

DR70-A,B,C

DR70 REPAIR DIAG
CZDRMAO

AH-T420A-MC
FICHE 1 OF 2

OCT 1983
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IDENTIFICATION

PRODUCT CODE: AC-T419A-MC
PRODUCT NAME: CZDRMA0 DR70 REPAIR DIAG
PRODUCT DATE: FEBRUARY 25, 1983
MAINTAINER: CSS/GOVERNMENT NETWORKS GROUP DIAGNOSTIC ENGINEERING
COSTA MESA, CALIFORNIA
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0.0 MODIFICATION HISTORY

25-JAN-83 INITIAL DESIGN
23-FEB-83 REVISION A.0 SUBMITTED FOR RELEASE

1.0 GENERAL INFORMATION

1.1 PROGRAM ABSTRACT

THIS PROGRAM CONTAINS A SET OF TESTS WHICH WILL VERIFY THE INTEGRITY OF THE DR70 INTERFACE CABLED TO AN RH11 OR RH70 MASSBUS CONTROLLER. THE TESTS REQUIRE THAT THE USER INTERFACE TO THE DR70 BE DISCONNECTED AND THE M8432 TEST MODULE AND CABLING BE INSTALLED. TESTING THE INTERFACE IS LIMITED TO ONE UNIT ONLY.

THE DEFAULT SET OF TESTS WILL EXERCISE BOTH REVISION 'A' AND 'B' INTERFACE BOARDS. ADVANCED TEST(S) MAY BE SELECTED DEPENDING UPON THE OPERATING REQUIREMENTS OF THE DR70 INTERFACE ENVIRONMENT.

1.2 RELATED DOCUMENTS AND STANDARDS

THE USER SHOULD REFER TO THE FOLLOWING MANUALS/OPTION DESCRIPTIONS FOR MORE DETAILED INFORMATION.

DOCUMENT	REV	DESCRIPTION
CSS-WO-F-5.2-26		RH70 MASSBUS CONTROLLER OPTION DES.
CSS-WO-F-5.2.27		RH11 MASSBUS CONTROLLER OPTION DES.
YW-C084C-00	P1	DR70B MASSBUS CHANNEL INTERFACE OPTION DES.
AC-S296A-AC	A0	CIQPMAO XXDP+ PROGRAMMER'S MANUAL

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2.0 HARDWARE REQUIREMENTS

2.1 SYSTEM REQUIREMENTS

THE PROGRAM IS DESIGNED TO TEST THE OPTION ONLY ON THE PDP-11 FAMILY PROCESSORS, WITH AT LEAST 16K MEMORY. PRIOR TO INSTALLATION OF THE DR70 INTERFACE, THE SYSTEM MUST HAVE EITHER AN RH11 OF RH70 MASSBUS CONTROLLER INSTALLED.

2.2 MEDIA

THIS DIAGNOSTIC IS AVAILABLE FROM THE SOFTWARE DISTRIBUTION CENTER (SDC) ON MULTIMEDIA. REFER TO THE HARDWARE DOCUMENTATION KIT HANDBOOK FOR ORDERING INFORMATION.

2.3 DIAGNOSTIC HIERARCHY PREREQUISITES

BEFORE THE PROGRAM IS LOADED, THE RH11(RH70) MASSBUS CONTROLLER, THE DR70 AND THE M8432 TEST MODULE AND CABLING SHOULD BE INSTALLED ON THE PDP SYSTEM, AND CHECKED USING A FEW QUICK TESTS.

THE SYSTEM SHOULD BOOT XXDP+ PROPERLY: IMPROPER INSTALLATION MAY CAUSE THE BUS TO HANG, AND PREVENT ANY I/O FROM TAKING PLACE.

RH11(RH70) REGISTER ADDRESSING: THE RH11(RH70) REGISTERS SHOULD BE EXAMINED WITHOUT ADDRESS ERROR USING THE SWITCH REGISTER.

DR70 DRIVE TYPE: THE DRIVE TYPE REGISTER (CSR + 26) CONTENTS SHOULD BE EXAMINED TO DETERMINE THAT THE DR70 INTERFACE IS PRESENT ON THE MASSBUS, AND THE PROPER UNIT SELECT SWITCHES HAVE BEEN SET.

2.4 ASSUMPTIONS

ALL MASSBUS AND UNIBUS CABLING AND TERMINATORS ARE ASSUMED TO BE FUNCTIONING PROPERLY.

2.5 RESTRICTIONS

THIS DIAGNOSTIC SUPPORTS TESTING OF A SINGLE DR70 CABLED TO A DEDICATED MASSBUS CONTROLLER. THE USER INTERFACE MUST BE REMOVED AND REPLACED BY THE M8432 MAINTENANCE CARD.

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3.0 SOFTWARE REQUIREMENTS

3.1 DIAGNOSTIC SUPERVISOR

THIS DIAGNOSTIC HAS BEEN WRITTEN FOR USE WITH THE DIAGNOSTIC RUNTIME SERVICES SOFTWARE (SUPERVISOR). THESE SERVICES PROVIDE THE INTERFACE TO THE OPERATOR AND TO THE SOFTWARE ENVIRONMENT. THIS PROGRAM CAN BE USED WITH XXDP+, ACT, APT, SLIDE AND PAPER TAPE. FOR A COMPLETE DESCRIPTION OF THE RUNTIME SERVICES, REFER TO THE XXDP+ USER'S MANUAL. THERE IS A BRIEF DESCRIPTION OF THE RUNTIME SERVICES IN SECTION 4 OF THIS DOCUMENT.

3.2 REQUIRED FILES

THE DISTRIBUTION KIT SHOULD CONTAIN THE FOLLOWING FILES:

ZDRMA0.BIN	DIAGNOSTIC PROGRAM
ZDRMA0.HLP	DIAGNOSTIC HELP INFORMATION
DRS.HLP	SUPERVISOR HELP INFORMATION

3.3 ASSUMPTIONS

IT IS ASSUMED THAT THE OPERATOR IS FAMILIAR WITH THE PDP-11 SYSTEM USING THE DR70 OPTION, AND THAT THE OPERATOR HAS READ THIS PROGRAM DOCUMENTATION BEFORE ATTEMPTING TO LOAD THE DIAGNOSTIC.

4.0 OPERATING INSTRUCTIONS

THIS SECTION CONTAINS A BRIEF DESCRIPTION OF THE RUNTIME SERVICES.
FOR DETAILED INFORMATION, REFER TO THE XXDP+ USER'S MANUAL (CHQUS).

4.1 COMMANDS

THERE ARE ELEVEN LEGAL COMMANDS FOR THE DIAGNOSTIC RUNTIME SERVICES
(SUPERVISOR). THIS SECTION LISTS THE COMMANDS AND GIVES A VERY
BRIEF DESCRIPTION OF THEM. THE XXDP+ USER'S MANUAL HAS MORE DETAILS.

COMMAND	EFFECT
-----	-----
START	START THE DIAGNOSTIC FROM AN INITIAL STATE
RESTART	START THE DIAGNOSTIC WITHOUT INITIALIZING
CONTINUE	CONTINUE AT TEST THAT WAS INTERRUPTED (AFTER ^C)
PROCEED	CONTINUE FROM AN ERROR HALT
EXIT	RETURN TO XXDP+ MONITOR (XXDP+ OPERATION ONLY!)
ADD	ACTIVATE A UNIT FOR TESTING (ALL UNITS ARE CONSIDERED TO BE ACTIVE AT START TIME
DROP	DEACTIVATE A UNIT
PRINT	PRINT STATISTICAL INFORMATION (IF IMPLEMENTED BY THE DIAGNOSTIC - SECTION 7.0)
DISPLAY	TYPE A LIST OF ALL DEVICE INFORMATION
FLAGS	TYPE THE STATE OF ALL FLAGS (SEE SECTION 4.3)
ZFLAGS	CLEAR ALL FLAGS (SEE SECTION 4.3)

A COMMAND CAN BE RECOGNIZED BY THE FIRST THREE CHARACTERS. SO
YOU MAY, FOR EXAMPLE, TYPE "STA" INSTEAD OF "START".

4.2 SWITCHES

THERE ARE SEVERAL SWITCHES WHICH ARE USED TO MODIFY SUPERVISOR OPERATION. THESE SWITCHES ARE APPENDED TO THE LEGAL COMMANDS. ALL OF THE LEGAL SWITCHES ARE TABULATED BELOW WITH A BRIEF DESCRIPTION OF EACH. IN THE DESCRIPTIONS BELOW, A DECIMAL NUMBER IS DESIGNATED BY 'DDDDD'.

SWITCH	EFFECT
-----	-----
/TESTS:LIST	EXECUTE ONLY THOSE TESTS SPECIFIED IN THE LIST. LIST IS A STRING OF TEST NUMBERS, FOR EXAMPLE - /TESTS:1:5:7-10. THIS LIST WILL CAUSE TESTS 1,5,7,8,9,10 TO BE RUN. ALL OTHER TESTS WILL NOT BE RUN.
/PASS:DDDDD	EXECUTE DDDDD PASSES (DDDDD = 1 TO 64000)
/FLAGS:FLGS	SET SPECIFIED FLAGS. FLAGS ARE DESCRIBED IN SECTION 4.3.
/EOP:DDDDD	REPORT END OF PASS MESSAGE AFTER EVERY DDDDD PASSES ONLY. (DDDDD = 1 TO 64000)
/UNITS:LIST	TEST/ADD/DROP ONLY THOSE UNITS SPECIFIED IN THE LIST. LIST EXAMPLE - /UNITS:0:5:10-12 USE UNITS 0,5,10,11,12 (UNIT NUMBERS = 0-63)

EXAMPLE OF SWITCH USAGE:

START/TESTS:1-5/PASS:1000/EOP:100

THE EFFECT OF THIS COMMAND WILL BE: 1) TESTS 1 THROUGH 5 WILL BE EXECUTED, 2) ALL UNITS WILL TESTED 1000 TIMES AND 3) THE END OF PASS MESSAGES WILL BE PRINTED AFTER EACH 100 PASSES ONLY. A SWITCH CAN BE RECOGNIZED BY THE FIRST THREE CHARACTERS. YOU MAY, FOR EXAMPLE, TYPE '/TES:1-5' INSTEAD OF '/TESTS:1-5'.

BELOW IS A TABLE THAT SPECIFIES WHICH SWITCHES CAN BE USED BY EACH COMMAND.

	TESTS	PASS	FLAGS	EOP	UNITS
-----	-----	-----	-----	-----	-----
START	X	X	X	X	X
RESTART	X	X	X	X	X
CONTINUE		X	X	X	
PROCEED			X		
DROP					X
ADD					X
PRINT					
DISPLAY					X
FLAGS					
ZFLAGS					
EXIT					

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4.3 FLAGS

FLAGS ARE USED TO SET UP CERTAIN OPERATIONAL PARAMETERS SUCH AS LOOPING ON ERROR. ALL FLAGS ARE CLEARED AT STARTUP AND REMAIN CLEARED UNTIL EXPLICITLY SET USING THE FLAGS SWITCH. FLAGS ARE ALSO CLEARED AFTER A START COMMAND UNLESS SET USING THE FLAG SWITCH. THE ZFLAGS COMMAND MAY ALSO BE USED TO CLEAR ALL FLAGS. WITH THE EXCEPTION OF THE START AND ZFLAGS COMMANDS, NO COMMANDS AFFECT THE STATE OF THE FLAGS; THEY REMAIN SET OR CLEARED AS SPECIFIED BY THE LAST FLAG SWITCH.

