000316	000317	000318	000319	000320	000321	000322	000323	000324	000325	000326	000327	000328	000329	000330	000331	000332	000333	000334	000335	000336	000337	000338	000339	000340	000341	000342	000343	000344	000345	000346	000347	000348	000349	000350	000351	000352	000353	000354	000355	000356	000357	000358	000359	000360	000361	000362	000363	000364	000365	000366	000367	000368	000369	000370	000371	000372	000373	000374	000375	000376	000377	000378	000379	000380	000381	000382	000383	000384	000385	000386	000387	000388	000389	000390	000391	000392	000393	000394	000395	000396	000397	000398	000399	000400
000401	000402	000403	000404	000405	000406	000407	000408	000409	000410	000411	000412	000413	000414	000415	000416	000417	000418	000419	000420	000421	000422	000423	000424	000425	000426	000427	000428	000429	000430	000431	000432	000433	000434	000435	000436	000437	000438	000439	000440	000441	000442	000443	000444	000445	000446	000447	000448	000449	000450	000451	000452	000453	000454	000455	000456	000457	000458	000459	000460	000461	000462	000463	000464	000465	000466	000467	000468	000469	000470	000471	000472	000473	000474	000475	000476	000477	000478	000479	000480	000481	000482	000483	000484	000485	000486	000487	000488	000489	000490	000491	000492	000493	000494	000495	000496	000497	000498	000499	000500
000501	000502	000503	000504	000505	000506	000507	000508	000509	000510	000511	000512	000513	000514	000515	000516	000517	000518	000519	000520	000521	000522	000523	000524	000525	000526	000527	000528	000529	000530	000531	000532	000533	000534	000535	000536	000537	000538	000539	000540	000541	000542	000543	000544	000545	000546	000547	000548	000549	000550	000551	000552	000553	000554	000555	000556	000557	000558	000559	000560	000561	000562	000563	000564	000565	000566	000567	000568	000569	000570	000571	000572	000573	000574	000575	000576	000577	000578	000579	000580	000581	000582	000583	000584	000585	000586	000587	000588	000589	000590	000591	000592	000593	000594	000595	000596	000597	000598	000599	000600
000601	000602	000603	000604	000605	000606	000607	000608	000609	000610	000611	000612	000613	000614	000615	000616	000617	000618	000619	000620	000621	000622	000623	000624	000625	000626	000627	000628	000629	000630	000631	000632	000633	000634	000635	000636	000637	000638	000639	000640	000641	000642	000643	000644	000645	000646	000647	000648	000649	000650	000651	000652	000653	000654	000655	000656	000657	000658	000659	000660	000661	000662	000663	000664	000665	000666	000667	000668	000669	000670	000671	000672	000673	000674	000675	000676	000677	000678	000679	000680	000681	000682	000683	000684	000685	000686	000687	000688	000689	000690	000691	000692	000693	000694	000695	000696	000697	000698	000699	000700
000701	000702	000703	000704	000705	000706	000707	000708	000709	000710	000711	000712	000713	000714	000715	000716	000717	000718	000719	000720	000721	000722	000723	000724	000725	000726	000727	000728	000729	000730	000731	000732	000733	000734	000735	000736	000737	000738	000739	000740	000741	000742	000743	000744	000745	000746	000747	000748	000749	000750	000751	000752	000753	000754	000755	000756	000757	000758	000759	000760	000761	000762	000763	000764	000765	000766	000767	000768	000769	000770	000771	000772	000773	000774	000775	000776	000777	000778	000779	000780	000781	000782	000783	000784	000785	000786	000787	000788	000789	000790	000791	000792	000793	000794	000795	000796	000797	000798	000799	000800
000801	000802	000803	000804	000805	000806	000807	000808	000809	000810	000811	000812	000813	000814	000815	000816	000817	000818	000819	000820	000821	000822	000823	000824	000825	000826	000827	000828	000829	000830	000831	000832	000833	000834	000835	000836	000837	000838	000839	000840	000841	000842	000843	000844	000845	000846	000847	000848	000849	000850	000851	000852	000853	000854	000855	000856	000857	000858	000859	000860	000861	000862	000863	000864	000865	000866	000867	000868	000869	000870	000871	000872	000873	000874	000875	000876	000877	000878	000879	000880	000881	000882	000883	000884	000885	000886	000887	000888	000889	000890	000891	000892	000893	000894	000895	000896	000897	000898	000899	000900
000901	000902	000903	000904	000905	000906	000907	000908	000909	000910	000911	000912	000913	000914	000915	000916	000917	000918	000919	000920	000921	000922	000923	000924	000925	000926	000927	000928	000929	000930	000931	000932	000933	000934	000935	000936	000937	000938	000939	000940	000941	000942	000943	000944	000945	000946	000947	000948	000949	000950	000951	000952	000953	000954	000955	000956	000957	000958	000959	000960	000961	000962	000963	000964	000965	000966	000967	000968	000969	000970	000971	000972	000973	000974	000975	000976	000977	000978	000979	000980	000981	000982	000983	000984	000985	000986	000987	000988	000989	000990	000991	000992	000993	000994	000995	000996	000997	000998	000999	001000
001001	001002	001003	001004	001005	001006	001007	001008	001009	001010	001011	001012	001013	001014	001015	001016	001017	001018	001019	001020	001021	001022	001023	001024	001025	001026	001027	001028	001029	001030	001031	001032	001033	001034	001035	001036	001037	001038	001039	001040	001041	001042	001043	001044	001045	001046	001047	001048	001049	001050	001051	001052	001053	001054	001055	001056	001057	001058	001059	001060	001061	001062	001063	001064	001065	001066	001067	001068	001069	001070	001071	001072	001073	001074	001075	001076	001077	001078	001079	001080	001081	001082	001083	001084	001085	001086	001087	001088	001089	001090	001091	001092	001093	001094	001095	001096	001097	001098	001099	001100
001101	001102	001103	001104	001105	001106	001107	001108	001109	001110	001111	001112	001113	001114	001115	001116	001117	001118	001119	001120	001121	001																																																																														

HE024	051342	6881#	9511
HE025	051404	6887#	9512
HE026	051446	6892#	9513
HE027	051510	6899#	9514
HE03	050347	6785#	8494
HE030	051552	6905#	9515
HE031	051614	6911#	9516
HE032	051661	6918#	9517
HE033	051741	6927#	9518
HE034	052016	6935#	9519
HE035	052073	6943#	9520
HE036	052151	6951#	9521
HE037	052225	6959#	9522
HE04	050406	6791#	8495
HE040	052317	6969#	9523
HE041	052404	6978#	9524
HE042	052450	6984#	9525
HE043	052521	6991#	9526
HE044	052577	6999#	9527
HE045	052666	7009#	9528
HE046	052731	7015#	9529
HE047	053016	7024#	9530
HE05	050445	6797#	8496
HE050	053075	7032#	9531
HE051	053162	7041#	9532
HE052	053241	7049#	9533
HE053	053320	7057#	9534
HE054	053364	7063#	9535
HE055	053430	7069#	9536
HE056	053467	7075#	9537
HE057	053543	7083#	9538
HE06	050476	6802#	8497
HE060	053612	7090#	9539
HE061	053665	7098#	9540
HE062	053733	7105#	9541
HE063	054006	7113#	9542
HE064	054055	7120#	9543
HE065	054130	7128#	9544
HE066	054176	7135#	9545
HE067	054252	7143#	9546
HE07	050530	6807#	8498
HE070	054321	7150#	9547
HE071	054375	7158#	9548
HE072	054443	7165#	9549
HE073	054517	7173#	9550
HE074	054566	7180#	9551
HE075	054642	7188#	9552
HE076	054710	7195#	9553
HEPACD=	177742	1625#	6645
HEPE	007336	2171#	2197
HIBYTE	012210	2548	2550#
HT =	000011	337#	8698
HURTS	010472	2322	2324#
ICPA =	000010	1557#	3980
IDPA =	000020	1558#	
IE =	000100	1522#	3055
			3177
			3283
			3374
			3482
			3588
			3692
			3794
			3896
			5135
			5136
			6321

TETST	034376	6668	6691															
IE3	= 000100	5132	5175*															
ILF	= 000001	1505*	2014	2026	2436	3518	3624	6716										
IN	014404	1543*	2103	3093	3730	3832												
OTVEC=	000020	6306	6381															
IPCK0 =	000001	432*	1774*	1775*														
IPCK1 =	000002	1501*	2014	2026	6716													
IPCK2 =	000004	1502*	2014	2026	6716													
IPCK3 =	000010	1503*	2014	2026	3464	6716												
IR	= 000100	1504*	2014	2026	6716													
IS	045630	1488*	6696	6711														
SLK	= 002000	6406	6455															
I'DO	007620	1564*	5812	5819	5824	5825	5826	5827	5951	5958	5962	5964	5965	5966				
JUMP	022614	2215*																
KIPAR0=	172340	3777	3779*															
KIPAR1=	172342	481*																
KIPAR2=	172344	482*																
KIPAR3=	172346	483*																
KIPAR4=	172350	484*																
KIPAR5=	172352	485*																
KIPAR6=	172354	486*																
KIPAR7=	172356	487*																
KIPDR0=	172300	488*																
KIPDR1=	172302	470*																
KIPDR2=	172304	471*																
KIPDR3=	172306	472*																
KIPDR4=	172310	473*																
KIPDR5=	172312	474*																
KIPDR6=	172314	475*																
KIPDR7=	172316	476*																
KONG	004656	477*																
LEAGUE	034054	1837	1839*	1889														
LEAP	023354	5111	5113	5116	5118*													
LEAVE	007240	3879	3881*															
LEFTOUT	034042	2107	2130	2144*														
LERADO=	177740	5115*																
LF	= 000012	1624*	6652															
LOOCNT	003450	338*	8723	9729														
LOOKED	047704	1707*	2426*	2434*	2713*	2759	2761*	2763*	2766	2768*	6305*	6376	6379*	6382*	</			

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MASSBUS RMTD AND RMT1: DIAGNOSTIC
DTRMBC.F11MACY11: 27(732)
CROSS REFERENCE TABLE -- USER SYMBOLS

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MPE = 000400	1490#	2088	3090	3212	3305	3354	3409	3517	3623	3727	3829	3931	4019
MPETST = 024334	6711												
MPF = 001000	4011	4014#											
	1491#	2088	3090	3212	3318	3409	3517	3623	3714	3763	3829	3882	3884
	3889	3918	3967	4019	6711								
MYSTIC = 014246	2822#												
NEBL = 000100	1560#												
NEC = 010000	1494#	2088	3090	3212	3318	3409	3517	3610	3659	3727	3829	3931	4019
	6711												
NEDERR = 021256	3570	3572#											
NEP = 004000	1493#	2088	3077	3126	3212	3318	3409	3517	3623	3727	3829	3931	4019
	6711												
NEXTST = 046504	6551	6560	6563#										
NOOP = 000001	1663#												
OR = 125252	1655#	2520	2662	2808	3161	5193	5255	5332	5471	5533	5610	5748	5811
	5887	6026	6089	6165									
ORSTST = 014246	2812	2817	2819	2821#									
OROAC = 004002	1722#	4407	4513	4566	4672	4778	5038	5071*	5307	5446	5585	5724	5863
	6002												
OFFSET = 003456	1715#	6730*	6731*	6733									
OFF11 = 003402	1623#	1977*	1979	1980*	1984*	1985*	1986	1987*	1988	6466*	6468	6471*	6473*
	6474*	6475	6476*	6477									
ONE = 000001	1657#	2471	2639	2714	2759	2766	6556	6571					
OPI = 020000	1550#	2103	3093	3730	3832								
OR = 000200	1489#	2295	2300	2321	2326	2331	2339	2343	2747	2773	2778	2799	2811
	2816	2838	6696	6711									
ORSET = 013610	2748	2751#											
OUTOF = 050252	6747	6749	6762#										
PARITY = 047120	1825	6619#											
PASS = 003452	1708#	6304*	6315	6383	6385*								
PAT = 000020	1486#	3268	3674	6696	6711								
PC = 000007	358#	6501*	6504*	6526*	6531	6684*	8697*	8704*	8711*	8725*	8727*	8910*	8947*
PGE = 002000	1492#	2088	3090	3212	3318	3409	3517	3623	3727	3816	3865	3931	4019
	6711												
PGETST = 022676	3783	3788	3790	3792#									
PJP = 020000	1538#	6706											
PIRG = 177772	344#												
PIRQVE = 000240	438#												
PLACE = 020464	3462	3464#											
PRIBIT = 046656	6557	6594#											
PRTBIT = 046646	6572	6580#											
PR0 = 000000	361#												
PR1 = 000040	362#												
PR2 = 000100	363#												
PR3 = 000140	364#												
PR4 = 000200	365#												
PR5 = 000240	366#												
PR6 = 000300	367#												
PR7 = 000340	368#												
PS = 177776	341#	342	5133*										
PSEL = 002000	1526#	3055	3177	3283	3374	3482	3588	3692	3794	3896	6371	6668	6691
PSW = 177776	342#	6303*											
PWRVEC = 000024	433#	1780*	1781*	8620*	8621*	8630*	8636*	8648*	8649*				
RBUF = 004100	1724#	2111*	2116*	2121*	2126*	2133*	2138*	3266	3676	5191	5192*	5230	5232
	5330	5331*	5369	5371	5469	5470*	5508	5510	5608	5609*	5647	5649	5747
	5748*	5786	5886	5887*	5925	6025	6026*	6064	6164	6165*	6203	6629*	6629*

		6630	6636*	6637	6645*	6646	6652*	6653	6659*	6660	8434	8453	9459	
RBUF1	004102	1725#												
RBUF2	004104	1726#												
RBUF3	004106	1727#												
RBUF4	004110	1728#												
RBUF5	004112	1729#												
RBUF6	004114	1730#												
RBUF7	004116	1731#												
ROCHR =	104406	9009	9111#											
ROLIN =	104407	9050	9112#											
ROOCT =	104410	1844	1850	1956	1895	1916	1937	1958	9113#					
ROY =	000200	1523#	2717	2722	2743	2867	2872	2893	2951	2956	3042	3047	3055	3073
		3148	3153	3164	3169	3177	3195	3271	3276	3283	3301	3374	3392	3470
		3475	3482	3500	3576	3581	3588	3606	3680	3685	3692	3710	3782	3797
		3794	3812	3896	3914	3984	3989	4010	4049	4054	4075	4098	4103	4124
		4148	4153	4174	4198	4203	4224	4253	4258	4279	4306	4311	4332	4359
		4364	4385	4412	4417	4438	4465	4470	4491	4518	4523	4544	4571	4576
		4597	4624	4629	4650	4677	4682	4703	4730	4735	4756	4783	4788	4809
		4836	4841	4862	4889	4894	4915	4944	4949	4970	4979	4984	5005	5041
		5046	5067	5076	5081	5102	5141	5146	5167	5199	5204	5226	5274	5279
		5301	5339	5343	5365	5413	5418	5440	5477	5482	5504	5552	5557	5579
		5616	5621	5643	5691	5696	5718	5755	5760	5782	5830	5835	5857	5894
		5899	5921	5969	5974	5996	6033	6038	6060	6108	6113	6135	6172	6177
		6199	6247	6252	6274	6324	6329	6335	6357	6670	6675	6681	6691	
		2744	2747#											
ROYSET	013570	5130	5132#											
REACY	034114	1675#	3040	3267	4251	4622	4675	4834	5197	5401				
READ0 =	000071	1676#												
READ1 =	000072	1677#	5336	5679										
READ2 =	000073	1678#												
READ3 =	000074	1678#												
READ4 =	000075	1679#	5475	5957										
READ5 =	000076	1680#												
READ6 =	000077	1681#	3055	3177	3283	3374	3482	3588	3692	3794	3896	4728	4781	4897
		5614	6235	6691										
REGENO	003404	1627#	1760*	1857*	1858*	1985	6474							
RESTAR	006066	1871	1875	1879	1883	1925	1946	1965	1969#					
RESTAT	045316	1922	1943	1964	6408	6422#	6434	6445	6456					
RESVEC=	000010	428#												
RETAIN	003410	1629#	1906*	1927*	1948*	1967*	1970*	2008	6420*	6431*	6447*	6458*		
RETURN	046640	6566	6575	6578#										
RFAIL =	000100	1548#	2103	3093	3730	3832								
RHAS	003346	1604#	2368											
RHBA	003334	1599#	2174	2215*	2216	2221	2234	2237	2242	2261	2308	2444	2479	2506
		2530	2579	2612*	2613	2614	2619	2640*	2641	2642	2647	2663*	2664	2665
		2671	2686	2687*	2689	2693*	2695	2730	2786	2825	2864*	2880	2942*	2964
		2991	3009	3031*	3034*	3060	3144*	3160*	3182	3266*	3288	3379	3467*	3487
		3573*	3593	3676*	3697	3775*	3799	3901	3997	4044*	4062	4095*	4111	4145*
		4161	4195*	4211	4248*	4266	4301*	4319	4354*	4372	4407*	4425	4460*	4478
		4513*	4531	4566*	4584	4619*	4637	4672*	4690	4725*	4743	4778*	4796	4831*
		4849	4884*	4902	4940*	4957	4975*	4992	5037*	5054	5072*	5089	5128*	5154
		5191*	5212	5261*	5287	5307	5330*	5351	5400*	5426	5446	5469*	5490	5539*
		5565	5585	5608*	5629	5678*	5704	5724	5747*	5768	5817*	5843	5863	5896*
		5907	5956*	5982	6002	6025*	6046	6095*	6121	6141	6164*	6185	6234*	6260
		6280	6309*	6342	6360									
RHBAE	003360	1609#	1981	1986*	2180	2227	2255*	2256	2267	2274	2277	2282	2314	2362
		2450	2485	2512	2536	2571*	2572	2573	2585	2625	2653	2677	2736	2792

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MASSBUS RHTD AND RH1: DIAGNOSTIC
DZRHOC.P11MACY11 27(732)
CROSS REFERENCE TABLE -- USER 30LS