FLAG	EFFECT
-----	-----
HOE	HALT ON ERROR - CONTROL IS RETURNED TO RUNTIME SERVICES COMMAND MODE
LOE	LOOP ON ERROR
IER*	INHIBIT ALL ERROR REPORTS
IBE*	INHIBIT ALL ERROR REPORTS EXCEPT FIRST LEVEL (FIRST LEVEL CONTAINS ERROR TYPE, NUMBER, PC, TEST AND UNIT)
IXE*	INHIBIT EXTENDED ERROR REPORTS (THOSE CALLED BY PRINTX MACRO'S)
PRI	DIRECT MESSAGES TO LINE PRINTER
PNT	PRINT TEST NUMBER AS TEST EXECUTES
BOE	'BELL' ON ERROR
UAM	UNATTENDED MODE (NO MANUAL INTERVENTION)
ISR	INHIBIT STATISTICAL REPORTS (DOES NOT APPLY TO DIAGNOSTICS WHICH DO NOT SUPPORT STATISTICAL REPORTING)
IDR	INHIBIT PROGRAM DROPPING OF UNITS
ADR	EXECUTE AUTODROP CODE
LOT	LOOP ON TEST
EVL	EXECUTE EVALUATION (ON DIAGNOSTICS WHICH HAVE EVALUATION SUPPORT)

* ERROR MESSAGES ARE DESCRIBED IN SECTION 3.1

SEE THE XXDP+ USER'S MANUAL FOR MORE DETAILS ON FLAGS. YOU MAY SPECIFY MORE THAN ONE FLAG WITH THE FLAG SWITCH. FOR EXAMPLE, TO CAUSE THE PROGRAM TO LOOP ON ERROR, INHIBIT ERROR REPORTS AND TYPE A 'BELL' ON ERROR, YOU MAY USE THE FOLLOWING STRING:

/FLAGS:LOE:IER:BOE

4.4 HARDWARE QUESTIONS

WHEN A DIAGNOSTIC IS STARTED, THE RUNTIME SERVICES WILL PROMPT THE USER FOR HARDWARE INFORMATION BY TYPING "CHANGE HW (L) ?". YOU MUST ANSWER "Y" AFTER A START COMMAND UNLESS THE HARDWARE INFORMATION HAS BEEN "PRELOADED" USING THE SETUP UTILITY (SEE CHAPTER 6 OF THE XXDP+ USER'S MANUAL). WHEN YOU ANSWER THIS QUESTION WITH A "Y", THE RUNTIME SERVICES WILL ASK FOR THE NUMBER OF UNITS (IN DECIMAL). YOU WILL THEN BE ASKED THE FOLLOWING QUESTIONS FOR EACH UNIT.

CHANGE HW (L) ?

UNITS (D) ?

UNIT 0

DEVICE ADDRESS (D) 172440 ?

VECTOR ADDRESS (D) 224 ?

PRIORITY (D) 5 ?

DRIVE (D) 0 ?

UPON INITIAL LOADING OF THE PROGRAM, THE OPERATOR MAY ELECT TO UTILIZE THE ABOVE DEFAULT P-TABLE VALUES, WHICH HAVE ALREADY BEEN ASSEMBLED INTO THE PROGRAM. ADDITIONALLY, THE OPERATOR MAY CHOOSE TO MODIFY THE DEFAULT P-TABLE VALUES BY ANSWERING THE HARDWARE QUESTIONS TO BUILD THE HARDWARE P-TABLE FOR UNIT 0. THE OPERATOR MUST SPECIFY BOTH THE DEVICE AND INTERRUPT VECTOR ADDRESSES OF THE INTERFACE, WHICH ARE SELECTED BY THE APPROPRIATE JUMPERS ON THE RH11 OR RH70 CONTROLLER ADDRESS BOARD. IN ADDITION, THE OPERATOR MUST SPECIFY THE BUS REQUEST INTERRUPT PRIORITY AND THE DRIVE NO. SELECTED FOR THE INTERFACE.

THE DEFAULT VALUES PRESENT ARE PROVIDED TO AVOID CONFLICT WITH THE STANDARD PDP-11 SYSTEMDEVICE ADDRESSES. CONSULT THE PDP-11 PERIPHERALS HANDBOOK FOR THE STANDARD ASSIGNMENTS.

4.5 SOFTWARE QUESTIONS

AFTER YOU HAVE ANSWERED THE HARDWARE QUESTIONS OR AFTER A RESTART OR CONTINUE COMMAND, THE RUNTIME SERVICES WILL ASK FOR SOFTWARE PARAMETERS. THESE PARAMETERS WILL GOVERN SOME DIAGNOSTIC SPECIFIC OPERATION MODES. YOU WILL BE PROMPTED BY "CHANGE SW (L) ?" IF YOU WISH TO CHANGE ANY PARAMETERS, ANSWER BY TYPING "Y". THE SOFTWARE QUESTIONS AND THE DEFAULT VALUES ARE DESCRIBED IN THE NEXT PARAGRAPH(S).

4.5.1 SOFTWARE PARAMETER CONTROL

THE SOFTWARE QUESTION PARAMETERS ARE USED BY THE PROGRAM TO BUILD A TEST SELECTION WORD, WHICH CONTROLS DEFAULT AND OPTIONAL INTERFACE TESTING. THIS APPROACH ALLOWS EASY MODIFICATION OF INDIVIDUAL TEST EXECUTION CRITERIA, IF REQUIRED. THE TEST SELECTION MASK IS REBUILT EACH PASS, AND MAY BE MODIFIED AFTER ANY START, RESTART OR CONTINUE COMMAND. NOTE THAT ALL PARAMETER DEFAULT VALUES ARE INITIALLY CLEARED, WHICH OMITTS ALL OPTIONAL TESTING.

4.5.2 SOFTWARE QUESTION DESCRIPTIONS

(1) REVISION 'A' INTERFACE (L) N ?

A 'Y' RESPONSE TO THIS QUESTION WILL ADD/OMIT ALL TEST SECTIONS WHICH APPLY TO THE REVISION 'A' DR70 INTERFACE.

(2) ATO ATTN DISABLED [SW4 'OFF'] (L) N ?

A 'Y' RESPONSE TO THIS QUESTION WILL BOTH ADD THE OPTIONAL TEST FOR SWITCH 4 DESCRIBED IN SECTION 8.4.3 AND OMIT THE USER ATTENTION TEST DESCRIBED IN SECTION 8.1.6. NOTE THIS QUESTION ONLY APPLIES TO REVISION 'B' DR70 INTERFACE TESTING.

(3) AT3 ATTN DISABLED [SW5 'OFF'] (L) N ?

A 'Y' RESPONSE TO THIS QUESTION WILL BOTH ADD THE OPTIONAL TEST FOR SWITCH 5 DESCRIBED IN SECTION 8.4.4, AND OMIT THE USER ATTENTION TEST DESCRIBED IN SECTION 8.1.6. NOTE THIS QUESTION ONLY APPLIES TO REVISION 'B' DR70 INTERFACE TESTING.

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(4) AT3 TRANSFER ABORT DISABLED [SW6 'OFF'] (L) N ?

A 'Y' RESPONSE TO THIS QUESTION WILL ADD THE OPTIONAL TEST FOR SWITCH 6 DESCRIBED IN SECTION 8.4.5. NOTE THIS QUESTION ONLY APPLIES TO REVISION 'B' DR70 INTERFACE TESTING.

(5) BYTE MODE OPERATION [SW7 'ON'] (L) N ?

THIS QUESTION WILL ALLOW THE OPERATOR TO MAKE ALL INTERFACE DATA TRANSFER TESTING IN BYTE MODE. REFER TO THE BYTE MODE TESTS DESCRIBED IN SECTION 8.3.

(6) INPUT PARITY DISABLED [SW8 'OFF'] (L) N ?

THIS QUESTION WILL DISABLE THE PARITY GENERATION TEST DESCRIBED IN SECTION 8.4.2. NOTE THAT THIS QUESTION IS USEFUL ONLY FOR DR70 'B' BOARDS WITHOUT THE INVERT PARITY LOGIC ECO.

(7) OPERATOR SPECIFIED DATA PATTERN (L) N ?

THIS QUESTION WILL ENABLE THE OPERATOR TO SPECIFY DATA PATTERN AND TRANSFER BLOCK SIZE FOR EITHER BYTE OR WORD MODE TESTS DESCRIBED IN SECTIONS 8.4.6 AND 8.4.7.

(8) ADJUST TRANSFER BANDWIDTH (L) N ?

THIS QUESTION WILL ALLOW THE OPERATOR TO MAKE ADJUSTMENTS TO THE SCLK TRANSFER PERIOD. A 'Y' RESPONSE WILL CAUSE THE TEST IN 8.4.8 TO BE EXECUTED BEFORE THE END OF PASS.

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4.6 OPERATOR HELP INFORMATION

TWO HELP FILES HAVE BEEN CREATED TO AID THE OPERATOR IN RUNNING THE PROGRAM. THE FILES CONTAIN THE MOST USEFUL INFORMATION CONTAINED IN THIS DOCUMENT. NOTE THE OPERATOR IS ASKED IF HE WANTS THE INFORMATION DISPLAYED ONLY ONCE EACH TIME THE PROGRAM IS LOADED, AFTER ALL SOFTWARE QUESTIONS HAVE BEEN ANSWERED. THE DEFAULT RESPONSE TO EACH QUESTION IS NEGATIVE.

PRINT SUPERVISOR HELP FILE: DRS.HLP (L) N ?

PRINT DIAGNOSTIC HELP FILE: ZDRMA0.HLP (L) N ?

4.7 EXTENDED P-TABLE DIALOGUE

WHEN YOU ANSWER THE HARDWARE QUESTIONS, YOU ARE BUILDING ENTRIES IN A TABLE THAT DESCRIBES THE DEVICES UNDER TEST. THIS PROGRAM IS DESIGNED TO TEST ONLY ONE DR70 INTERFACE UNIT (0-7).

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4.8 SAMPLE PROGRAM EXECUTION

THE FOLLOWING SAMPLE PROGRAM EXECUTION WILL ILLUSTRATE THE MINIMUM REQUIRED COMMANDS NECESSARY TO EXECUTE THE DEFAULT TESTS. NOTE THAT THIS EXAMPLE CAN BE USED ONLY IF ALL DEFAULT HARDWARE AND SOFTWARE CONDITIONS HAVE BEEN MET. OPERATOR INPUT IS DENOTED BY THE UNDERLINED TEXT. EXECUTION TIME FOR A SINGLE PASS IS APPROXIMATELY ONE SECOND.

```
.RUN ZDRMA0 <CR>
-----
ZDRMA0.BIN
DIAG. RUN-TIME SERVICES
ZDRM-A-0
DR70 REPAIR DIAGNOSTIC
UNIT IS DR70 MASSBUS INTERFACE
RESTART ADDR: 146730
DR>START/PASS:1 <CR>
-----
CHANGE HW (L)   ? N <CR>
-----
CHANGE SW (L)   ? N <CR>
-----
PRINT SUPERVISOR HELP FILE: DRS.HLP (L) N ? N <CR>
-----
PRINT DIAGNOSTIC HELP FILE: ZDRMA0.HLP (L) N ? N <CR>
-----
ZDRM EOP      1
      0 CUMULATIVE ERRORS
DR>
```

WHEN YOU FOLLOW THIS PROCEDURE YOU WILL BE USING ONLY THE DEFAULTS FOR FLAGS AND SOFTWARE PARAMETERS. THESE DEFAULTS ARE DESCRIBED IN SECTIONS 4.3 AND 4.5.

4.9 SW1 DEFAULT SWITCH POSITIONS

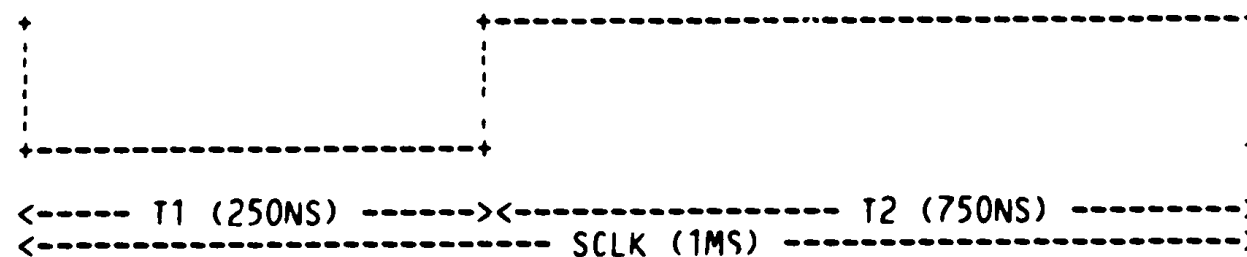
THE FOLLOWING TABLE SHOWS THE NECESSARY SWITCH POSITIONS REQUIRED FOR EXECUTION OF THE DEFAULT TESTS.