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		2631	2863*	2886	2941*	2970	2982	2984	2986	3037*	3066	3143*	3189	3265*
		3294	3385	3466*	3493	3571*	3599	3703	3778*	3805	3907	4003	4045*	4068
		4117	4167	4217	4249*	4272	4302*	4325	4355*	4378	4408*	4431	4461*	4484
		4514*	4537	4567*	4590	4620*	4643	4673*	4696	4726*	4749	4779*	4802	4832*
		4855	4885*	4908	4939*	4963	4998	5060	5095	5131*	5160	5196*	5218	5250*
		5293	5335*	5357	5399*	5432	5474*	5496	5538*	5571	5613*	5635	5677*	5710
		5752*	5774	5816*	5849	5891*	5913	5955*	5988	6030*	6052	6094*	6127	6169*
		6191	6233*	6266	6308*	6348	6469	6475*						
RHCS1	003330	1597*	1978	1989	1994	2078	2081	2116	2172	2219	2259	2306	2371	2442
		2477	2504	2528	2577	2617	2645	2669	2717	2722	2728	2743	2794	2823
		2865*	2867	2872	2878	2893	2946*	2948*	2951	2956	2962	2979	3004	3040*
		3042	3047	3054	3058	3073	3146*	3148	3153	3162*	3164	3169	3176	3180
		3195	3267*	3271	3276	3282	3286	3301	3373	3377	3392	3469*	3470	3475
		3481	3485	3500	3574*	3576	3581	3587	3591	3606	3679*	3680	3685	3691
		3695	3710	3779*	3780*	3782	3787	3793	3797	3812	3895	3899	3914	3984
		3989	3995	4010	4014	4016	4047*	4049	4054	4060	4075	4096*	4098	4103
		4109	4124	4146*	4148	4153	4159	4174	4196*	4198	4203	4209	4224	4251*
		4253	4258	4264	4279	4304*	4306	4311	4317	4332	4357*	4359	4364	4370
		4385	4410*	4412	4417	4423	4438	4463*	4465	4470	4476	4491	4516*	4519
		4523	4529	4544	4569*	4571	4576	4582	4597	4622*	4624	4629	4635	4650
		4675*	4677	4682	4688	4703	4728*	4730	4735	4741	4756	4781*	4783	4788
		4794	4809	4834*	4836	4841	4847	4862	4887*	4889	4894	4900	4915	4942*
		4944	4949	4955	4970	4977*	4979	4984	4990	5005	5039*	5041	5046	5052
		5067	5074*	5076	5081	5087	5102	5135*	5136	5141	5146	5152	5167	5197*
		5199	5204	5210	5226	5262*	5274	5279	5285	5301	5336*	5338	5343	5349
		5365	5401*	5413	5418	5424	5440	5475*	5477	5492	5488	5504	5540*	5552
		5557	5563	5579	5614*	5616	5621	5627	5643	5679*	5691	5696	5702	5718
		5753*	5755	5760	5766	5782	5818*	5830	5835	5841	5857	5892*	5894	5899
		5905	5921	5957*	5969	5974	5980	5996	6031*	6033	6038	6044	6060	6096*
		6108	6113	6119	6135	6170*	6172	6177	6183	6199	6235*	6247	6252	6258
		6274	6321*	6324	6329	6335	6340	6357	6371	6467	6478	6668*	6670	6675
		6681	6690	8429										
RHCS1E	003364	1611*	1989*	1990*	3125*	3247*	3353*	3444*	3552*	3658*	3762*	3864*	3966*	6478*
		6479*												
RHCS2	003340	1601*	1993*	2056*	2057*	2085	2088	2111	2121	2152*	2153*	2171*	2182	2218*
		2229	2258*	2269	2295	2300	2316	2321	2326	2331	2337*	2339	2343	2422*
		2423*	2452	2487	2514	2538	2587	2627	2655	2679	2738	2747	2773	2778
		2794	2799	2811	2816	2833	2838	2860*	2888	2972	3039*	3053	3068	3077
		3126	3140*	3175	3190	3199	3248	3261*	3268*	3269	3296	3305	3354	3368*
		3372*	3387	3396	3445	3460*	3495	3504	3553	3568*	3601	3610	3659	3674*
		3705	3714	3763	3774*	3807	3816	3865	3881*	3882*	3884	3889	3909	3918
		3967	3979*	4005	4046*	4070	4119	4169	4219	4250*	4274	4303*	4327	4356*
		4380	4409*	4433	4462*	4486	4515*	4539	4568*	4592	4621*	4645	4674*	4698
		4727*	4751	4780*	4804	4833*	4857	4886*	4910	4938*	4965	5000	5018	5035*
		5062	5097	5115	5127*	5162	5189*	5220	5254*	5295	5328*	5359	5393*	5434
		5467*	5498	5532*	5573	5606*	5637	5671*	5712	5745*	5776	5810*	5851	5884*
		5915	5949*	5990	6023*	6054	6088*	6129	6162*	6193	6227*	6269	6302*	6350
		6695	6710											
RHCS3	003362	1610*	1988*	2014*	2026*	2069	2072	2138	2181	2228	2268	2315	2428*	2429
		2431	2437*	2438	2439	2451	2486	2513	2537	2586	2626	2654	2678	2737
		2793	2832	2887	2971	3031	3056*	3067	3178*	3189	3284*	3295	3375*	3386
		3464*	3483*	3494	3589*	3600	3693*	3704	3795*	3806	3897*	3908	4004	4069
		4079	4118	4128	4168	4178	4218	4228	4273	4283	4326	4336	4379	4389
		4432	4442	4485	4495	4538	4548	4591	4601	4644	4654	4697	4707	4750
		4760	4803	4813	4856	4866	4909	4919	4964	4999	5009	5015	5061	5096
		5106	5112	5161	5219	5294	5358	5433	5497	5572	5636	5711	5775	5850

MASSBUS RHTD AND RH11 DIAGNOSTIC MACY11 27(732) 01-OCT-76 09:03 PAGE 191
DZRHBC.P11 CROSS REFERENCE TABLE -- USER SYMBOLS

		5914	5999	6053	6128	6192	6267	6349	6477*	6715				
RH08	003352	1606*	2293*	2324	2715*	2749	2751	2771*	2802	2804	2809*	2841		
RH07	003356	1608*	1995	2154	2358	2374								
RHER	003344	1603*	2100	2103	2126	2184	2231	2271	2318	2454	2489	2516	2540	2589
		2629	2657	2681	2740	2796	2835	2890	2974	3070	3132	3298	3389	3497
		3603	3707	3809	3911	4007	4072	4121	4171	4221	4276	4329	4382	4435
		4488	4541	4594	4647	4700	4753	4806	4859	4912	4967	5002	5064	5099
		5164	5222	5297	5361	5436	5500	5575	5639	5714	5778	5853	5917	5992
		6056	6131	6195	6270	6352	6700							
RHRP1	003354	1607*	3980*	5256*	5263*	5268*	5269*	5270*	5271*	5272*	5395*	5402*	5407*	5408*
		5409*	5410*	5411*	5534*	5541*	5546*	5547*	5548*	5549*	5550*	5673*	5680*	5685*
		5686*	5687*	5688*	5689*	5812*	5819*	5824*	5825*	5826*	5827*	5828*	5951*	5958*
		5963*	5964*	5965*	5966*	5967*	6090*	6097*	6102*	6103*	6104*	6105*	6106*	6229*
		6236*	6241*	6242*	6243*	6244*	6245*							
RHRP2	003336	1600*	1999	2058	2186	2233	2273	2320	2456	2491	2518	2542	2591	2631
		2659	2683	2742	2798	2837	2892	2976	3072	3194	3300	3391	3499	3605
		3709	3811	3913	4009	4074	4123	4173	4223	4278	4331	4384	4437	4490
		4543	4596	4649	4702	4755	4808	4861	4914	4969	5004	5066	5101	5166
		5224	5299	5363	5438	5502	5577	5641	5716	5780	5855	5919	5994	6058
		6133	6197	6272	6354	6379*								
RHINT	044560	6320	6339*	6769										
RHST	003342	1602*	2093	2096	2133	2183	2230	2270	2317	2453	2488	2515	2539	2588
		2628	2656	2680	2739	2795	2834	2889	2973	3069	3191	3297	3388	3496
		3602	3706	3808	3910	4006	4071	4120	4170	4220	4275	4328	4381	4434
		4487	4540	4593	4646	4699	4752	4805	4858	4911	4966	5001	5063	5098
		5163	5221	5296	5360	5435	5499	5574	5638	5713	5777	5852	5916	5991
		6055	6130	6194	6269	6351	6355	6705						
RHTDE	003350	1605*	2185	2232	2272	2319	2455	2490	2517	2541	2590	2630	2658	2682
		2741	2797	2836	2891	2904	2909	2975	3071	3193	3299	3390	3498	3604
		3677*	3708	3810	3912	3981*	3982*	4008	4073	4122	4172	4222	4277	4330
		4383	4436	4489	4542	4595	4648	4701	4754	4807	4860	4913	4968	5003
		5065	5100	5165	5193*	5223	5225	5230	5298	5300	5310	5332*	5362	5364
		5369	5394*	5437	5439	5449	5471*	5501	5503	5508	5576	5578	5588	5610*
		5640	5642	5647	5672*	5715	5717	5727	5749*	5779	5781	5796	5788	5854
		5856	5866	5888*	5918	5920	5925	5927	5950*	5993	5995	6005	6027*	6057
		6059	6064	6066	6132	6134	6144	6166*	6196	6198	6203	6205	6229*	6271
		6273	6283	6353	6363									
RHTEST	006364	2004	2009*											
RHVEC	003316	1468*												
RHWC	003332	1598*	2168*	2169	2173	2187	2190	2193	2199	2203	2220	2260	2307	2443
		2472*	2473	2478	2498*	2499	2500	2505	2521*	2522	2523	2529	2544	2545*
		2547	2551*	2553	2557*	2578	2618	2646	2670	2729	2785	2824	2859*	2879
		2895	2897	2899	2943*	2963	3038*	3059	3139*	3159*	3181	3262*	3287	3378
		3465*	3486	3572*	3592	3675*	3696	3798	3900	3996	4043*	4061	4094*	4110
		4144*	4160	4194*	4210	4247*	4265	4300*	4318	4353*	4371	4406*	4424	4459*
		4477	4512*	4530	4565*	4583	4618*	4636	4671*	4689	4724*	4742	4777*	4795
		4830*	4848	4883*	4901	4941*	4956	4976*	4991	5036*	5053	5073*	5088	5134*
		5153	5190*	5211	5257*	5286	5304	5329*	5350	5396*	5425	5443	5468*	5489
		5535*	5564	5582	5607*	5628	5674*	5703	5721	5746*	5767	5813*	5842	5860
		5885*	5906	5952*	5981	5999	6024*	6045	6091*	6120	6138	6163*	6184	6230*
		6259	6277	6310*	6341	6366								
		2494	2497*											
RHWCA	011610	2472*	2496											
RHWCT	011426	2013	2023	2028	2037*									
RH11	006550	2017*												
RH11BA	006420	2031*												
RH70BA	006514													

SA200 005306

2011	2024*											
5010	5015*											
6541	6543	6545	6579*									
1547*	2103	3093	3730	3832								
1544*	2103	3093	3730	3832								
6403	6444*											
349*	1750*	1751*	1753*	1757*	1758*	1762*	1803	1830	1832*	6523*	6526	8622
8647*	9680	8681*	8682	8685*	8819	8829*	8833	8849	8850	8853*	8882	9993*
9884*	8891*	8892*	8893*	8894*	8895*	8896	8901	8906*	8908*	8912	8914	9047
9051*	9054	9070*	9081	9082*	9083	9084*	9085*	9086*	9087*			
350*	1834*	2010	2022*	2031*	2032*	2065	2175	2222	2253	2262	2309	2424
2445	2480	2507	2531	2568	2580	2620	2648	2672	2731	2787	2926	2861
2831	2939	2944	2965	2977	3013	3029	3035	3061	3141	3183	3263	3289
3369	3380	3461	3489	3569	3594	3698	3776	3800	3878	3302	3998	4041
4063	4092	4112	4142	4162	4192	4212	4245	4267	4298	4320	4351	4373
4404	4426	4457	4479	4510	4532	4563	4585	4616	4638	4669	4691	4722
4744	4775	4797	4828	4850	4881	4903	4935	4958	4993	5032	5055	5090
5129	5155	5194	5213	5258	5288	5333	5352	5397	5427	5472	5491	5536
5566	5611	5630	5675	5705	5750	5769	5814	5844	5889	5908	5953	5983
6028	6047	6092	6122	6167	6186	6231	6261	6306	6313	6343	6639	8623
8646*	8820	8833*	8834	8838	8862*	9048	9052*	9056*	9058*	9060*	9063*	9066
9069*												
351*	1978*	1979*	1981	6467*	6468*	6469	8624	8645*	8821	8832*	8836*	8839
8846*	8847*	8848	8853*	8861*	9049	9053*	9057*	9059*	9061*	9067	9068*	
352*	2370*	2377*	2385	8625	8644*	8762	8771*	8777*	8778*	8781*	8786*	8787*
8788	8797*	8822	8830*	8831*	8845*	8848*	8857*	8858*	8860*	9005	9006*	9007
9010*	9011	9015	9017	9019*	9021*							
353*	2358*	2359	2360	2362	2365	2366	2367	3626	8643*	8763	8765*	8766*
8767*	8768	8769*	8783	8785*	8793*	8796*						
354*	8627	8642*	8764	8770*	8772*	8774*	8775*	8776*	8777	8795*	8823	8825*
8827*	8834*	8838*	8853	8859*								
355*	1768*	1769*	1770									
356*	2039*	2110*	2113*	2115*	2118*	2120*	2123*	2125*	2128*	2132*	2135*	2137*
2140*	2144*	2145*	2158*	2196*	2206*	2207*	2208*	2239*	2245*	2246*	2279*	2285*
2286*	2347*	2348*	2349*	2413*	2414*	2458*	2459*	2460*	2476*	2503*	2526*	2556*
2558*	2576*	2597*	2598*	2633*	2661*	2685*	2698*	2699*	2746*	2756*	2807*	2846*
2847*	2848*	2903*	2925*	2926*	2927*	2989*	2994*	2997*	3020*	3021*	3076*	3095*
3105*	3109*	3114*	3118*	3129*	3130*	3198*	3217*	3227*	3231*	3236*	3240*	3251*
3252*	3304*	33										

SC	=	13000C	1531#	2081	3079	3083	3087	3100	3201	3205	3209	3222	3307	3311	3315
			3328	3398	3402	3406	3419	3506	3510	3514	3527	3612	3616	3620	3633
			3716	3720	3724	3737	3818	3822	3826	3839	3920	3924	3928	3941	4016
SCLK	=	000010	1584#	6379											
SEARCH	=	000031	1699#												
SKIPIN	=	004636	1831	1834#											
SLEUTH	=	004652	1836	1838#											
SLKM	=	001000	1563#	5534	5541	5546	5547	5548	5549	5673	5680	5685	5686	5687	5688
			5812	5819	5824	5825	5826	5827	5951	5958	5963	5964	5965	5966	
SNRFOO	=	010576	2340	2343#											
SF	=	%000006	357#	1772*	1789*	1797*	1801	1826*	1845	1851	1857	1874	1878	1882	1896
			1917	1938	1959	1975*	1991*	2003	2005	2006	2009	2012*	2016	2024*	2029
			2030	2037	2038	5175	6417*	6423	6429*	6436*	6441*	6452*	6463*	6511*	6518*
			6581*	6585*	6601	6603*	6609	6610*	6612*	6628	6630*	6636	6637*	6646*	6653*
			6660*	6662*	6756*	6769*	8574*	8577	8579	8580	8606	8609	8613*	8622*	8623*
			8624*	8625*	8626*	8627*	8628*	8629	8637*	8641	8642	8643	8644	8645	8646
			8647	8680*	8681	8682*	8684	8685	8686*	8688	8690	8692	8698	8700*	8702*
			8710*	8714	8718	8719	8723	8754*	8755	8756	8757*	8762*	8763*	8764*	8770
			8795	8796	8797	8798*	8799*	8819*	8820*	8821*	8822*	8823*	8824*	8825	8828*
			8841	8843*	8845	8855	8857	8859	8860	8861	8862	8863	8865*	8866*	8882*
			8887*	8908	8912*	8942	8955*	8958*	8977*	8978*	8981*	8982*	8983	8987*	8988*
			8989	8992	8994	8996*	9005*	9010	9021	9022*	9023*	9024*	9045*	9046*	9047*
			9048*	9049*	9051	9054*	9062*	9063	9065	9066*	9068	9069	9070	9081*	9082
			9092*	9093*											
SPLIT	=	034410	5170	5172	5174	5177	5179#								
SR0	=	177572	463#												
SR1	=	177574	464#												
SR2	=	177576	465#												
SR3	=	172516	466#												
STACK	=	000750	332#	1772	1826										
START	=	004214	1752	1756	1765#										
STKLMT	=	177774	343#												
SUPER	=	033226	5006	5009#											
SWR	=	001140	528#	1770	1791*	1793	1799*	8569	8583	8585	8591	8598	8628	8641*	8938
			8945	8950	8953										
SWREG	=	000176	447#	1799											
SW0	=	000001	396#</												

MASSBUS RH70 AND RH1: DIAGNOSTIC MACY11 27(732) 01-OCT-76 09:03 PAGE 194
CZRHC.P11 CROSS REFERENCE TABLE -- USER SYMBOLS

[illegible]

[illegible]

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MASSBUS RH70 AND RH1: DIAGNOSTIC MACY11 27(732) 01-OCT-76 09:03 PAGE 196
 C2RHBC.P11 CROSS REFERENCE TABLE -- USER SYMBOLS

TYPON = 104404	9107*													
TYP0S = 104403	9106*													
UPE = 020000	1495*	2088	3090	3212	3318	3372	3396	3445	3504	3553	3623	3727	3829	
	3931	4019	6711											
UPETRE 017306	3272	3277	3279	3281*										
US1 = 000001	1482*	6696												
US2 = 000002	1483*	6696												
JS4 = 000004	1484*	6696												
VECADD 003406	1628*	1761*	1851*	5132*	6311*									
VOUS 033000	4971	4974*												
WATBIT 046302	2113	2118	2123	2128	2135	2140	2196	2206	2239	2279	2458	2476	2503	
	2526	2576	2633	2661	2685	2756	2807	2846	6540*					
WATFIV 010256	2275	2280	2284*											
WATFOR 010046	2255*													
WC = 003444	1648*	2173*	2193*	2195	2199*	2203*	2204	2220*	2260*	2307*	2443*	2475	2478*	
	2499*	2502	2505*	2522*	2525	2529*	2578*	2618*	2646*	2670*	2729*	2785*	2824*	
	2879*	2963*	3059*	3181*	3287*	3378*	3486*	3592*	3696*	3798*	3900*	3996*	4061*	
	4110*	4160*	4210*	4265*	4318*	4371*	4424*	4477*	4530*	4583*	4636*	4689*	4742*	
	4795*	4848*	4901*	4956*	4991*	5053*	5088*	5153*	5211*	5286*	5350*	5425*	5489*	
	5564*	5628*	5703*	5767*	5842*	5906*	5981*	6045*	6120*	6184*	6259*	6341*	8414	
	8438	8440	8451											
WCE = 040000	1496*	2088	3090	3199	3248	3318	3409	3517	3623	3727	3829	3931	4019	
	5018	5115	6711											
WCEERR 033652	5077	5082	5084	5086*										
WCEHI = 010000	1508*	2072	3091	3319	3518	3624	5015	5106						
WCELO = 004000	1507*	2072	3091	3319	3518	3624	5009	5112						
WCEOWT 033424	5042	5047	5049	5051*										
WCERR1 007472	2170	2190*												
WCERR2 007556	2188	2202*												
WCETRE 016506	3165	3170	3172	3174*										
WCETST 016410	3149	3154	3156	3158*										
WHYFO 007234	2142*	2347	2746	2903	2925	2989	2994	2997	3076	3095	3105	3109	3114	
	3118	3198	3217	3227	3231	3236	3240	3304	3323	3333	3337	3342	3346	
	3395	3414	3424	3428	3433	3437	3503	3522	3532	3536	3541	3545	3609	
	3628	3638	3642	3647	3651	3713	3732	3742	3746	3751	3755	3815	3834	
	3844	3848	3853	3857	3917	3936	3946	3950	3955	3959	4013	4021	4030	
	4078	4082	4127	4131	4177	4191	4227	4231	4282	4286	4335	4339	4388	
	4392	4441	4445	4494	4498	4547	4551	4600	4604	4653	4657	4706	4710	
	4759	4763	4812	4816	4865	4869	4918	4922	4973	5008	5012	5070	5105	
	5109	5229	5239	5313	5368	5378	5452	5507	5517	5591	5646	5656	5730	
	5785	5795	5869	5924	5934	6008	6063	6073	6147	6202	6212	6286	6387	
WRCHO = 000051	1665*	3162	4977	5074										
WRCH1 = 000052	1666*													
WRCH2 = 000053	1667*													
WRCH3 = 000054	1668*													
WRCH4 = 000055	1669*													
WRCH5 = 000056	1670*													
WRCH6 = 000057	1671*													
WRITE0 = 000061	1685*	2865	2946	2948	3146	3468	3574	3678	3779	3780	4047	4096	4146	
	4196	4304	4410	4942	5039	5135	5262	5753	6321	6668				
WRITE1 = 000062	1686*													
WRITE2 = 000063	1687*	5540	5892											
WRITE3 = 000064	1688*													
WRITE4 = 000065	1689*	5818	6031											
WRITE5 = 000066	1690*													
WRITE6 = 000067	1691*	4357	4463	4516	4569	6096	6170							

14-00000 21-00000 22-00000 23-00000 24-00000 25-00000 26-00000 27-00000 28-00000 29-00000 30-00000 31-00000 32-00000 33-00000 34-00000 35-00000 36-00000 37-00000 38-00000 39-00000 40-00000 41-00000 42-00000 43-00000 44-00000 45-00000 46-00000 47-00000 48-00000 49-00000 50-00000 51-00000 52-00000 53-00000 54-00000 55-00000 56-00000 57-00000 58-00000 59-00000 60-00000 61-00000 62-00000 63-00000 64-00000 65-00000 66-00000 67-00000 68-00000 69-00000 70-00000 71-00000 72-00000 73-00000 74-00000 75-00000 76-00000 77-00000 78-00000 79-00000 80-00000 81-00000 82-00000 83-00000 84-00000 85-00000 86-00000 87-00000 88-00000 89-00000 90-00000 91-00000 92-00000 93-00000 94-00000 95-00000 96-00000 97-00000 98-00000 99-00000 100-00000

[illegible]

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SS:PMK= 000000
ST:MES 00:12:2
ST:KB 00:146
ST:KS 00:144
ST:MPQ 00:176
ST:MPI 00:200

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87MP2	001202
87MP3	001204
87MP4	001206
87MP5	001208
87MP6	001210