SWITCH(S)	DESCRIPTION	DEFAULT POSITION
SW1-1 SW1-2 SW1-3	MASSBUS DRIVE SELECT BITS 1-3 (SW1-1 IS LSB)	ALL THREE SWITCHES MUST BE CLOSED (ON) TO TEST DRIVE ZERO
SW1-4	ATO USER ATTENTION ENABLE	ATO ATTN. ENABLED (ON)
SW1-5	AT3 USER ATTENTION ENABLE	AT3 ATTN. ENABLED (ON)
SW1-6	AT3 TRANSFER ABORT ENABLE	AT3 ABORT ENABLED (ON)
SW1-7	DR70 BYTE MODE OPERATION	WORD MODE XFERS (OFF)
SW1-8	USER INPUT PARITY ENABLE	PARITY ENABLED (ON)

4.10 TRANSFER RATE ADJUSTMENT

THE DR70 MASSBUS DATA TRANSFER RATE IS CONTROLLED BY AN ON-BOARD SYNC CLOCK (SCLK) PULSE. THIS TRANSFER RATE HAS BEEN FACTORY SET AT 1 MHZ BEFORE SHIPMENT. THIS RATE MAY BE SET TOO FAST FOR SOME SYSTEMS, PRODUCING DATA LATE (DLT) ERRORS AT THE MASSBUS CONTROLLER. IN THIS CASE, THE DR70 SCLK SHOULD BE ADJUSTED BY EXECUTING TEST 27 (BANDWIDTH ADJUSTMENT) AND PLACING AN OCILLISCOPE PROBE ON THE M8440 BOARD TEST POINT (TP1). THE FREQUENCY ADJUSTMENT IS MADE USING THE TWO CALIBRATION POTENTIOMETERS, R57 AND R32. NOTE THAT R57 CONTROLS THE SCLK LOW PULSE WIDTH (T1) AND SHOULD BE SET AT NO LESS THAN 250 NS FOR PROPER OPERATION. THIS DIAGNOSTIC WILL PASS ALL DATA TRANSFER TESTS WITH SCLK SET AT A MAXIMUM RATE OF 1.12 MHZ ON BOTH RH70 AND RH11 MASSBUS CONTROLLERS.

DR70 SYNC CLOCK (SCLK) PULSE WITH MINIMUM TIMES.



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5.0 DEVICE INFORMATION TABLES

THE DR70 P-TABLE ENTRY CONTAINS ONLY THE MINIMUM INFORMATION REQUIRED TO ADDRESS THE DEVICE AND SERVICE INTERRUPTS. NOTE THAT THESE PARAMETERS ARE DETERMINED BY JUMPERS ON THE RH11 OR RH70 MASSBUS CONTROLLER ADDRESS BOARD. REFER TO SECTION 4.4 FOR THE HARDWARE PARAMETER QUESTIONS AND DEFAULT VALUES.

DEVICE ADDRESS: THIS PARAMETER SPECIFIES THE UNIBUS BASE ADDRESS FOR THE MASSBUS CONTROLLER. ALL REGISTERS ARE MAPPED ONTO THE BUS STARTING AT THIS ADDRESS.

VECTOR ADDRESS: THIS PARAMETER SPECIFIES THE INTERRUPT SERVICE ADDRESS VECTOR FOR THE DEVICE, WHICH MUST CONTAIN THE SERVICE ROUTINE START ADDRESS.

PRIORITY: THIS PARAMETER SPECIFIES THE DEVICE INTERRUPT PRIORITY, WHICH DETERMINES AT WHAT PRIORITY THE SERVICE ROUTINE WILL RUN.

DRIVE: THIS PARAMETER CORRESPONDES TO THE DRIVE OR UNIT SELECT SWITCHES SET ON THE INTERFACE.

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6.0 ERROR INFORMATION

THERE ARE THREE LEVELS OF ERROR MESSAGES THAT MAY BE ISSUED BY A DIAGNOSTIC: GENERAL, BASIC AND EXTENDED. GENERAL ERROR MESSAGES ARE ALWAYS PRINTED UNLESS THE "IER" FLAG IS SET (SECTION 4.3). THE GENERAL ERROR MESSAGE IS OF THE FORM:

NAME TYPE NUMBER ON UNIT NUMBER TST NUMBER PC:XXXXXX
ERROR MESSAGE

NAME = DIAGNOSTIC NAME
TYPE = ERROR TYPE (SYS FATAL, DEV FATAL, HARD OR SOFT)
NUMBER = ERROR NUMBER
UNIT NUMBER = 0 - N (N IS LAST UNIT IN PTABLE)
TST NUMBER = TEST AND SUBTEST WHERE ERROR OCCURRED
PC:XXXXXX = ADDRESS OF ERROR MESSAGE CALL

BASIC ERROR MESSAGES ARE MESSAGES THAT CONTAIN SOME ADDITIONAL INFORMATION ABOUT THE ERROR. THESE ARE ALWAYS PRINTED UNLESS THE "IER" OR "IBR" FLAGS ARE SET (SECTION 4.3). THESE MESSAGES ARE PRINTED AFTER THE ASSOCIATED GENERAL MESSAGE.

EXTENDED ERROR MESSAGES CONTAIN SUPPLEMENTARY ERROR INFORMATION SUCH AS REGISTER CONTENTS OR GOOD/BAD DATA. THESE ARE ALWAYS PRINTED UNLESS THE "IER", "IBR" OR "IXR" FLAGS ARE SET (SECTION 4.3). THESE MESSAGES ARE PRINTED AFTER THE ASSOCIATED GENERAL ERROR MESSAGE AND ANY ASSOCIATED BASIC ERROR MESSAGES.

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6.1 BASIC ERROR MESSAGES

ALL BASIC ERROR MESSAGES ARE DESIGNED TO BE SPECIFIC AND SELF-EXPLANATORY. PLEASE REFER TO THE DIAGNOSTIC PROGRAM LISTING GLOBAL TEXT SECTION FOR A COMPLETE LIST OF THE BASIC ERROR MESSAGES.

6.1.1 REGISTER VALUE/ADDRESSING ERRORS

- 'REGISTER ADDRESS ERROR'
- 'NON-EXISTENT DRIVE ERROR'
- 'REGISTER INITIALIZATION ERROR'
- 'REGISTER ERROR'
- 'CS1 FUNCTION BIT ERROR'
- 'FUNCTION STATUS BIT ERROR'

6.1.2 MASSBUS CONTROLLER ERRORS

- 'MASSBUS CONTROLLER ERROR'
- 'MASSBUS CONTROLLER RDY BIT NOT RESET BY IRY'
- 'MASSBUS CONTROLLER RDY BIT NOT SET BY IRY'
- 'CONTROLLER NOT CLEARED BY MASSBUS INIT'

6.1.3 INTERFACE STATUS REGISTER ERRORS

- 'INTERFACE STATUS ERROR'
- 'INTERFACE STATUS ERROR ON INTERFACE CLEAR CMD'
- 'INTERFACE STATUS USER ATTN BIT NOT SET/RESET'
- 'INTERFACE STATUS USER ATTENTION BIT NOT RESET'
- 'INTERFACE STATUS IRY NOT SET ON ERROR'
- 'INTERFACE STATUS IRY BIT RESET WHEN CYC BIT SET'
- 'INTERFACE STATUS IRY NOT RESET BY DATA TRANSFER CMD'
- 'IRY NOT SET BY WORD TRANSFER END OF BLOCK'
- 'IRY NOT SET BY WORD TRANSFER ABORT'
- 'IRY NOT SET BY INTERFACE CLEAR CMD'
- 'IRY NOT SET BY BYTE TRANSFER END OF BLOCK'
- 'IRY NOT SET BY BYTE TRANSFER ABORT'

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6.1.4 USER ATTENTION CONDITION ERRORS

'ATA NOT SET ON USER ATTN CONDITION'
'ATA NOT SET BY ERR ACTIVE'
'ATA NOT RESET BY INTERFACE CLEAR CMD'
'NO INTERRUPT WHEN INTERFACE STATUS ATA SET'
'ATA NOT RESET BY WRITING TO ATTN SUMMARY BIT'
'ATA NOT RESET BY LOADING DATA TRANSFER CMD'
'ATTENTION SUMMARY BIT NOT SET BY UNIT UNDER TEST'

6.1.5 USER INTERFACE ERRORS

'ERO NOT SET THROUGH M8432 TEST MODULE'
'ERO NOT RESET BY INTERFACE CLEAR CMD'
'ERR NOT SET BY ERO ACTIVE'
'ERR NOT RESET BY INTERFACE CLEAR CMD'

6.1.6 DATA TRANSFER ERRORS

'WORD TRANSFER NOT COMPLETE'
'WORD TRANSFER ERROR ON INTERFACE WRITE'
'WORD TRANSFER ERROR ON INTERFACE READ'
'WORD TRANSFER COMPARISON ERROR'
'BYTE TRANSFER NOT COMPLETE'
'BYTE TRANSFER ERROR ON INTERFACE WRITE'
'BYTE TRANSFER ERROR ON INTERFACE READ'
'BYTE TRANSFER COMPARISON ERROR'

6.1.7 TRANSFER INTERRUPT ERRORS

'NO INTERRUPT ON WORD TRANSFER END OF BLOCK'
'NO INTERRUPT ON BYTE TRANSFER END OF BLOCK'

6.1.8 TRANSFER ABORT ERRORS

'NO WORD TRANSFER ABORT ON INTERFACE WRITE'
'NO WORD TRANSFER ABORT ON INTERFACE READ'
'NO BYTE TRANSFER ABORT ON INTERFACE WRITE'
'NO BYTE TRANSFER ABORT ON INTERFACE READ'
'CONTROLLER TRE BIT NOT SET BY TRANSFER ABORT LOGIC'

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6.1.9 CONTROL/DATA PARITY ERRORS

"INTERFACE STATUS IDP NOT SET BY DATA PARITY ERROR"
"INTERFACE STATUS IDP NOT RESET BY INTERFACE CLEAR CMD"
"INTERFACE STATUS ICP NOT RESET BY WRITE TO IDP BIT"
"INTERFACE STATUS ICP NOT SET BY CONTROL PARITY ERROR"
"INTERFACE STATUS ICP NOT RESET BY INTERFACE CLEAR CMD"
"INTERFACE STATUS ICP NOT RESET BY WRITE TO ICP BIT"

6.1.10 USER ATTENTION/ABORT SWITCH ERRORS

"SW4 DOES NOT DISABLE ATO INPUT TO INTERFACE ATA"
"SW5 DOES NOT DISABLE AT3 INPUT TO INTERFACE ATA"
"SW6 DOES NOT DISABLE AT3 TRANSFER ABORT LOGIC"

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6.2 EXTENDED ERROR MESSAGES

EACH ERROR CONDITION SENSED WHILE TESTING THE INTERFACE WILL PRODUCE AT LEAST ONE EXTENDED ERROR MESSAGE IN ADDITION TO THE ERROR BANNER AND BASIC MESSAGE. THESE EXTENDED MESSAGES WILL PROVIDE USEFUL INFORMATION ABOUT THE INTERFACE/CONTROLLER REGISTER STATUS. EACH TYPE OF EXTENDED IS DISCUSSED BELOW.

6.2.1 REGISTER ADDRESSING ERRORS

ALL REGISTER ADDRESSING ERRORS ARE ACCUMULATED AND REPORTED IN TABULAR FORM. AN EXAMPLE IS GIVEN BELOW.

REG	ADRS
DR.CS1	172440
DI.IS	172452

6.2.2 REGISTER INITIALIZATION ERRORS

ONLY SPECIFIC REGISTER INITIALIZATION VALUES ARE TESTED BY THE PROGRAM. ANY UNEXPECTED VALUES ARE ACCUMULATED AND LISTED IN TABULAR FORM, WITH THEIR ACTUAL, EXPECTED, XOR AND EXPANDED BIT VALUES. AN EXAMPLE IS GIVEN BELOW.

REG	ACT	EXP	XOR	BIT(S)
DR.CS1	144260	004270	140010	SC TRE F3

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6.2.3 REGISTER ERRORS

ALL SPECIFIC REGISTER ERRORS ARE REPORTED WITH THEIR ACTUAL, EXPECTED, XOR AND EXPANDED BIT VALUES. AN EXAMPLE IS GIVEN BELOW.