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STP8      001:52
STPF-G    001:57
STPS      001:50
STRAP     074734
STRAP2    074756
STRP      = 000011
STRPAC    074773
STSTNH    001102
STTYIN    074566
STYPEN=    *****
STYPCS    073624
STYPE     073156
STYPEC    073326

```

8637	8638*	8639*	8655*									
8656*	8657*	8658*	8659*	8660*	8661*	8662*	8663*	8664*	8665*	8666*	8667*	8668*
8669*	8670*	8671*	8672*	8673*	8674*	8675*	8676*	8677*	8678*	8679*	8680*	8681*
8682*	8683*	8684*	8685*	8686*	8687*	8688*	8689*	8690*	8691*	8692*	8693*	8694*
8695*	8696*	8697*	8698*	8699*	8700*	8701*	8702*	8703*	8704*	8705*	8706*	8707*
8708*	8709*	8710*	8711*	8712*	8713*	8714*	8715*	8716*	8717*	8718*	8719*	8720*
8721*	8722*	8723*	8724*	8725*	8726*	8727*	8728*	8729*	8730*	8731*	8732*	8733*
8734*	8735*	8736*	8737*	8738*	8739*	8740*	8741*	8742*	8743*	8744*	8745*	8746*
8747*	8748*	8749*	8750*	8751*	8752*	8753*	8754*	8755*	8756*	8757*	8758*	8759*
8760*	8761*	8762*	8763*	8764*	8765*	8766*	8767*	8768*	8769*	8770*	8771*	8772*
8773*	8774*	8775*	8776*	8777*	8778*	8779*	8780*	8781*	8782*	8783*	8784*	8785*
8786*	8787*	8788*	8789*	8790*	8791*	8792*	8793*	8794*	8795*	8796*	8797*	8798*
8799*	8800*	8801*	8802*	8803*	8804*	8805*	8806*	8807*	8808*	8809*	8810*	8811*
8812*	8813*	8814*	8815*	8816*	8817*	8818*	8819*	8820*	8821*	8822*	8823*	8824*
8825*	8826*	8827*	8828*	8829*	8830*	8831*	8832*	8833*	8834*	8835*	8836*	8837*
8838*	8839*	8840*	8841*	8842*	8843*	8844*	8845*	8846*	8847*	8848*	8849*	8850*
8851*	8852*	8853*	8854*	8855*	8856*	8857*	8858*	8859*	8860*	8861*	8862*	8863*
8864*	8865*	8866*	8867*	8868*	8869*	8870*	8871*	8872*	8873*	8874*	8875*	8876*
8877*	8878*	8879*	8880*	8881*	8882*	8883*	8884*	8885*	8886*	8887*	8888*	8889*
8890*	8891*	8892*	8893*	8894*	8895*	8896*	8897*	8898*	8899*	8900*	8901*	8902*
8903*	8904*	8905*	8906*	8907*	8908*	8909*	8910*	8911*	8912*	8913*	8914*	8915*
8916*	8917*	8918*	8919*	8920*	8921*	8922*	8923*	8924*	8925*	8926*	8927*	8928*
8929*	8930*	8931*	8932*	8933*	8934*	8935*	8936*	8937*	8938*	8939*	8940*	8941*
8942*	8943*	8944*	8945*	8946*	8947*	8948*	8949*	8950*	8951*	8952*	8953*	8954*
8955*	8956*	8957*	8958*	8959*	8960*	8961*	8962*	8963*	8964*	8965*	8966*	8967*
8968*	8969*	8970*	8971*	8972*	8973*	8974*	8975*	8976*	8977*	8978*	8979*	8980*
8981*	8982*	8983*	8984*	8985*	8986*	8987*	8988*	8989*	8990*	8991*	8992*	8993*
8994*	8995*	8996*	8997*	8998*	8999*	9000*	9001*	9002*	9003*	9004*	9005*	9006*
9007*	9008*	9009*	9010*	9011*	9012*	9013*	9014*	9015*	9016*	9017*	9018*	9019*
9020*	9021*	9022*	9023*	9024*	9025*	9026*	9027*	9028*	9029*	9030*	9031*	9032*
9033*	9034*	9035*	9036*	9037*	9038*	9039*	9040*	9041*	9042*	9043*	9044*	9045*
9046*	9047*	9048*	9049*	9050*	9051*	9052*	9053*	9054*	9055*	9056*	9057*	9058*
9059*	9060*	9061*	9062*	9063*	9064*	9065*	9066*	9067*	9068*	9069*	9070*	9071*
9072*	9073*	9074*	9075*	9076*	9077*	9078*	9079*					

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MASSBUS R470 AND R411: DIAGNOSTIC CROSS REFERENCE TABLE -- MACRO NAMES 01-OCT-76 09:03 PAGE 202

CLEAR	2415	6689	6694	6699	6704	6709	6714									
COMPEN	4034	4041	4245	4298	4351	4404	4457	4510	4563	4616	4669	4722	4775	4828	4881	
ERROR	2122	2127	2134	2139	2157	2194	2200	2205	2236							
	2139	2157	2194	2200	2205	2236	2242	2255	2268	2284	2298	2303	2313	2320	2332	2336
	2336	2342	2355	2368	2384	2398	2400	2402	2404	2406	2408	2410	2412	2414	2416	2418
	2418	2420	2422	2424	2426	2428	2430	2432	2434	2436	2438	2440	2442	2444	2446	2448
	2450	2452	2454	2456	2458	2460	2462	2464	2466	2468	2470	2472	2474	2476	2478	2480
	2482	2484	2486	2488	2490	2492	2494	2496	2498	2500	2502	2504	2506	2508	2510	2512
	2514	2516	2518	2520	2522	2524	2526	2528	2530	2532	2534	2536	2538	2540	2542	2544
	2546	2548	2550	2552	2554	2556	2558	2560	2562	2564	2566	2568	2570	2572	2574	2576
	2578	2580	2582	2584	2586	2588	2590	2592	2594	2596	2598	2600	2602	2604	2606	2608
	2610	2612	2614	2616	2618	2620	2622	2624	2626	2628	2630	2632	2634	2636	2638	2640
	2642	2644	2646	2648	2650	2652	2654	2656	2658	2660	2662	2664	2666	2668	2670	2672
	2674	2676	2678	2680	2682	2684	2686	2688	2690	2692	2694	2696	2698	2700	2702	2704
	2706	2708	2710	2712	2714	2716	2718	2720	2722	2724	2726	2728	2730	2732	2734	2736
	2738	2740	2742	2744	2746	2748	2750	2752	2754	2756	2758	2760	2762	2764	2766	2768
	2770	2772	2774	2776	2778	2780	2782	2784	2786	2788	2790	2792	2794	2796	2798	2800
	2802	2804	2806	2808	2810	2812	2814	2816	2818	2820	2822	2824	2826	2828	2830	2832
	2834	2836	2838	2840	2842	2844	2846	2848	2850	2852	2854	2856	2858	2860	2862	2864
	2866	2868	2870	2872	2874	2876	2878	2880	2882	2884	2886	2888	2890	2892	2894	2896
	2898	2900	2902	2904	2906	2908	2910	2912	2914	2916	2918	2920	2922	2924	2926	2928
	2930	2932	2934	2936	2938	2940	2942	2944	2946	2948	2950	2952	2954	2956	2958	2960
	2962	2964	2966	2968	2970	2972	2974	2976	2978	2980	2982	2984	2986	2988	2990	2992
	2994	2996	2998	3000	3002	3004	3006	3008	3010	3012	3014	3016	3018	3020	3022	3024
	3026	3028	3030	3032	3034	3036	3038	3040	3042	3044	3046	3048	3050	3052	3054	3056
	3058	3060	3062	3064	3066	3068	3070	3072	3074	3076	3078	3080	3082	3084	3086	3088
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	3122	3124	3126	3128	3130	3132	3134	3136	3138	3140	3142	3144	3146	3148	3150	3152
	3154	3156	3158	3160	3162	3164	3166	3168	3170	3172	3174	3176	3178	3180	3182	3184
	3186	3188	3190	3192	3194	3196	3198	3200	3202	3204	3206	3208	3210	3212	3214	3216
	3218	3220	3222	3224	3226	3228	3230	3232	3234	3236	3238	3240	3242	3244	3246	3248
	3250	3252	3254	3256	3258	3260	3262	3264	3266	3268	3270	3272	3274	3276	3278	3280
	3282	3284	3286	3288	3290	3292	3294	3296	3298	3300	3302	3304	3306	3308	3310	3312
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	3506	3508	3510	3512	3514	3516	3518	3520	3522	3524	3526	3528	3530	3532	3534	3536
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	3570	3572	3574	3576	3578	3580	3582	3584	3586	3588	3590	3592	3594	3596	3598	3600
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	3890	3892	3894	3896	3898	3900	3902	3904	3906	3908	3910	3912	3914	3916	3918	3920
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	3954	3956	3958	3960	3962	3964	3966	3968	3970	3972	3974	3976	3978	3980	3982	3984
	3986	3988	3990	3992	3994	3996	3998	4000	4002	4004	4006	4008	4010	4012	4014	4016
	4018	4020	4022	4024	4026	4028	4030	4032	4034	4036	4038	4040	4042	4044	4046	4048
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	4082	4084	4086	4088	4090	4092	4094	4096	4098	4100	4102	4104	4106	4108	4110	4112
	4114	4116	4118	4120	4122	4124	4126	4128	4130	4132	4134	4136	4138	4140	4142	4144
	4146	4148	4150	4152	4154	4156	4158	4160	4162	4164	4166	4168	4170	4172	4174	4176
	4178	4180	4182	4184	4186	4188	4190	4192	4194	4196	4198	4200	4202	4204	4206	4208
	4210	4212	4214	4216	4218	4220	4222	4224	4226	4228	4230	4232	4234	4236	4238	4240
	4242	4244	4246	4248	4250	4252	4254	4256	4258	4260	4262	4264	4266	4268	4270	4272
	4274	4276	4278	4280	4282	4284	4286	4288	4290	4292	4294	4296	4298	4300	4302	4304
	4306	4308	4310	4312	4314	4316	4318	4320	4322	4324	4326	4328	4330	4332	4334	4336
	4338	4340	4342	4344	4346	4348	4350	4352	4354	4356	4358	4360	4362	4364	4366	4368
	4370	4372	4374	4376	4378	4380	4382	4384	4386	4388	4390	4392	4394	4396	4398	4400
	4402	4404	4406	4408	4410	4412	4414	4416	4418	4420	4422	4424	4426	4428	4430	4432
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	4466	4468	4470	4472	4474	4476	4478	4480	4482	4484	4486	4488	4490	4492	4494	4496
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	4530	4532	4534	4536	4538	4540	4542	4544	4546	4548	4550	4552	4554	4556	4558	4560
	4562	4564	4566	4568	4570	4572	4574	4576	4578	4580	4582	4584	4586	4588	4590	4592
	4594	4596	4598	4600	4602	4604	4606	4608	4610	4612	4614	4616	4618	4620	4622	4624
	4626	4628	4630	4632	4634	4636	4638	4640	4642	4644	4646	4648	4650	4652	4654	4656
	4658	4660	4662	4664	4666	4668	4670	4672	4674	4676	4678	4680	4682	4684	4686	4688
	4690	4692	4694	4696	4698	4700	4702	4704	4706	4708	4710	4712	4714	4716	4718	4720
	4722	4724	4726	4728	4730	4732	4734	4736	4738	4740	4742	4744	4746	4748	4750	4752
	4754	4756	4758	4760	4762	4764	4766	4768	4770	4772	4774	4776	4778	4780	4782	4784
	4786	4788	4790	4792	4794	4796	4798	4800	4802	4804	4806	4808	4810	4812	4814	4816

SETTRA	9096	9105	9106	9107	9108	9111	9112	9113							
SETUP	1	439	1766												
SKIP	1	439	2254	2425	2569	4042	4093	4143	4193	4246	4299	4352	4405	4458	4511
	4564	4617	4670	4723	4776	4829	4882								
SLASH	1	439													
SPACE	439														
STARS	1	439	454	490	493	503	558	1469	1631	1633	1650	1652	1659	1662	1664
	1673	1683	1693	1697	1702	1704	1709	1712	1717	1719	1733	1735	1748	1763	1815
	1822	2040	2046	2051	2055	2060	2064	2146	2150	2161	2165	2209	2213	2247	2251
	2287	2291	2350	2354	2416	2420	2462	2469	2561	2566	2601	2608	2702	2709	2852
	2857	2929	2935	3023	3027	3133	3137	3254	3259	3360	3365	3452	3457	3561	3565
	3666	3671	3768	3772	3870	3876	3973	3977	4034	4039	4085	4090	4134	4140	4184
	4190	4236	4243	4289	4296	4342	4349	4395	4402	4448	4455	4501	4508	4554	4561
	4607	4614	4660	4667	4713	4720	4766	4773	4819	4826	4872	4879	4925	4932	5024
	5030	5121	5125	5181	5187	5246	5252	5320	5326	5385	5391	5459	5465	5524	5530
	5598	5604	5663	5669	5737	5743	5802	5808	5876	5882	5941	5947	6015	6021	6080
	6086	6154	6160	6219	6225	6293	6298	6391	6395	6488	6536	6538	6588	6590	6615
	6617	6665	6667	6685	6687	6720	6722	6741	6744	6754	6767	6771	6773	7203	7235
	8490	8556	8618	8634	8661	8731	8808	8875	8922	8963	8969	8998	9037	9075	
SURSU	1	439	1787												
TIME	2040	2294	2325	2716	2772	2910	2966	2950	3041	3147	3163	3270	3469	3575	3679
	3781	3983	3983	4048	4097	4147	4197	4252	4305	4358	4411	4464	4517	4570	4623
	4676	4729	4782	4835	4988	4943	4978	5040	5075	5140	5199	5273	5337	5412	5476
	5551	5615	5690	5754	5829	5893	5968	6032	6107	6171	6246	6323	6669		
TRESC	2851	3054	3176	3282	3373	3481	3587	3691	3793	3895					
TRMTRP	9096														
TYPBIN	1	439													
TYPDEC	1	439	6511	6518	6580	6594									
TYPNAM	1	439													
TYPNUM	1	439													
TYPOCS	1	439													
TYPOCT	1	439	1975	6417	6429	6441	6452	6463	6603	6610	6630	6637	6646	6653	6660
	6756	8887	8911												
TYPTXT	1	439	1805	1809	1840	1846	1852	1890	1911	1932	1953	1971	2017	2033	2391
	6409	6413	6425	6437	6448	6459	6507	6514	6552	6567	6592	6597	6605	6619	6624
	6632	6641	6648	6655	6752	6758									
XPCYSR	1751	5254	5393	5532	5671	5810	5949	6088	6227						
SSCMRE	501	540	541	542	543	544	545								
SSCMTH	501	546	547	548	549	550	551								
SSESCA	1	439													
SSNEWT	1	439	1815	2040	2146	2161	2209	2247	2287	2350	2416	2462	2561	2601	2702
	2852	2929	3023	3133	3254	3360	3452	3561	3666	3768	3870	3973	4034	4085	4134
	4184	4236	4289	4342	4395	4448	4501	4554	4607	4660	4713	4766	4819	4872	4925
	5024	5121	5181	5246	5320	5385	5459	5524	5598	5663	5737	5802	5876	5941	6015
	6080	6154	6219	6293	6391										
SSSET	9096	9105	9106	9107	9108	9111	9112	9113							
SSSKIP	1	439	2254	2425	2569	4042	4093	4143	4193	4246	4299	4352	4405	4458	4511
	4564	4617	4670	4723	4776	4829	4882								
.EQUAT	1	307	329												
.HEADC	1	307	308												
.K711	1	307	455												
.SETUP	1	307	1765												
.SUP	1	307	318												
.SUF	307	329													
.SAC	1	307	491												
.SAP	1														

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 CTRMC.F11 CROSS REFERENCE TABLE -- MACRO NAMES

NAME	AGE	SEX	HEIGHT	WEIGHT	HAIR	EYES	SKIN	MARKS	REMARKS
SMITH	30	M	5'8"	175	BROWN	BROWN	Fair	None	Good
JOHNSON	32	M	5'10"	185	BLACK	BLACK	Dark	Scars on arms	Excellent
WILLIAMS	28	F	5'6"	130	BROWN	BROWN	Fair	None	Good
BROWN	35	M	6'0"	200	BLACK	BLACK	Dark	Scars on back	Excellent
DAVIS	25	F	5'4"	120	BROWN	BROWN	Fair	None	Good
GARCIA	31	M	5'9"	170	BLACK	BLACK	Dark	Scars on arms	Excellent
MARTIN	29	F	5'7"	140	BROWN	BROWN	Fair	None	Good
RODRIGUEZ	33	M	5'11"	190	BLACK	BLACK	Dark	Scars on back	Excellent
WILSON	27	F	5'5"	125	BROWN	BROWN	Fair	None	Good
ANDERSON	34	M	6'1"	210	BLACK	BLACK	Dark	Scars on arms	Excellent
THOMAS	26	F	5'3"	115	BROWN	BROWN	Fair	None	Good
LEE	36	M	5'12"	205	BLACK	BLACK	Dark	Scars on back	Excellent
WALKER	24	F	5'2"	110	BROWN	BROWN	Fair	None	Good
YOUNG	37	M	6'2"	215	BLACK	BLACK	Dark	Scars on arms	Excellent
SCOTT	23	F	5'1"	105	BROWN	BROWN	Fair	None	Good
GREEN	38	M	6'3"	220	BLACK	BLACK	Dark	Scars on back	Excellent
ADAMS	22	F	5'0"	100	BROWN	BROWN	Fair	None	Good
NEAL	39	M	6'4"	225	BLACK	BLACK	Dark	Scars on arms	Excellent
BELT	21	F	4'11"	95	BROWN	BROWN	Fair	None	Good
WATSON	40	M	6'5"	230	BLACK	BLACK	Dark	Scars on back	Excellent
FRANK	20	F	4'10"	90	BROWN	BROWN	Fair	None	Good
ROBERTS	41	M	6'6"	235	BLACK	BLACK	Dark	Scars on arms	Excellent
TURNER	19	F	4'9"	85	BROWN	BROWN	Fair	None	Good
PHILLIPS	42	M	6'7"	240	BLACK	BLACK	Dark	Scars on back	Excellent
CAMPBELL	18	F	4'8"	80	BROWN	BROWN	Fair	None	Good
MITCHELL	43	M	6'8"	245	BLACK	BLACK	Dark	Scars on arms	Excellent
PEREZ	17	F	4'7"	75	BROWN	BROWN	Fair	None	Good
ROBERTSON	44	M	6'9"	250	BLACK	BLACK	Dark	Scars on back	Excellent
WRIGHT	16	F	4'6"	70	BROWN	BROWN	Fair	None	Good
COOPER	45	M	6'10"	255	BLACK	BLACK	Dark	Scars on arms	Excellent
BAKER	15	F	4'5"	65	BROWN	BROWN	Fair	None	Good
WATKINS	46	M	6'11"	260	BLACK	BLACK	Dark	Scars on back	Excellent
WATSON	14	F	4'4"	60	BROWN	BROWN	Fair	None	Good
WATSON	47	M	7'0"	265	BLACK	BLACK	Dark	Scars on arms	Excellent
WATSON	13	F	4'3"	55	BROWN	BROWN	Fair	None	Good
WATSON	48	M	7'1"	270	BLACK	BLACK	Dark	Scars on back	Excellent
WATSON	12	F	4'2"	50	BROWN	BROWN	Fair	None	Good
WATSON	49	M	7'2"	275	BLACK	BLACK	Dark	Scars on arms	Excellent
WATSON	11	F	4'1"	45	BROWN	BROWN	Fair	None	Good
WATSON	50	M	7'3"	280	BLACK	BLACK	Dark	Scars on back	Excellent
WATSON	10	F	4'0"	40	BROWN	BROWN	Fair	None	Good
WATSON	51	M	7'4"	285	BLACK	BLACK	Dark	Scars on arms	Excellent
WATSON	9	F	3'11"	35	BROWN	BROWN	Fair	None	Good
WATSON	52	M	7'5"	290	BLACK	BLACK	Dark	Scars on back	Excellent
WATSON	8	F	3'10"	30	BROWN	BROWN	Fair	None	Good
WATSON	53	M	7'6"	295	BLACK	BLACK	Dark	Scars on arms	Excellent
WATSON	7	F	3'9"	25	BROWN	BROWN	Fair	None	Good
WATSON	54	M	7'7"	300	BLACK				

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PERMANENT SYMBOLS

PERMANENT SYMBOLS	PERMANENT SYMBOLS	PERMANENT SYMBOLS	PERMANENT SYMBOLS	PERMANENT SYMBOLS	PERMANENT SYMBOLS	PERMANENT SYMBOLS	PERMANENT SYMBOLS	PERMANENT SYMBOLS	PERMANENT SYMBOLS	PERMANENT SYMBOLS	PERMANENT SYMBOLS	PERMANENT SYMBOLS	PERMANENT SYMBOLS	PERMANENT SYMBOLS	PERMANENT SYMBOLS
9063	9060	9058	9056	9054	9052	9050	9048	9046	9044	9042	9040	9038	9036	9034	9032
2011	2009	2007	2005	2003	2001	1999	1997	1995	1993	1991	1989	1987	1985	1983	1981
2235	2233	2231	2229	2227	2225	2223	2221	2219	2217	2215	2213	2211	2209	2207	2205
2690	2688	2686	2684	2682	2680	2678	2676	2674	2672	2670	2668	2666	2664	2662	2660
2896	2894	2892	2890	2888	2886	2884	2882	2880	2878	2876	2874	2872	2870	2868	2866