REG	ACT	EXP	XOR	BIT(S)
RH.CS1	100700	000300	100400	DLT MDPE

6.2.4 CONTROLLER/INTERFACE STATUS ERRORS

IN SOME CASES, A SPECIFIC REGISTER ERROR MAY HAVE BEEN CAUSED BY THE INTERACTION BETWEEN THE MASSBUS CONTROLLER AND THE INTERFACE, AND A SINGLE REGISTER VALUE DISPLAY IS INSUFFICIENT TO ISOLATE THE PROBLEM. IN THESE CASES, ALL CONTROLLER AND INTERFACE REGISTERS ARE DISPLAYED WITH THE INTENT TO GIVE THE OPERATOR A SNAPSHOT OF THE SYSTEM FOR ANALYSIS. AN EXAMPLE IS GIVEN BELOW.

CONTROLLER STATUS				
RH.CS1	[172440]	144260	:	SC TRE DVA RDY F4 F3
RH.WC	[172442]	177664	:	
RH.BA	[172444]	003224	:	
RH.CS2	[172450]	100307	:	DLT OR IR U2 U1 U0

INTERFACE STATUS				
DR.FS	[172446]	004010	:	FR3 DS3
DR.IS	[172452]	100210	:	ATA IRY AT3
DR.IB	[172454]	000400	:	
DR.AS	[172456]	000200	:	AS7
DR.OB	[172460]	000000	:	
DR.DT	[172466]	000005	:	

6.2.5 DATA COMPARISON ERRORS

ALL DATA TRANSFER TESTS WILL COMPARE DATA READ AGAINST DATA WRITTEN. ANY DISCREPANCIES ARE RECORDED AND ONLY THE FIRST EIGHT OCCURENCES ARE LISTED, ALONG WITH THE TOTAL ERROR COUNT. IN ADDITION, THE INPUT BUFFER DATA ADDRESS AND DECIMAL WORD NUMBER ARE GIVEN, TO AID IN ISOLATION OF PARTICULAR DATA TRANSFER PROBLEMS. AN EXAMPLE IS GIVEN BELOW.

ADRS	WRD	RECVD	EXPTD	XOR
002040	1	107776	177776	070000
002042	2	117777	177775	060002
002056	10	136777	176777	040000

TOTAL ERRORS: 3

6.2.6 DATA PATTERN DISPLAY

DURING INVERTED PARITY GENERATION TESTING, THE PROGRAM WILL DISPLAY THE STATUS OF ALL REGISTERS, AS DESCRIBED ABOVE. IN ADDITION, THE

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PROGRAM WILL DISPLAY THE SPECIFIC DATA PATTERN THAT PRODUCED THE
ERROR IN THAT SUBTEST, AS SHOWN.

DATA PATTERN: 177777

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6.3 FORCED MESSAGES

DETECTION OF CERTAIN ERRORS INDICATE A CRITICAL INSTALLATION OR
HARDWARE CONFIGURATION FAULT AND WILL FORCE THE APPROPRIATE MESSAGE
TO BE DISPLAYED TO FACILITATE CORRECTION OF THE PROBLEM. NOTE THAT
THE MESSAGE(S) ARE DISPLAYED REGARDLESS OF OPERATOR SPECIFIED FLAGS/
SWITCHES AND WILL ONLY BE LISTED ONCE EACH TIME THE PROGRAM IS LOADED.

- 'P-TABLE ERROR ON UNIT 0'
- 'CHECK MASSBUS CONTROLLER CSR ADDRESS'
- 'CHECK DRIVE SELECT SWITCHES 1-3'
- 'CHECK UNIT FOR POWER ON'
- 'CHECK SWITCH SW1-7 SET TO 'OFF' POSITION'
- 'CHECK SWITCH SW1-8 SET TO 'ON' POSITION'
- 'CHECK M8432 TEST MODULE LOOP-BACK CABLE'

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7.0 PERFORMANCE AND PROGRESS REPORTS

AT THE END OF EACH PASS, THE PASS COUNT IS GIVEN ALONG WITH THE TOTAL NUMBER OF ERRORS REPORTED SINCE THE DIAGNOSTIC WAS STARTED. THE 'EOP' SWITCH CAN BE USED TO CONTROL HOW OFTEN THE END OF PASS MESSAGE IS PRINTED. SECTION 4.2 DESCRIBES SWITCHES.

ADDITIONALLY THE PROGRAM SUPPORTS THE 'PRINT' FUNCTION, WHICH ALLOWS THE OPERATOR TO DISPLAY STATISTICAL DATA ABOUT THE TESTS. EACH TEST THAT COMPLETES EXECUTION WILL LOG ITS PASS AND ERROR COUNT INTO THE REPORT TABLES. EACH TIME THE PROGRAM INITIALIZES THROUGH THE START COMMAND CODE, ALL REPORT TABLE ENTRIES ARE CLEARED. THE PROGRAM WILL CONTINUE TO LOG THE INFORMATION UNTIL THE REQUIRED NUMBER OF PASSES ARE EXECUTED, OR AN OPERATOR BREAK IS DETECTED. THE OPERATOR MAY THEN USE THE PRINT COMMAND TO DISPLAY THE TEST SUMMARY, AS SHOWN BELOW. NOTE THAT DATA IS DISPLAYED ONLY FOR TESTS THAT WERE EXECUTED.

DR>STA/TES:1-4:17-20/PAS:1000/EOP:1000/FLA:IER

CHANGE HW ? N

CHANGE SW ? N

ZDRMAO EOP 1000

160 CUMULATIVE ERRORS

DR>PRI

DIAGNOSTIC SUMMARY:

TEST	PASSES	ERRORS
1	1000	0
2	1000	0
3	1000	0
4	1000	12
17	1000	100
18	1000	0
19	1000	0
20	1000	48

7.1 REPORT DATA CONTROL

EACH TIME THE 'PRINT' COMMAND IS GIVEN, THE REPORT TABLE DATA IS RESET TO ZERO FOR ALL TESTS. THIS IS ALSO TRUE FOR BOTH 'START' AND 'RESTART' COMMANDS. NOTE THE 'CONTINUE' COMMAND CAN BE USED TO AVOID A TABLE RESET.

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8.0 PROGRAM DESCRIPTION

THE MAIN GROUP OF TESTS IN THE PROGRAM ARE CONSIDERED THE DEFAULT TEST GROUP, WHICH WILL TEST THE BASIC INTERFACE FUNCTIONS. THE INTERFACE IS DESIGNED TO ACCOMODATE SEVERAL ADDITIONAL FUNCTIONS, WHICH MAY BE SELECTED BY THE USER, USING THE ON-BOARD DIP SWITCHES.

THESE FUNCTIONS ARE INCLUDED IN THE TEST SEQUENCE, ONLY WHEN SELECTED USING THE PROGRAM SOFTWARE PARAMETERS, AND MAY AUTOMATICALLY EXCLUDE SOME DEFAULT TESTS AFFECTED BY THE OPTIONAL FUNCTIONS. IT IS ASSUMED THAT THE OPERATOR IS FAMILIAR WITH THE REQUIREMENTS OF THE INTERFACE ENVIRONMENT AND THE TESTS DESCRIBED BELOW BEFORE THE PROGRAM IS LOADED.

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8.1 DEFAULT REGISTER LOGIC TESTS

SECTIONS 8.1.1 - 8.1.11 DESCRIBE ALL DEFAULT TESTS AND THEIR CONDITIONS FOR EXECUTION. WITH THE EXCEPTION OF THE REGISTER ADDRESSING TEST, ALL TESTS BEGIN WITH A MASSBUS CONTROLLER CLEAR, WHICH WILL INITIALIZE ALL REGISTERS TO A KNOWN STATE. NOTE THAT ANY ERROR DETECTED AFTER A MASSBUS CONTROLLER CLEAR IS CONSIDERED DEVICE FATAL AND WILL DISPLAY ALL REGISTERS CONTENTS AND ABORT THE CURRENT PASS.

8.1.1 REGISTER ADDRESSING: (TEST 1)

THIS TEST WILL DETERMINE THAT THE RH11 OR RH70 MASSBUS CONTROLLER IS CONFIGURED WITH THE CORRECT UNIBUS DEVICE ADDRESS, AND THAT THE CORRECT DR70 INTERFACE UNIT IS UNDER TEST. TEST FAILURE INDICATES THAT EITHER THE SPECIFIED REGISTER(S) CANNOT BE ADDRESSED, AND THAT THE MASSBUS CONTROLLER ADDRESS IS INCORRECT, OR THE INCORRECT UNIT HAS BEEN SELECTED AND THE INTERFACE UNIT SELECT SWITCHES SHOULD BE CHECKED. NOTE THAT TEST FAILURE WILL ABORT THE ENTIRE PASS.

8.1.2 REGISTER INITIALIZATION: (TEST 2)

THIS TEST WILL CHECK THAT SPECIFIC REGISTERS HAVE BEEN CORRECTLY INITIALIZED BY A MASSBUS CONTROLLER CLEAR SIGNAL. TEST FAILURE WILL LIST THE REGISTER(S) WITH THEIR ACTUAL, EXPECTED AND XOR VALUES AFTER THE MASSBUS CLEAR. NOTE THAT NOT ALL REGISTERS ARE TESTED, AND THAT FAILURE MAY INDICATE THAT EITHER THE CONTROLLER OR THE INTERFACE ARE BAD OR THAT THE INCORRECT DR70 REVISION HAS BEEN SELECTED.

8.1.3 CONTROL/STATUS 1 REGISTER FUNCTION BITS: (TEST 3)

THIS TEST WILL DETERMINE THAT ALL CONTROL/STATUS 1 REGISTER FUNCTION BITS MAY BE SET/RESET THROUGH THE MASSBUS CONTROLLER. TEST FAILURE WILL LIST THE CS1 REGISTER ACTUAL, EXPECTED AND XOR VALUES AND INDICATES PROBABLE FAULT ON THE INTERFACE BOARD.

8.1.4 INTERFACE FUNCTION/STATUS REGISTER BITS: (TEST 4)

THIS TEST WILL DETERMINE THAT ALL INTERFACE STATUS DRIVE STATUS BITS MAY BE SET/RESET BY THE USER INTERFACE. TEST FAILURE WILL LIST THE FUNCTION/STATUS REGISTER ACTUAL, EXPECTED AND XOR VALUES, AND MAY INDICATE A FAULT ON THE INTERFACE BOARD. NOTE THAT THIS TEST DEPENDS UPON PROPER OPERATION OF THE M8432 TEST MODULE AND LOOP-BACK CABLING. IN THE EVENT THAT NO DRIVE STATUS BITS MAY BE SET, THE OPERATOR IS PROMPTED TO CHECK THAT THE LOOP-BACK CABLE HAS BEEN PROPERLY INSTALLED.

8.1.5 INTERFACE STATUS ATTENTION CONDITION: (TEST 5)

THIS TEST WILL BE EXECUTED ONLY WHEN THE DEFAULT USER ATTENTION FUNCTIONS ARE IN EFFECT. THE TEST WILL VERIFY THAT THE INTERFACE STATUS REGISTER USER ATTENTION BITS MAY BE SET/RESET BY THE DRIVE UNDER TEST. TEST FAILURE WILL LIST THE INTERFACE STATUS REGISTER ACTUAL, EXPECTED AND XOR VALUES, AND AGAIN MAY INDICATE A PROBLEM IN USING THE M8432 TEST MODULE AND CABLE.

8.1.6 INTERFACE STATUS USER ATTENTION CONDITIONS: (TEST 6)

THIS TEST WILL BE EXECUTED ONLY WHEN THE DEFAULT USER ATTENTION FUNCTIONS ARE IN EFFECT. THE TEST WILL VERIFY THAT THE INTERFACE STATUS REGISTER ATTENTION BIT IS SET BY USER ATTENTION CONDITIONS AND MAY BE RESET BY A DRIVE CLEAR COMMAND. TEST FAILURE WILL LIST THE INTERFACE STATUS REGISTER ACTUAL, EXPECTED AND XOR VALUES, AND INDICATES A FAULT ON THE INTERFACE BOARD.

8.1.7 INTERFACE STATUS USER ERROR CONDITION: (TEST 7)

THIS TEST CHECKS FIRST THAT THE INTERFACE STATUS REGISTER USER ERROR BIT MAY BE SET, AND WILL SET BOTH THE GENERAL ERROR AND ATTENTION CONDITION BITS, AND SECONDLY THAT ALL BITS MAY BE RESET BY A DRIVE CLEAR COMMAND. TEST FAILURE WILL LIST THE INTERFACE STATUS REGISTER ACTUAL, EXPECTED AND XOR VALUES, AND INDICATES EITHER A FAULT ON THE INTERFACE BOARD OR A LOOP-BACK CABLE PROBLEM.

8.1.8 INTERFACE STATUS READY STATUS ON ERROR: (TEST 8)

THIS TEST WILL VERIFY THAT THE INTERFACE READY STATUS WILL BE RESET BY LOADING A VALID DATA TRANSFER COMMAND INTO THE DRIVE CONTROL REGISTER, AND WILL BE SET BY A USER ERROR CONDITION. TEST FAILURE WILL DISPLAY BOTH THE CONTROLLER AND INTERFACE REGISTERS CONTENTS.

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8.1.9 INTERFACE STATUS ADVANCED ATTENTION FUNCTIONS: (TEST 9)

THIS TEST WILL VERIFY THAT AN INTERFACE ATTENTION CONDITION WILL GENERATE A DEVICE INTERRUPT, AND THAT UNIT UNDER TEST WILL SET THE CORRESPONDING ATTENTION SUMMARY REGISTER BIT. IN ADDITION, THE TEST WILL INSURE THAT THE ATTENTION CONDITION IS REMOVED BY WRITING TO THE ATTENTION SUMMARY REGISTER BIT. FAILURE TO RECEIVE INTERRUPT WILL DISPLAY ALL REGISTERS CONTENTS, AND MAY INDICATE THAT THE INCORRECT INTERRUPT VECTOR ADDRESS OR PRIORITY HAS BEEN SELECTED FOR THE MASSBUS CONTROLLER. AN ATTENTION SUMMARY REGISTER FAILURE WILL LIST THE REGISTER ACTUAL, EXPECTED AND XOR VALUES, AND INDICATES A FAULT ON THE INTERFACE BOARD.

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8.2 DEFAULT WORD TRANSFER TESTS

SECTIONS 8.2.1 - 8.2.5 DESCRIBE ALL INTERFACE WORD TRANSFER TESTS. THESE TESTS ARE EXECUTED WITH THE DEFAULT TESTS, UNLESS BYTE TRANSFERS ARE SELECTED BY THE OPERATOR. THE TESTS WILL TRANSFER 64-WORD BLOCKS TO AND FROM THE INTERFACE, UTILIZING THE TEST MODULE SILO AND CABLING.

8.2.1 WORD DATA TRANSFER LOGIC: (TEST 10)

THIS TEST WILL BE EXECUTED ONLY UNDER THE DEFAULT (WORD) TRANSFER MODE CONDITIONS. THE TEST WILL CHECK THAT AN INTERFACE CYCLE REQUEST WILL NOT RESET EITHER THE INTERFACE OR CONTROLLER READY STATUS BITS UNTIL A VALID DATA TRANSFER COMMAND IS ISSUED TO THE DRIVE, AND THAT THE READY STATUS IS PRESENT ON TRANSFER COMPLETE. TEST FAILURE WILL DISPLAY ALL REGISTERS CONTENTS, AND INDICATES A PROBABLE FAULT ON THE INTERFACE BOARD.

8.2.2 WORD DATA TRANSFER INTERRUPTS: (TEST 11)

THIS TEST WILL BE EXECUTED ONLY UNDER THE DEFAULT (WORD) TRANSFER MODE CONDITIONS. THE TEST WILL VERIFY THAT BOTH BLOCK WRITE AND BLOCK READ TO AND FROM THE INTERFACE WILL GENERATE AN INTERRUPT. BOTH INTERFACE AND CONTROLLER STATUS ARE CHECKED FOR ERRORS, AND AN INTERRUPT MUST BE RECEIVED. ANY ERROR CONDITIONS WILL CAUSE TEST FAILURE AND DISPLAY OF ALL REGISTERS CONTENTS.

8.2.3 WORD DATA TRANSFER INTEGRITY: (TEST 12)

THIS TEST WILL BE EXECUTED ONLY UNDER THE DEFAULT (WORD) TRANSFER MODE CONDITIONS. THE TEST WILL PERFORM BLOCK TRANSFER TO AND FROM THE INTERFACE VIA THE TEST MODULE, AND TEST THE DATA INTEGRITY. FOUR DISTINCT DATA PATTERNS ARE USED, TO ISOLATE SPECIFIC REGISTER OR BUS FAULTS. TEST FAILURE MAY BE DUE TO CONTROLLER/INTERFACE ERROR STATUS, NO INTERRUPT RECEIVED OR ERROR IN COMPARISON OF DATA READ AND DATA WRITTEN. STATUS/INTERRUPT ERRORS WILL CAUSE ALL REGISTERS TO BE DISPLAYED. DATA ERRORS WILL CAUSE THE RECEIVED, EXPECTED AND XOR DATA VALUES TO BE DISPLAYED. ONLY THE FIRST EIGHT DATA ERROR VALUES ARE LISTED ALONG WITH THE TOTAL ERROR COUNT.

8.2.4 WORD TRANSFER ABORT THROUGH XABT BIT: (TEST 13)

THIS TEST WILL BE EXECUTED ONLY UNDER THE DEFAULT (WORD) TRANSFER CONDITIONS AND WILL VERIFY THAT THE REVISION 'B' BOARD DATA TRANSFERS MAY BE TERMINATED BY WRITING TO THE INTERFACE STATUS REGISTER XABT BIT. BOTH READ AND WRITE TRANSFERS ARE TESTED, AND THE TRANSFER MUST HALT ONLY A FEW CYCLES AFTER THE XABT BIT IS SET. TEST FAILURE WILL CAUSE ALL REGISTERS CONTENTS TO BE DISPLAYED, AND MAY INDICATE THE INCORRECT DR70 REVISION HAS BEEN SPECIFIED.

8.2.5 WORD TRANSFER ABORT THROUGH USER ATTENTION: (TEST 14)

THIS TEST WILL BE EXECUTED ONLY UNDER THE DEFAULT (WORD) TRANSFER AND DEFAULT USER ATTENTION TEST CONDITIONS. THE TEST WILL VERIFY THAT THE REVISION 'B' BOARD DATA TRANSFERS MAY BE TERMINATED BY SETTING THE USER ATTENTION CONDITION AT03. BOTH READ AND WRITE TRANSFERS ARE TESTED, AND THE TRANSFER MUST HALT WITHIN A FEW CYCLES AFTER THE INTERFACE STATUS REGISTER AT03 ATTENTION BIT IS SET. TEST FAILURE MAY OCCUR IF THE TRANSFER DOES NOT HALT SOON ENOUGH OR IF THE AT03 ATTENTION ABORT ENABLE (SWITCH 6) HAS BEEN SET INCORRECTLY, AND WILL CAUSE THE CONTENTS OF ALL REGISTERS TO BE DISPLAYED.

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8.3 BYTE TRANSFER TESTS

SECTIONS 8.3.1 - 8.3.5 DESCRIBE THE INTERFACE BYTE TRANSFER TESTS. THESE TESTS WILL EXERCISE THE INTERFACE BYTE TIMING CONTROL SECTION OF THE INTERFACE, AND ARE EXECUTED ONLY WHEN SELECTED BY THE OPERATOR. THE TESTS WILL TRANSFER 64 PACKED-BYTE BLOCKS TO AND FROM THE INTERFACE UTILIZING THE TEST MODULE SILO AND CABLING. NOTE THAT BYTE MODE TESTS CANNOT IMPLICITLY DETECT WHETHER THE DR70 IS OPERATING IN WORD OR BYTE TRANSFER MODES.

8.3.1 BYTE DATA TRANSFER LOGIC: (TEST 15)

THIS TEST WILL BE EXECUTED ONLY WHEN THE OPERATOR SELECTS THE BYTE TRANSFER MODE CONDITIONS. THE TEST WILL CHECK THAT AN INTERFACE CYCLE REQUEST WILL NOT RESET EITHER THE INTERFACE OR CONTROLLER READY STATUS BITS UNTIL A VALID DATA TRANSFER COMMAND IS ISSUED TO THE DRIVE, AND THAT THE READY STATUS IS PRESENT ON TRANSFER COMPLETE. TEST FAILURE WILL DISPLAY ALL REGISTERS CONTENTS, AND INDICATES A PROBABLE FAULT ON THE INTERFACE BOARD.

8.3.2 BYTE DATA TRANSFER INTERRUPTS: (TEST 16)

THIS TEST WILL BE EXECUTED ONLY UNDER THE OPTIONAL BYTE TRANSFER MODE CONDITIONS. THE TEST WILL VERIFY THAT BOTH BLOCK WRITE AND BLOCK READ TO AND FROM THE INTERFACE WILL GENERATE AN INTERRUPT. BOTH INTERFACE AND CONTROLLER STATUS ARE CHECKED FOR ERRORS, AND AN INTERRUPT MUST BE RECEIVED. ANY ERROR CONDITIONS WILL CAUSE TEST FAILURE AND DISPLAY OF ALL REGISTERS CONTENTS.

8.3.3 BYTE DATA TRANSFER INTEGRITY: (TEST 17)

THIS TEST WILL BE EXECUTED ONLY UNDER THE OPTIONAL BYTE TRANSFER MODE CONDITIONS. THE TEST WILL PERFORM BLOCK TRANSFER TO AND FROM THE INTERFACE VIA THE TEST MODULE, AND TEST THE DATA INTEGRITY. FOUR DISTINCT DATA PATTERNS ARE USED, TO ISOLATE SPECIFIC REGISTER OR BUS FAULTS. TEST FAILURE MAY BE DUE TO CONTROLLER/INTERFACE ERROR STATUS, NO INTERRUPT RECEIVED OR ERROR IN COMPARISON OF DATA READ AND DATA WRITTEN. STATUS/INTERRUPT ERRORS WILL CAUSE ALL REGISTERS TO BE DISPLAYED. DATA ERRORS WILL CAUSE THE RECEIVED, EXPECTED AND XOR DATA VALUES TO BE DISPLAYED. ONLY THE FIRST EIGHT DATA ERROR VALUES ARE LISTED ALONG WITH THE TOTAL ERROR COUNT.

8.3.4 BYTE TRANSFER ABORT THROUGH XABT BIT: (TEST 18)

THIS TEST WILL BE EXECUTED ONLY UNDER THE OPTIONAL BYTE TRANSFER CONDITIONS AND WILL VERIFY THAT THE REVISION 'B' BOARD DATA TRANSFERS MAY BE TERMINATED BY WRITING TO THE INTERFACE STATUS REGISTER XABT BIT. BOTH READ AND WRITE TRANSFERS ARE TESTED, AND THE TRANSFER MUST HALT ONLY A FEW CYCLES AFTER THE XABT BIT IS SET. TEST FAILURE WILL CAUSE ALL REGISTERS CONTENTS TO BE DISPLAYED, AND MAY INDICATE THE INCORRECT DR70 REVISION HAS BEEN SPECIFIED.

8.3.5 BYTE TRANSFER ABORT THROUGH USER ATTENTION: (TEST 19)

THIS TEST WILL BE EXECUTED ONLY UNDER THE OPTIONAL BYTE TRANSFER AND DEFAULT USER ATTENTION TEST CONDITIONS. THE TEST WILL VERIFY THAT THE REVISION 'B' BOARD DATA TRANSFERS MAY BE TERMINATED BY SETTING THE USER ATTENTION CONDITION AT03. BOTH READ AND WRITE TRANSFERS ARE TESTED, AND THE TRANSFER MUST HALT WITHIN A FEW CYCLES AFTER THE INTERFACE STATUS REGISTER AT03 ATTENTION BIT IS SET. TEST FAILURE MAY OCCUR IF THE TRANSFER DOES NOT HALT SOON ENOUGH OR IF THE AT03 ATTENTION ABORT ENABLE (SWITCH 6) HAS BEEN SET INCORRECTLY, AND WILL CAUSE THE CONTENTS OF ALL REGISTERS TO BE DISPLAYED.

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8.4 ADVANCED FEATURE TESTS

THE TESTS DESCRIBED IN 8.4.1 - 8.4.6 WILL NOT BE EXECUTED UNDER ANY DEFAULT TEST CONDITIONS. SELECTION OF ONE OR MORE OPTIONAL TESTS CAN ONLY BE MADE IN RESPONSE TO THE SOFTWARE TABLE PARAMETER SECTION. NOTE THAT WHEN LOADED, ALL SOFTWARE TABLE OPTIONAL PARAMETERS ARE CLEARED, BUT ONCE SELECTED WILL BECOME THE DEFAULT VALUES UNLESS RESET THROUGH ANOTHER SOFTWARE TABLE PARAMETER DIALOGUE (SECTION 4.5).