3062	3060	3058	3056	3054	3052	3050	3048	3046	3044	3042	3040	3038	3036	3034	3032
3462	3460	3458	3456	3454	3452	3450	3448	3446	3444	3442	3440	3438	3436	3434	3432
3819	3817	3815	3813	3811	3809	3807	3805	3803	3801	3799	3797	3795	3793	3791	3789
4156	4154	4152	4150	4148	4146	4144	4142	4140	4138	4136	4134	4132	4130	4128	4126
4427	4425	4423	4421	4419	4417	4415	4413	4411	4409	4407	4405	4403	4401	4399	4397
4738	4736	4734	4732	4730	4728	4726	4724	4722	4720	4718	4716	4714	4712	4710	4708
5016	5014	5012	5010	5008	5006	5004	5002	5000	4998	4996	4994	4992	4990	4988	4986
5282	5280	5278	5276	5274	5272	5270	5268	5266	5264	5262	5260	5258	5256	5254	5252
5485	5483	5481	5479	5477	5475	5473	5471	5469	5467	5465	5463	5461	5459	5457	5455
5699	5697	5695	5693	5691	5689	5687	5685	5683	5681	5679	5677	5675	5673	5671	5669
5902	5900	5898	5896	5894	5892	5890	5888	5886	5884	5882	5880	5878	5876	5874	5872
6116	6114	6112	6110	6108	6106	6104	6102	6100	6098	6096	6094	6092	6090	6088	6086
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DECB	8702	8705	8779	8790											
ENT	333														
HALT	445														
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K15

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

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70V

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1917	1926	1927	1938	1947	1948	1959	1966	1967	1969	1970	1975	1977	1978	1979
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3176	3180	3181	3182	3188	3189	3190	3191	3192	3193	3194	3211	3212	3213	3214
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4122	4123	4144	4145	4146	4159	4160	4161	4167	4168	4169	4170	4171	4172	4173
4194	4195	4196	4209	4210	4211	4217	4218	4219	4220	4221	4222	4223	4247	4248
4249	4250	4251	4264	4265	4266	4272	4273	4274	4275	4276	4277	4278	4300	4301
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4408	4409	4410	4423	4424	4425	4431	4432	4433	4434	4435	4436	4437	4459	4460
4461	4462	4463	4476	4477	4478	4484	4485	4486	4487	4488	4489	4490	4512	4513
4514	4515	4516	4529	4530	4531	4537	4538	4539	4540	4541	4542	4543	4565	4566
4567	4568	4569	4582	4583	4584	4590	4591	4592	4593	4594	4595	4596	4618	4619
4620	4621	4622	4635	4636	4637	4643	4644	4645	4646	4647	4648	4649	4671	4672
4673	4674	4675	4688	4689	4690	4696	4697	4698	4699	4700	4701	4702	4724	4725
4726	4727	4728	4741	4742	4743	4749	4750	4751	4752	4753	4754	4755	4777	4778
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4832	4833	4834	4847	4848	4849	4855	4856	4857	4858	4859	4860	4861	4883	4884
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5254	5255	5256	5257	5260	5261	5262	5263	5268	5269	5270	5271	5272	5285	5286
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5576	5577	5578	5606	5607	5608	5609	5610	5613	5614	5627	5628	5629	5635	5636
5637	5638	5639	5640	5641	5642	5671	5672	5673	5674	5677	5678	5679	5680	5685
5686	5687	5688	5689	5702	5703	5704	5710	5711	5712	5713	5714	5715	5716	5717
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5779	5780	5781	5810	5811	5812	5813	5816	5817	5818	5819	5824	5825	5826	5827
5828	5841	5842	5843	5849	5850	5851	5852	5853	5854	5855	5856	5884	5885	5886
5887	5888	5891	5892	5905	5906	5907	5913	5914	5915	5916	5917	5918	5919	5920
5949	5950	5951	5952	5955	5956	5957	5958	5963	5964	5965	5966	5967	5980	5981
5982	5988	5989	5990	5991	5992	5993	5994	5995	6023	6024	6025	6026	6027	6030
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6129	6130	6131	6132	6133	6134	6162	6163	6164	6165	6166	6169	6170	6183	6184
6185	6191	6192	6193	6194	6195	6196	6197	6198	6227	6228	6229	6230	6233	6234
6235	6236	6241	6242	6243	6244	6245	6258	6259	6260	6266	6267	6268	6269	6270
6271	6272	6273	6302	6308	6309	6310	6311	6321	6340	6341	6342	6348	6349	6350
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6518	6523	6547	6548	6581	6585	6601	6603	6609	6610	6612	6628	6630	6636	6637
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8580	8593	8605	8606	8608	8609	8612	8613	8620	8621	8622	8623	8624	8625	8626
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8680	8681	8685	8700	8754	8762	8763	8764	8770	8777	8795	8796	8797	8798	8799
8819	8820	8821	8822	8823	8824	8825	8830	8833	8853	8859	8860	8861	8862	8863
8865	8866	8882	8887	8896	8901	8906	8908	8912	8937	8942	8955	8958	8977	8978
9005	9006	9021	9022	9023	9024	9045	9046	9047	9048	9049	9051	9066	9067	9068
9069	9070	9081	9082	9086	9092	9093								
1784	2546	2552	2688	2694	2948	3125	3247	3353	3444	3552	3658	3762	3864	3966
8611	8682	8710	8718	8755	8756	8759	8760	8761	8765	8768	8769	8788	8828	8831
8945	8848	8857	8944	8981	8987	9010	9015	9054	9084					
8766	8827													
6527	6528	6529												

MOV8

NEG
NCP

M16

MASSBUS RMTD AND RH1: DIAGNOSTIC MACY11 27(732) 01-OCT-76 09:03 PAGE 211
 DZRHBC.P11 CROSS REFERENCE TABLE -- PERMANENT SYMBOLS

RESET	6525														
ROL	1858	2433	2495	2595	2636	2764	6731	8772	8774	8775	8776	8778	9057	9059	9061
ROR	6558	6573													
RTI	1798	6613	6663	6770	8614	8652	8687	8800	8867	8960	8997	9025	9071	9094	
RTS	2144	6579	6684	6693	6698	6703	5708	6713	6718	6739	6762	8727	8910	9087	
SUB	6602	6629	9834	8943											
TRAP	9096	9105	9106	9107	9108	9111	9112	9113							
TST	1803	1830	1835	1862	1865	1868	1874	1899	1902	1908	1920	1923	1929	1941	1944
	1950	1962	1994	2003	2010	2065	2067	2076	2083	2091	2098	2106	2129	2175	2187
	2190	2222	2234	2253	2262	2274	2309	2359	2360	2365	2424	2445	2480	2493	2507
	2531	2568	2580	2620	2634	2648	2672	2731	2757	2787	2826	2861	2881	2895	2899
	2939	2944	2965	2977	2986	2991	3009	3013	3029	3035	3061	3141	3183	3263	3289
	3369	3380	3461	3488	3569	3594	3698	3776	3800	3878	3902	3998	4041	4063	4092
	4112	4142	4162	4192	4212	4245	4267	4298	4320	4351	4373	4404	4426	4457	4479
	4510	4532	4563	4585	4616	4638	4669	4691	4722	4744	4775	4797	4828	4850	4881
	4903	4935	4958	4993	5032	5055	5090	5129	5155	5194	5213	5232	5258	5288	5333
	5352	5371	5397	5427	5472	5491	5510	5536	5566	5611	5630	5649	5675	5705	5750
	5769	5788	5814	5844	5889	5908	5927	5953	5983	6028	6047	6066	6092	6122	6167
	6186	6205	6231	6261	6306	6313	6315	6343	6366	6376	6383	6423	6423	6444	6455
	6483	6550	6565	6639	8576	8600	8684	8692	8714	8783	8839	8849	8914	8950	8956
	9065	9083													
TEST	1897	1918	1939	1960	3123	3245	3251	3442	3550	3656	3760	3862	3964	5013	5110
	5171	5176	5240	5314	5379	5453	5518	5592	5657	5731	5796	5870	5935	6009	6074
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	7679	7690	7719	7759	7770	7781	7791	7820	7855	7898	7922	7932	7948	7967	7987
	7997	8008	8019	8029	8039	8050	8059	8069	8081	8090	8208	8222	8236	8250	8264
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	554	557	1808	1812	1843	1849	1855	1894	1915	1936	1957	1974	2021	2036	2384
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	6824	6828	6833	6838	6813	6849	6855	6861	6867	6873	6881	6887	6893	6899	6905
	6911	6918	6927	6935	6943	6951	6959	6969	6978	6984	6991	6999	7009	7015	7024
	7032	7041	7049	7057	7063	7069	7075	7083	7090	7098	7105	7113	7120	7128	7135
	7143	7150	7158	7165	7173	7180	7188	7195	7208	7214	7220	7228	7234	7256	7266
	7273	7278	7284	7287	7294	7298	7302	7305	7312	7321	7326	7329	7334	7339	7343
	7348	7353	7359	7363	7370	7377	7382	7388	7401	7409	7421	7428	7434	7444	7452
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	7513	7514	7515	7518	7528	7533	7537	7541	7545	7566	7579	7581	7589	7609	7628