NOTE THAT THE DIAGNOSTIC CANNOT IMPLICITLY DETECT ANY SWITCH POSITIONS AND MUST RELY UPON ACCURACY OF ANSWERS GIVEN TO THE SOFTWARE QUESTIONS TO DETERMINE MODES OF OPERATION. EXTRANEIOUS ERRORS MAY OCCUR WHEN ANY SWITCH POSITION IS CHANGED WITHOUT RESTARTING THE PROGRAM AND CHANGING THE RESPONSE TO THE APPROPRIATE SOFTWARE QUESTION.

8.4.1 INTERFACE STATUS CONTROL PARITY ERROR: (TEST 20)

THIS TEST IS EXECUTED UNDER THE DEFAULT DR70 REVISION LEVEL. THE TEST WILL VERIFY THAT THE INTERFACE STATUS REGISTER CONTROL PARITY ERROR BIT MAY BE SET BY ISSUING A COMMAND WITH INVERTED PARITY, AND WILL BE RESET BY ISSUING AN INTERFACE WRITE COMMAND WITH NORMAL PARITY. TEST FAILURE WILL DISPLAY ALL REGISTERS CONTENTS.

8.4.2 INTERFACE STATUS DATA PARITY ERROR: (TEST 21)

THIS TEST WILL BE EXECUTED UNDER THE DEFAULT DR70 REVISION LEVEL. THE TEST WILL DETERMINE THAT THE INTERFACE STATUS REGISTER DATA PARITY ERROR BIT MAY BE SET BY INVERTED DATA PARITY GENERATION ON THE INTERFACE, AND WILL BE RESET BY ISSUING A DRIVE CLEAR COMMAND TO THE INTERFACE. THE TEST MAY BE EXCLUDED THROUGH OPERATOR SELECTION. TEST FAILURE WILL DISPLAY ALL REGISTERS CONTENTS, AND MAY INDICATE A PARITY GENERATION ERROR, OR THAT THE INCORRECT USER PARITY ENABLE/INHIBIT HAS BEEN SELECTED.

8.4.3 INTERFACE USER ATTENTION ATO DISABLE: (TEST 22)

THIS TEST IS EXECUTED ONLY WHEN TESTING THE REVISION 'B' INTERFACE AND WHEN SELECTED BY THE OPERATOR THROUGH THE SOFTWARE QUESTIONING. THE TEST WILL VERIFY THAT THE DR70 BOARD SWITCH 4 WILL INHIBIT THE USER ATTENTION ATO FROM INPUT TO INTERFACE STATUS ATA, WHEN IN THE 'OFF' POSITION. TEST FAILURE MAY INDICATE THAT THE INTERFACE BOARD SWITCH HAS BEEN SET INCORRECTLY AND WILL DISPLAY THE ACTUAL, EXPECTED, AND XOR INTERFACE STATUS REGISTER VALUES.

8.4.4 INTERFACE USER ATTENTION AT3 DISABLE: (TEST 23)

THIS TEST IS EXECUTED ONLY WHEN TESTING THE REVISION 'B' INTERFACE AND WHEN SELECTED BY THE OPERATOR THROUGH THE SOFTWARE QUESTIONING. THE TEST WILL VERIFY THAT THE DR70 BOARD SWITCH 5 WILL INHIBIT THE USER ATTENTION AT3 FROM INPUT TO INTERFACE STATUS ATA, WHEN IN THE 'OFF' POSITION. TEST FAILURE MAY INDICATE THAT THE INTERFACE BOARD SWITCH HAS BEEN SET INCORRECTLY AND WILL DISPLAY THE ACTUAL, EXPECTED, AND XOR INTERFACE STATUS REGISTER VALUES.

8.4.5 USER ATTENTION AT3 TRANSFER ABORT DISABLE: (TEST 24)

THIS TEST IS EXECUTED ONLY WHEN TESTING THE REVISION 'B' INTERFACE AND WHEN SELECTED BY THE OPERATOR THROUGH THE SOFTWARE QUESTIONING. THE TEST WILL VERIFY THAT THE DR70 BOARD SWITCH 6 WILL INHIBIT THE USER ATTENTION AT3 FROM CAUSING A DATA TRANSFER ABORT, WHEN IN THE 'OFF' POSITION. THE TEST IS MADE USING ONLY READ BLOCK DATA TRANSFERS, AND MAY BE EXECUTED IN EITHER WORD OR BYTE TRANSFER MODE. TEST FAILURE MAY INDICATE THAT THE INTERFACE BOARD SWITCH HAS BEEN SET INCORRECTLY AND WILL DISPLAY THE ACTUAL, EXPECTED, AND XOR INTERFACE STATUS REGISTER VALUES.

8.4.6 WORD BLOCK TRANSFER (OPERATOR DATA PATTERN) (TEST 25)

THIS TEST IS DESIGNED TO AID THE OPERATOR IN ISOLATING PROBLEMS WHICH MAY BE DATA SPECIFIC. THE TEST IS EXECUTED ONLY BY OPERATOR SELECTION IN WORD TRANSFER MODE. THE OPERATOR MAY SUPPLY A ONE WORD DATA PATTERN AND TRANSFER BLOCK SIZE. THE PROGRAM WILL CONTINUE TO WRITE AND READ BLOCKS TO AND FROM THE INTERFACE, UNTIL OPERATOR INTERVENTION THROUGH A CONTROL/C BREAK. TEST FAILURE INDICATORS ARE IDENTICAL TO THE DEFAULT WORD TRANSFER ERRORS (TEST 12).

8.4.7 BYTE BLOCK TRANSFER (OPERATOR DATA PATTERN) (TEST 26)

THIS TEST IS DESIGNED TO AID THE OPERATOR IN ISOLATING PROBLEMS WHICH MAY BE DATA SPECIFIC. THE TEST IS EXECUTED ONLY BY OPERATOR SELECTION IN BYTE TRANSFER MODE. THE OPERATOR MAY SUPPLY A ONE BYTE DATA PATTERN AND TRANSFER BLOCK SIZE. THE PROGRAM WILL CONTINUE TO WRITE AND READ BLOCKS TO AND FROM THE INTERFACE, UNTIL OPERATOR INTERVENTION THROUGH A CONTROL/C BREAK. TEST FAILURE INDICATORS ARE IDENTICAL TO THE DEFAULT BYTE TRANSFER ERRORS (TEST 17).

8.4.8 TRANSFER BANDWIDTH ADJUSTMENT: (TEST 27)

THIS TEST WILL OPTIONALLY ALLOW THE OPERATOR TO ADJUST THE TRANSFER BANDWIDTH OR SCLK PERIOD TO MATCH THE SYSTEM REQUIREMENTS OF THE INTERFACE, USING AN OSCILLOSCOPE TO MEASURE THIS PERIOD DURING WORD OR BYTE MODE DATA TRANSFERS. THE TEST WILL PROMPT THE OPERATOR TO BEGIN THE ADJUSTMENT AND TO INPUT A CONTROL/C FROM THE CONSOLE DEVICE WHEN THE BANDWIDTH IS SET. THE TEST THEN BEGINS TO LOOP ON BLOCK WRITE TRANSFERS TO THE INTERFACE, TO CONTINUOUSLY PROVIDE AN SCLK PERIOD THAT CAN BE OBSERVED AND ADJUSTED.

Address	Offset	Field Name	Value	Description
1337		.SBTTL PROGRAM HEADER		
1363		.ENABL	ABS,AMA	
1365		.	=	2000
1366	002000			
1368		BGNMOD		
1369	002000			
1370		STARS		
1371	002000	*****		
1372		*****		
1373		*****		
1374	002000	*****		
1375		*****		
1376	002000	POINTER	BGNSW,BGNSFT,BGNRPT,BGNSETUP	
1377		HEADER	ZDRM,A,0,0,1	
1378	002000	L\$NAME::	:DIAGNOSTIC NAME	
002000	132	.ASCII	/Z/	
002001	104	.ASCII	/D/	
002002	122	.ASCII	/R/	
002003	115	.ASCII	/M/	
002004	000	.BYTE	0	
002005	000	.BYTE	0	
002006	000	.BYTE	0	
002007	00C	.BYTE	0	
002010		L\$REV::	:REVISION LEVEL	
002010	101	.ASCII	/A/	
002011		L\$DEPO::	:0	
002011	060	.ASCII	/O/	
002012		L\$UNIT::	:NUMBER OF UNITS	
002012	000001	.WORD	T\$PTHV	
002014		L\$TIML::	:LONGEST TEST TIME	
002014	000000	.WORD	0	
002016		L\$HPCP::	:POINTER TO H.W. QUES.	
002016	041132	.WORD	L\$HARD	
002020		L\$SPCP::	:POINTER TO S.W. QUES.	
002020	041300	.WORD	L\$SOFT	
002022		L\$HPTP::	:PTR. TO DEF. H.W. PTABLE	
002022	002214	.WORD	L\$HW	
002024		L\$SPTP::	:PTR. TO S.W. PTABLE	
002024	002226	.WORD	L\$SW	
002026		L\$LADP::	:DIAG. END ADDRESS	
002026	042064	.WORD	L\$LAST	
002030		L\$STA::	:RESERVED FOR APT STATS	
002030	000000	.WORD	0	
002032		L\$CO::		
002032	000000	.WORD	0	
002034		L\$DTYP::	:DIAGNOSTIC TYPE	
002034	000001	.WORD	1	
002036		L\$APT::	:APT EXPANSION	
002036	000000	.WORD	0	
002040		L\$DTP::	:PTR. TO DISPATCH TABLE	
002040	002124	.WORD	L\$DISPATCH	
002042		L\$PRIO::	:DIAGNOSTIC RUN PRIORITY	
002042	000000	.WORD	0	
002044		L\$ENVI::	:FLAGS DESCRIBE HOW IT WAS SETUP	

ZDRMA0 DR70 REPAIR DIAGNOSTIC MACRO M1200 23-MAY-83 15:51 PAGE 35-1
PROGRAM HEADER

002044	000000		
002046		L\$EXP1::	.WORD 0 ;EXPANSION WORD
002046	000000		
002050		L\$MREV::	.WORD 0 ;SVC REV AND EDIT #
002050	003		
002051	003		
002052		L\$EF::	.BYTE C\$REVISION ;DIAG. EVENT FLAGS
002052	000000		
002054	000000		
002056		L\$SPC::	.WORD 0
002056	000000		
002060		L\$DEVP::	.WORD 0 ; POINTER TO DEVICE TYPE LIST
002060	005176		
002062		L\$REPP::	.WORD L\$DVTYP ;PTR. TO REPORT CODE
002062	017172		
002064		L\$EXP4::	.WORD L\$RPT
002064	000000		
002066		L\$EXP5::	.WORD 0
002066	000000		
002070		L\$AUT::	.WORD 0 ;PTR. TO ADD UNIT CODE
002070	000000		
002072		L\$DUT::	.WORD 0 ;PTR. TO DROP UNIT CODE
002072	000000		
002074		L\$LUN::	.WORD 0 ;LUN FOR EXERCISERS TO FILL
002074	000000		
002076		L\$DESP::	.WORD 0 ;POINTER TO DIAG. DESCRIPTION
002076	005226		
002100		L\$LOAD::	.WORD L\$DESC ;GENERATE SPECIAL AUTOLOAD EMT
002100	104035		
002102		L\$ETP::	EMT E\$LOAD ;POINTER TO ERRtbl
002102	000000		
002104		L\$IICP::	.WORD 0 ;PTR. TO INIT CODE
002104	017322		
002106		L\$CCP::	.WORD L\$INIT ;PTR. TO CLEAN-UP CODE
002106	020214		
002110		L\$ACP::	.WORD L\$CLEAN ;PTR. TO AUTO CODE
002110	020212		
002112		L\$PRT::	.WORD L\$AUTO ;PTR. TO PROTECT TABLE
002112	017314		
002114		L\$TEST::	.WORD L\$PROT ;TEST NUMBER
002114	000000		
002116		L\$DLY::	.WORD 0 ;DELAY COUNT
002116	000000		
002120		L\$HIME::	.WORD 0 ;PTR. TO HIGH MEM
002120	000000		

ZDRMAO DR70 REPAIR DIAGNOSTIC MACRO M1200 23-MAY-83 15:51 PAGE 36
DISPATCH TABLE

1380
1381
1382 002122

1383
1384
1385 002122

1386
1387 002122 000033
002122 000033
002124 020240
002126 020556
002130 020702
002132 021430
002134 022216
002136 023006
002140 023326
002142 023676
002144 024052
002146 024520
002150 025040
002152 025320
002154 027534
002156 030234
002160 030750
002162 031270
002164 031550
002166 033544
002170 034250
002172 034770
002174 035336
002176 036606
002200 037014
002202 037222
002204 037510
002206 040236
002210 041006

.SBTTL DISPATCH TABLE

STARS

::*****

:::

DISPATCH TABLE

STARS

::*****

DISPATCH 27

L\$DISPATCH::
 .WORD T1
 .WORD T2
 .WORD T3
 .WORD T4
 .WORD T5
 .WORD T6
 .WORD T7
 .WORD T8
 .WORD T9
 .WORD T10
 .WORD T11
 .WORD T12
 .WORD T13
 .WORD T14
 .WORD T15
 .WORD T16
 .WORD T17
 .WORD T18
 .WORD T19
 .WORD T20
 .WORD T21
 .WORD T22
 .WORD T23
 .WORD T24
 .WORD T25
 .WORD T26
 .WORD T27

ZDRMA0 DR70 REPAIR DIAGNOSTIC MACRO M1200 23-MAY-83 15:51 PAGE 37
 DEFAULT HARDWARE P-TABLE

```

1389          .SBTTL  DEFAULT HARDWARE P-TABLE
1390
1391 002212     STARS
                ;*****
1392          ;
1393          ;      DEFAULT P-TABLE VALUES
1394 002212     STARS
                ;*****
1395
1396 002212     BGNHW
                .WORD  L10000-L$HW/2
                L$HW::
1397
1398 002214     172440      .WORD  CSRADR      ;DEVICE ADDRESS
1399 002216     000224      .WORD  VECADR      ;INTERRUPT VECTOR ADDRESS
1400 002220     000005      .WORD  BRPRI      ;BUS REQUEST PRIORITY
1401 002222     000000      .WORD  0          ;DRIVE NUMBER
1402
1403 002224     ENHW
                L10000:
002224

```

ZDRMAO DR70 REPAIR DIAGNOSTIC MACRO M1200 23-MAY-83 15:51 PAGE 38
SOFTWARE P-TABLE

```

1405      .SBTTL  SOFTWARE P-TABLE
1406
1407 002224  STARS
          :*****
1408          :
1409          :      SOFTWARE P-TABLE
1410          :
1411          :      EACH FLAG CAN BE MODIFIED BY THE OPERATOR
1412          :      ON START/RESTART COMMAND.  ALL FLAGS ARE
1413          :      INITIALLY FALSE; A VALUE OF '1' INDICATES
1414          :      THE CONDITION IS TRUE.
1415 002224  STARS
          :*****
1416
1417 002224      BGNSW
          002224 .WORD  L10001-L$SW/2
          002226
1418          L$SW::
1419 002226 000000  REVFLG::      .WORD  0      ;DR70 REV 'A'
1420 002230 000000  AT0FLG::      .WORD  0      ;DISABLE AT0 ATTN
1421 002232 000000  AT3FLG::      .WORD  0      ;DISABLE AT3 ATTN
1422 002234 000000  ABOFLG::      .WORD  0      ;DISABLE AT3 ABORT LOGIC
1423 002236 000000  BYTFLG::      .WORD  0      ;BYTE MODE TRANSFER
1424 002240 000000  PARFLG::      .WORD  0      ;GENERATE PARITY ERROR
1425 002242 000000  DPFLG::      .WORD  0      ;USER DATA PATTERN FLAG
1426 002244 000000  BWFLG::      .WORD  0      ;ADJUST BAND WIDTH
1427 002246      ENDSW
          002246  L10001:
1428
1429 002246      ENDMOD
1430
1431      .SBTTL

```

ZDRMA0 DR70 REPAIR DIAGNOSTIC MACRO M1200 23-MAY-83 15:51 PAGE 39
GLOBAL EQUATES SECTION

1444
1472 002246
1473 002246

1474
1475
1476 002246

1477
1478 002246

.SBTTL GLOBAL EQUATES SECTION
BGNMOD

STARS

::*****

::

GLOBAL EQUATES

STARS

::*****

EQUALS

::

:: BIT DIFINITIONS

::

100000	BIT15== 100000
040000	BIT14== 40000
020000	BIT13== 20000
010000	BIT12== 10000
004000	BIT11== 4000
002000	BIT10== 2000
001000	BIT09== 1000
000400	BIT08== 400
000200	BIT07== 200
000100	BIT06== 100
000040	BIT05== 40
000020	BIT04== 20
000010	BIT03== 10
000004	BIT02== 4
000002	BIT01== 2
000001	BIT00== 1

::

001000	BIT9== BIT09
000400	BIT8== BIT08
000200	BIT7== BIT07
000100	BIT6== BIT06
000040	BIT5== BIT05
000020	BIT4== BIT04
000010	BIT3== BIT03
000004	BIT2== BIT02
000002	BIT1== BIT01
000001	BIT0== BIT00

::

:: EVENT FLAG DEFINITIONS

:: EF32:EF17 RESERVED FOR SUPERVISOR TO PROGRAM COMMUNICATION

::

000040	EF.START== 32.	; START COMMAND WAS ISSUED
000037	EF.RESTART== 31.	; RESTART COMMAND WAS ISSUED
000036	EF.CONTINUE== 30.	; CONTINUE COMMAND WAS ISSUED
000035	EF.NEW== 29.	; A NEW PASS HAS BEEN STARTED
000034	EF.PWR== 28.	; A POWER-FAIL/POWER-UP OCCURRED

::

:: PRIORITY LEVEL DEFINITIONS

::

000340	PRI07== 340
000300	PRI06== 300
000240	PRI05== 240
000200	PRI04== 200

ZDRMA0 DR70 REPAIR DIAGNOSTIC MACRO M1200 23-MAY-83 15:51 PAGE 39-1
GLOBAL EQUATES SECTION

000140	PRI03==	140
000100	PRI02==	100
000040	PRI01==	40
000000	PRI00==	0
	:	
	:	OPERATOR FLAG BITS
	:	
000004	EVL==	4
000010	LOT==	10
000020	ADR==	20
000040	IDU==	40
000100	ISR==	100
000200	UAM==	200
000400	BOE==	400
001000	PNT==	1000
002000	PRJ==	2000
004000	IXE==	4000
010000	IBE==	10000
020000	IER==	20000
040000	LOE==	40000
100000	HOE==	100000

ZDRMA0 DR70 REPAIR DIAGNOSTIC MACRO M1200 23-MAY-83 15:51 PAGE 40
GLOBAL EQUATES SECTION

1480 002246

STARS

1481

1482

1483 002246

REGISTER BIT EQUATES: (REG.***)

STARS

1484

1485

1486

1487 000001

1488 000002

1489 000004

1490 000010

1491 000020

1492 000040

1493 000100

1494 000200

1495 000400

1496 001000

1497 002000

1498 004000

1499 020000

1500 040000

1501 100000

1502

1503

1504

1505 000001

1506 000002

1507 000004

1508 000010

1509 000020

1510 000040

1511 000100

1512 000200

1513 000400

1514 001000

1515 002000

1516 004000

1517 010000

1518 020000

1519 040000

1520 100000

;

CONTROL /STATUS 1 REGISTER BIT EQUATES

CS1.GO	==	BIT00	:GO BIT	(R/W)	*
CS1.F0	==	BIT01	:FUNCTION BIT 0	(R/W)	*
CS1.F1	==	BIT02	:FUNCTION BIT 1	(R/W)	*
CS1.F2	==	BIT03	:FUNCTION BIT 2	(R/W)	*
CS1.F3	==	BIT04	:FUNCTION BIT 3	(R/W)	*
CS1.F4	==	BIT05	:FUNCTION BIT 4	(R/W)	*
CS1.IE	==	BIT06	:INTERRUPT ENABLE	(R/W)	
CS1.RDY	==	BIT07	:READY	(RO)	
CS1.A16	==	BIT08	:UNIBUS ADDR BIT 16	(R/W)	
CS1.A17	==	BIT09	:UNIBUS ADDR BIT 17	(R/W)	
CS1.PSEL	==	BIT10	:PORT SELECT	(R/W)	
CS1.DVA	==	BIT11	:DEVICE AVAILABLE	(RO)	*
CS1.MCP	==	BIT13	:MB CNTRL BUS PAR ERR	(RO)	
CS1.TRE	==	BIT14	:TRANSFER ERROR	(R/W)	
CS1.SC	==	BIT15	:SPECIAL CONDITION	(RO)	

;

CONTROL /STATUS 2 REGISTER BIT EQUATES

CS2.U0	==	BIT00	:UNIT SELECT BIT 0	(R/W)	
CS2.U1	==	BIT01	:UNIT SELECT BIT 1	(R/W)	
CS2.U2	==	BIT02	:UNIT SELECT BIT 2	(R/W)	
CS2.BAI	==	BIT03	:UB ADDR INCR INHIBIT	(R/W)	
CS2.PAT	==	BIT04	:PARITY TEST	(R/W)	
CS2.CLR	==	BIT05	:CONTROLLER CLEAR	(WO)	
CS2.IR	==	BIT06	:INPUT READY	(RO)	
CS2.OR	==	BIT07	:OUTPUT READY	(RO)	
CS2.MDPE	==	BIT08	:MB DATA BUS PAR ERR	(RO)	
CS2.MXF	==	BIT09	:MISSED TRANSFER	(R/W)	
CS2.PGE	==	BIT10	:PROGRAM ERROR	(RO)	
CS2.NEM	==	BIT11	:NON EXISTENT MEMORY	(RO)	
CS2.NED	==	BIT12	:NON EXISTENT DRIVE	(RO)	
CS2.UPE	==	BIT13	:UNIBUS PARITY ERROR	(R/W)	
CS2.WCE	==	BIT14	:WRITE CHECK ERROR	(RO)	
CS2.DLT	==	BIT15	:DATA LATE	(RO)	

ZDRMAO DR70 REPAIR DIAGNOSTIC MACRO M1200 23-MAY-83 15:51 PAGE 41
GLOBAL EQUATES SECTION

```

1522
1523      ;      INTERFACE STATUS REGISTER BIT EQUATES
1524
1525      000001      IS.AT0      ==      BIT00      ;USER DEFINED ATTENTION BIT 0
1526      000002      IS.AT1      ==      BIT01      ;USER DEFINED ATTENTION BIT 1
1527      000004      IS.AT2      ==      BIT02      ;USER DEFINED ATTENTION BIT 2
1528      000010      IS.AT3      ==      BIT03      ;USER DEFINED ATTENTION BIT 3
1529      000020      IS.CYC      ==      BIT04      ;PRIME CYCLE FLIP-FLOP BIT
1530      000200      IS.IRY      ==      BIT07      ;INTERFACE READY BIT
1531      000400      IS.IDP      ==      BIT08      ;INTERFACE DATA PARITY ERROR BIT
1532      001000      IS.ICP      ==      BIT09      ;INTERFACE CONTROL PARITY ERROR BIT
1533      002000      IS.ERO      ==      BIT10      ;USER DEFINED ERROR
1534      004000      IS.XABT     ==      BIT11      ;REV 'B' TRANSFER ABORT LOGIC
1535      010000      IS.IP       ==      BIT12      ;INVERT PARITY GENERATION
1536      040000      IS.ERR      ==      BIT14      ;ERROR SUM
1537      100000      IS.ATA      ==      BIT15      ;ATTENTION ACTIVE
1538
1539      ;      FUNCTION / STATUS REGISTER BIT EQUATES
1540
1541      000001      FS.ST0      ==      BIT00      ;STATUS BIT 0      (RO)
1542      000002      FS.ST1      ==      BIT01      ;STATUS BIT 1      (RO)
1543      000004      FS.ST2      ==      BIT02      ;STATUS BIT 2      (RO)
1544      000010      FS.ST3      ==      BIT03      ;STATUS BIT 3      (RO)
1545      000020      FS.ST4      ==      BIT04      ;STATUS BIT 4      (RO)
1546      000040      FS.ST5      ==      BIT05      ;STATUS BIT 5      (RO)
1547      000100      FS.ST6      ==      BIT06      ;STATUS BIT 6      (RO)
1548      000200      FS.ST7      ==      BIT07      ;STATUS BIT 7      (RO)
1549      000400      FS.F0       ==      BIT08      ;FUNCTION BIT 0      (R/W)
1550      001000      FS.F1       ==      BIT09      ;FUNCTION BIT 1      (R/W)
1551      002000      FS.F2       ==      BIT10      ;FUNCTION BIT 2      (R/W)
1552      004000      FS.F3       ==      BIT11      ;FUNCTION BIT 3      (R/W)
1553      010000      FS.F4       ==      BIT12      ;FUNCTION BIT 4      (R/W)
1554      020000      FS.F5       ==      BIT13      ;FUNCTION BIT 5      (R/W)
1555      040000      FS.F6       ==      BIT14      ;FUNCTION BIT 6      (R/W)
1556      100000      FS.F7       ==      BIT15      ;FUNCTION BIT 7      (R/W)