	7634	7641	7645	7663	7667	7675	7686	7698	7701	7714	7726	7730	7736	7742	7746
	7751	7767	7778	7788	7798	7802	7810	7815	7827	7832	7841	7846	7862	7867	7875
	7883	7890	7906	7908	7915	7929	7939	7955	7960	7974	7977	7984	7995	8004	8017
	8025	8035	8047	8056	8065	8077	8087	8097	8101	8109	8112	8121	8126	8132	8137
	8144	8153	8162	8171	8180	8189	8198	8203	8215	8229	8243	8257	8271	8282	8291
	8295	8301	8306	8317	8326	8335	8340	8345	8352	9359	8364	8368	8376	8381	8388
	8394	8398	8408	8656	8918	9029	9030	9031	9033						
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.BLKW	8872														
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	8803	8804	9026	9027											
.DSABL	8966														
.ENABL	1	307	8964												
.END	9114														
.ENOC	313	325	327	328	329	333	425	439	450	455	467	479	489	491	494
	498	500	504	508	510	538	546	552	553	554	555	555	1470	1632	1634

	4607	4609	4614	4616	4617	4660	4662	4667	4669	4670	4713	4715	4720	4722	4723
	4766	4768	4773	4775	4776	4819	4821	4826	4828	4829	4872	4874	4879	4881	4882
	4925	4927	4932	4934	4935	5024	5026	5030	5032	5121	5123	5125	5127	5181	5183
	5187	5189	5246	5248	5252	5254	5320	5322	5326	5328	5385	5387	5391	5393	5459
	5461	5465	5467	5524	5526	5530	5532	5598	5600	5604	5606	5663	5665	5667	5671
	5737	5739	5743	5745	5802	5804	5808	5810	5876	5878	5882	5894	5941	5943	5947
	5949	6015	6017	6021	6023	6080	6082	6086	6088	6154	6156	6160	6162	6219	6221
	6225	6227	6293	6295	6298	6300	6391	6393	6395	6397	6411	6415	6427	6439	6450
	6461	6488	6489	6490	6492	6493	6494	6496	6502	6505	6507	6509	6516	6525	6531
	6533	6534	6650	6657	6654	6655	6657	6685	6590	6599	6607	6615	6617	6622	6626
	6634	6643	6650	6657	6654	6655	6657	6685	6720	6722	6741	6744	6754	6760	6764
	6767	6771	6773	7203	7205	8490	8556	8559	8564	8569	8591	8583	8584	8585	8587
	8588	8589	8598	8600	8608	8609	8614	8615	8616	8618	8628	8629	8634	8641	8642
	8650	8652	8656	8661	8682	8731	8808	8875	8890	8906	8922	8925	8935	8938	8945
	8947	8948	8950	8953	8960	8961	8963	8965	8966	8969	8970	8998	9006	9007	9011
	9012	9028	9029	9035	9037	9040	9052	9075	9081	9085	9096	9105	9106	9107	9108
	9109	9110	9111	9112	9113	9114									
.IFF	325	327	328	329	333	455	491	494	498	500	504	507	509	538	559
	1470	1632	1634	1651	1653	1660	1663	1665	1674	1684	1694	1698	1703	1705	1710
	1713	1718	1720	1734	1736	1749	1764	1772	1816	1817	1823	1824	1825	2041	2042
	2047	2048	2049	2052	2056	2061	2065	2147	2148	2151	2152	2162	2163	2166	2167
	2168	2210	2211	2214	2215	2248	2249	2252	2253	2255	2288	2289	2292	2293	2351
	2352	2355	2356	2417	2418	2421	2422	2426	2463	2464	2470	2471	2562	2563	2567
	2568	2570	2602	2603	2609	2610	2703	2704	2710	2711	2853	2854	2858	2859	2930
	2931	2936	2937	2938	3024	3025	3028	3029	3134	3135	3138	3139	3255	3256	3260
	3261	3361	3362	3366	3367	3453	3454	3458	3459	3562	3563	3566	3567	3667	3668
	3672	3673	3769	3770	3773	3774	3871	3872	3877	3878	3974	3975	3978	3979	4035
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	4186	4191	4192	4194	4237	4238	4244	4245	4247	4290	4291	4297	4298	4300	4343
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	4503	4509	4510	4512	4555	4556	4562	4563	4565	4608	4609	4615	4616	4618	4661
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	4821	4827	4828	4830	4873	4874	4880	4881	4883	4926	4927	4933	4934	4935	5025
	5026	5031	5032	5122	5123	5126	5127	5182	5183	5188	5189	5247	5248	5253	5254
	5321	5322	5327	5328	5386	5387	5392	5393	5460	5461	5466	5467	5525	5526	5531
	5532	5599	5600	5605	5606	5664	5665	5670	5671	5738	5739	5744	5745	5803	5804
	5809	5810	5877	5878	5883	5884	5942	5943	5948	5949	6016	6017	6022	6023	6081
	6082	6087	6088	6155	6156	6161	6162	6220	6221	6226	6227	6294	6295	6299	6300
	6392	6393	6396	6397	6489	6493	6497	6503	6506	6533	6537	6539	6589	6591	6616
	6618	6666	6668	6686	6688	6721	6723	6742	6745	6765	6768	6772	6774	7204	7206
	8491	8557	8582	8585	8586	8589	8615	8619	8635	8652	8662	8732	8809	8876	8891
	8920	8923	8925	8938	8960	8961	8964	8966	8970	8972	8977	8998	8999	9008	9012
	9029	9038	9076	9082											
.IFT	1808	1812	1843	1849	1855	1894	1915	1936	1957	1974	2021	2036	2384	6412	6416
	6428	6440	6451	6462	6510	6517	6555	6570	6596	6600	6608	6623	6627	6635	6644
.IFTF	6651	6658	6755	6761	8597	8948	8972	8977	9056	9072	9073				
	1808	1812	1843	1849	1855	1894	1915	1936	1957	1974	2021	2036	2384	6412	6416
	6428	6440	6451	6462	6510	6517	6555	6570	6596	6600	6608	6623	6627	6635	6644
	6651	6658	6755	6761	8535	8947	8966	8970	8973	9052	9056	9072			
.IIF	308	313	318	322	323	324	325	328	329	445	558	1773	1776	1782	1783
	1785	1786	1976	6418	6430	6442	6453	6464	6490	6497	6498	6512	6519	6533	6534
	6582	6586	6604	6611	6631	6638	6647	6654	6661	6757	8560	8561	8562	8563	8564
	8565	8569	8596	8597	8612	8615	8616	8729	8888	8913	8926	8927	8928	8929	8930
	8935	8953	8960	8961	8964	9021	9029	9035	9104	9105	9106	9107	9108	9111	9112
	9113														
.IRP	1766	1815	2040	2146	2161	2209	2247	2287	2350	2416	2462	2561	2601	2702	2852

	2929	3023	3133	3254	3360	3452	3561	3666	3768	3870	3973	4034	4085	4134	4184
	4236	4289	4342	4395	4446	4501	4554	4607	4660	4713	4766	4819	4872	4925	5024
	5121	5181	5246	5320	5385	5459	5524	5598	5663	5737	5802	5876	5941	6015	6080
	6154	6219	6293	6391	6422	6428	6441	6442	6419	6459	6407	6068			
.LIST	1	307	328	439	445	538	540	541	542	543	544	545	546	547	548
	549	550	551	552	1766	1787	1803	1808	1812	1815	1824	1843	1849	1855	1894
	1915	1936	1957	1974	2021	2036	2040	2048	2146	2152	2161	2167	2209	2215	2247
	2253	2287	2293	2350	2356	2384	2416	2422	2462	2471	2561	2568	2601	2610	2702
	2711	2852	2859	2929	2937	3023	3029	3133	3139	3254	3261	3360	3367	3452	3459
	3561	3567	3666	3673	3768	3774	3870	3878	3973	3979	4034	4041	4085	4092	4134
	4142	4184	4192	4236	4245	4289	4298	4342	4351	4395	4404	4448	4457	4501	4510
	4554	4563	4607	4616	4660	4669	4713	4722	4766	4775	4819	4828	4872	4881	4925
	4934	5024	5032	5121	5127	5181	5189	5246	5254	5320	5328	5385	5393	5459	5467
	5524	5532	5598	5606	5663	5671	5737	5745	5802	5810	5876	5884	5941	5949	6015
	6023	6080	6088	6154	6162	6219	6227	6293	6300	6391	6397	6412	6416	6428	6440
	6451	6462	6497	6510	6517	6525	6555	6570	6596	6600	6608	6623	6627	6635	6644
	6651	6658	6755	6761	8564	8960	8998	9096	9104	9105	9106	9107	9108	9109	9111
	9112	9113	9114												
.MACRO	1	329	501	1751	1814	2040	2146	2160	2209	2247	2287	2350	2415	2461	2560
	2600	2701	2851	2852	2929	3023	3132	3254	3360	3560	3665	3768	3870	3973	4034
.MCALL	4085	4134	4184	4235	4925	5024	5121	5181	6293	6391	9096				
.MLIST	307	439	1787												
	1	307	328	439	445	538	540	541	542	543	544	545	546	547	548
	549	550	551	552	1766	1787	1803	1808	1812	1815	1824	1843	1849	1855	1894
	1915	1936	1957	1974	2021	2036	2040	2048	2146	2152	2161	2167	2209	2215	2247
	2253	2287	2293	2350	2356	2384	2416	2422	2462	2471	2561	2568	2601	2610	2702
	2711	2852	2859	2929	2937	3023	3029	3133	3139	3254	3261	3360	3367	3452	3459
	3561	3567	3666	3673	3768	3774	3870	3878	3973	3979	4034	4041	4085	4092	4134
	4142	4184	4192	4236	4245	4289	4298	4342	4351	4395	4404	4448	4457	4501	4510
	4554	4563	4607	4616	4660	4669	4713	4722	4766	4775	4819	4828	4872	4881	4925

E01

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DZRHBC.P11 CROSS REFERENCE TABLE -- PERMANENT SYMBOLS

ERRORS DETECTED: 0
DEFAULT GLOBALS GENERATED: 0

*DZRHBC, DZRHBC, SEQ/SOL/CRF/PAGNUM/NL: TOC=SYSMAC.SML(400,1066), DZRHBC(400,4571)
RUN-TIME: 70 105 17 SECONDS
RUN-TIME RATIO: 406/194=2.0
CORE USED: 38K (75 PAGES)