```

ZDRMA0 DR70 REPAIR DIAGNOSTIC MACRO M1200 23-MAY-83 15:51 PAGE 42
GLOBAL EQUATES SECTION

```

1558
1559      ;      COMMAND DEFINITIONS
1560
1561      000011    CLR.CMD      ==      11      ;INTERFACE CLEAR COMMAND
1562
1563      000071    RD.CMD       ==      71      ;READ & INCR ADDR COMMAND
1564      000061    WR.CMD       ==      61      ;WRITE & INCR ADDR COMMAND
1565      000171    RIE.CMD      ==      171     ;READ & INCR ADDR WITH INT ENABLED
1566      000161    WIE.CMD      ==      161     ;WRITE & INCR ADDR WITH INT ENABLED
1567
1568      000077    RD2.CMD      ==      77      ;READ & DECR ADDR COMMAND
1569      000067    WR2.CMD      ==      67      ;WRITE & DECR ADDR COMMAND
1570      000177    RIE2.CMD     ==      177     ;READ & DECR ADDR WITH INT ENABLED
1571      000167    WIE2.CMD     ==      167     ;WRITE & DECR ADDR WITH INT ENABLED
1572
1573      ;      TEST SELECT BIT EQUATES
1574
1575      000200    B.REVA       ==      BIT07    ;REV 'A' SELECT
1576      000020    B.UPAR       ==      BIT04    ;USER PARITY DISABLE
1577      000010    B.BYTE       ==      BIT03    ;BYTE MODE XFER SELECT
1578      000004    B.ABORT      ==      BIT02    ;AT3 ABORT DISABLE
1579      0000C2    B.AT3        ==      BIT01    ;AT3 ATTN DISABLE
1580      000001    B.ATO        ==      BIT00    ;ATO ATTN DISABLE
1581
1582      ;      DEVICE CONFIGURATION
1583
1584      177776    PS           ==      177776    ;PSW LOCATION
1585      177764    CPUID        ==      177764    ;SYSTEM ID (PDP-11/70)
1586      000033    MAXTST       ==      27.      ;CURRENT NUMBER OF TESTS
1587
1588      ;      DEFAULT P-TABLE VALUE EQUATES
1589
1590      172440    CSRADR        ==      172440    ;CSR ADDRESS
1591      000224    VECADR        ==      224      ;INTERRUPT VECTOR ADDRESS
1592      000005    BRPRI         ==      5        ;BUS REQUEST PRIORITY

```

ZDRMAO DR70 REPAIR DIAGNOSTIC MACRO M1200 23-MAY-83 15:51 PAGE 43
GLOBAL DATA SECTION

```

1594      .SBTTL  GLOBAL DATA SECTION
1595 002246  STARS
           ;*****
1596      ;
1597      ;      REGISTER DISPLACEMENT VALUES:  (D.*** )
1598      ;
1599      ;      EACH LOCATION CONTAINS THE CORRESPONDING REGISTER'S
1600      ;      WORD DISPLACEMENT FROM THE DEVICE BASE ADDRESS
1601 002246  STARS
           ;*****
1602
1603 002246  D.TBL::                                ;TABLE START
1604
1605 002246 000000 D.CS1::                          .WORD 0      ;CONTROL / STATUS 1
1606 002250 000002 D.WC::                          .WORD 2      ;WORD COUNT
1607 002252 000004 D.BA::                          .WORD 4      ;BUS ADDRESS
1608 002254 000006 D.FS::                          .WORD 6      ;FUNCTION / STATUS
1609 002256 000010 D.CS2::                          .WORD 10     ;CONTROL / STATUS 2
1610 002260 000012 D.IS::                          .WORD 12     ;INTERFACE STATUS
1611 002262 000014 D.IB::                          .WORD 14     ;INPUT BUFFER
1612 002264 000016 D.AS::                          .WORD 16     ;ATTENTION SUMMARY
1613 002266 000020 D.OB::                          .WORD 20     ;OUTPUT BUFFER
1614 002270 000026 D.DT::                          .WORD 26     ;DRIVE TYPE
1615 002272 000030 D.BAE::                         .WORD 30     ;BUFFER ADDR EXTENSION *
1616 002274 000032 D.CS3::                         .WORD 32     ;CONTROL / STATUS 3 *
1617
1618      D.SIZ      ==      .-D.TBL      ;TABLE SIZE

```

ZDRMAO DR70 REPAIR DIAGNOSTIC MACRO M1200 23-MAY-83 15:51 PAGE 44
GLOBAL DATA SECTION

1620 002275

STARS

1621

1622

1623 002276

REGISTER ADDRESS STORAGE: (A.***)

STARS

1624

1625

1626

1627 002276

; REGISTER ADDRESS STORAGE

A.TBL::

;TABLE START

1628

1629 002276 000000

A.CS1:: .WORD 0 ;CONTROL / STATUS 1 172440

1630 002300 000000

A.WC:: .WORD 0 ;WORD COUNT 172442

1631 002302 000000

A.BA:: .WORD 0 ;BUS ADDRESS 172444

1632 002304 000000

A.FS:: .WORD 0 ;FUNCTION / STATUS 172446

1633 002306 000000

A.CS2:: .WORD 0 ;CONTROL / STATUS 2 172450

1634 002310 000000

A.IS:: .WORD 0 ;INTERFACE STATUS 172452

1635 002312 000000

A.IB:: .WORD 0 ;INPUT BUFFER 172454

1636 002314 000000

A.AS:: .WORD 0 ;ATTENTION SUMMARY 172456

1637 002316 000000

A.OB:: .WORD 0 ;OUTPUT BUFFER 172460

1638 002320 000000

A.DT:: .WORD 0 ;DRIVE TYPE 172466

1639 002322 000000

A.BAE:: .WORD 0 ;BUFFER ADDR EXTENSION 172470 *

1640 002324 000000

A.CS3:: .WORD 0 ;CONTROL / STATUS 3 172472 *

1641

1642 000030

A.SIZ == .-A.TBL ;TABLE SIZE

ZDRMA0 DR70 REPAIR DIAGNOSTIC MACRO M1200 23-MAY-83 15:51 PAGE 45
GLOBAL DATA SECTION

1644 002326

STARS

:*****

1645

::

1646

::

REGISTER VALUE STORAGE: (R.***)

1647 002326

STARS

:*****

1648

:

REGISTER VALUE STORAGE

1649

1650

1651 002326

R.TBL::

;TABLE START

1652

1653 002326 000000

R.CS1:: .WORD 0

1654 002330 000000

R.WC:: .WORD 0

1655 002332 000000

R.BA:: .WORD 0

1656 002334 000000

R.FS:: .WORD 0

1657 002336 000000

R.CS2:: .WORD 0

1658 002340 000000

R.IS:: .WORD 0

1659 002342 000000

R.IB:: .WORD 0

1660 002344 000000

R.AS:: .WORD 0

1661 002346 000000

R.OB:: .WORD 0

1662 002350 000000

R.DT:: .WORD 0

1663 002352 000000

R.BAE:: .WORD 0

1664 002354 000000

R.CS3:: .WORD 0

1665

1666 000030

R.SIZ == .-R.TBL ;TABLE SIZE

ZDRMAO DR70 REPAIR DIAGNOSTIC MACRO M1200 23-MAY-83 15:51 PAGE 46
GLOBAL DATA SECTION

1668 002356

STARS

1669

1670

1671

1672

1673

1674

1675 002356

STARS

1676

1677

1678

1679 002356

; REGISTER INITIAL CONTENTS STORAGE

IN.TBL::

;TABLE START

1680

1681 002356 004200

IN.CS1:: .WORD 4200

;CONTROL / STATUS 1 (DVA & RDY)

1682 002360 000000

IN.WC:: .WORD 0

;WORD COUNT

1683 002362 000000

IN.BA:: .WORD 0

;BUFFER ADDRESS

1684 002364 000000

IN.FS:: .WORD 0

;FUNCTION / STATUS

1685 002366 000100

IN.CS2:: .WORD 100

;CONTROL / STATUS 2 (IR)

1686 002370 000200

IN.IS:: .WORD 200

;INTERFACE STATUS (IRY)

1687 002372 000000

IN.IB:: .WORD 0

;INPUT BUFFER

1688 002374 000000

IN.AS:: .WORD 0

;ATTENTION SUMMARY

1689 002376 000000

IN.OB:: .WORD 0

;OUTPUT BUFFER

1690 002400 000000

IN.DT:: .WORD 0

;DRIVE TYPE

1691 002402 000000

IN.BAE:: .WORD 0

;BUFFER ADDR EXTENSION *

1692 002404 000000

IN.CS3:: .WORD 0

;CONTROL / STATUS 3 *

1693

1694 000030

IN.SIZ == .-IN.TBL

;TABLE SIZE

ZDRMA0 DR70 REPAIR DIAGNOSTIC MACRO M1200 23-MAY-83 15:51 PAGE 47
GLOBAL DATA SECTION

1696 002406

STARS

1697

1698

1699

1700

1701

1702 002406

STARS

1703

1704

1705

1706 002406

;

REGISTER NAME ADDRESS POINTERS

NA.TBL::

;TABLE START ADDRESS

1708 002406 005352

NA.CS1::

.WORD

N.CS1

;POINTER TO ASCII CS1

1709 002410 005362

NA.WC::

.WORD

N.WC

;POINTER TO ASCII WC

1710 002412 005372

NA.BA::

.WORD

N.BA

;POINTER TO ASCII BA

1711 002414 005402

NA.FS::

.WORD

N.FS

;POINTER TO ASCII FS

1712 002416 005412

NA.CS2::

.WORD

N.CS2

;POINTER TO ASCII CS2

1713 002420 005422

NA.IS::

.WORD

N.IS

;POINTER TO ASCII IS

1714 002422 005432

NA.IB::

.WORD

N.IB

;POINTER TO ASCII IB

1715 002424 005442

NA.AS::

.WORD

N.AS

;POINTER TO ASCII AS

1716 002426 005452

NA.OB::

.WORD

N.OB

;POINTER TO ASCII OB

1717 002430 005462

NA.DT::

.WORD

N.DT

;POINTER TO ASCII DT

1718 002432 005472

NA.BAE::

.WORD

N.BAE

;POINTER TO ASCII BAE *

1719 002434 005502

NA.CS3::

.WORD

N.CS3

;POINTER TO ASCII CS3 *

1720

1721 000030

NA.SIZ

==

.-NA.TBL

;TABLE SIZE

ZDRMA0 DR70 REPAIR DIAGNOSTIC MACRO M1200 23-MAY-83 15:51 PAGE 48
GLOBAL DATA SECTION

1723 002436

STARS

1724

1725

1726

1727

1728

1729

1730 002436

STARS

REGISTER BIT NAME ADDRESS POINTERS: (BA.***)

EACH LOCATION CONTAINS A POINTER TO THE REGISTER
BIT NAME FORMAT STRING, USED BY DSPBITS SUBROUTINE
TO DISPLAY REGISTER NAMES.

1731

1732

1733

1734 002436

REGISTER BIT NAME ADDRESS POINTERS

BA.TBL::

;TABLE START ADDRESS

1735

1736 002436 005512

BA.CS1::

.WORD

B.CS1

;POINTER TO CS1 REGISTER BIT NAMES

1737 002440 006134

BA.WC::

.WORD

B.BIT

;POINTER TO DEFAULT REGISTER BIT NAMES

1738 002442 006134

BA.BA::

.WORD

B.BIT

;POINTER TO DEFAULT REGISTER BIT NAMES

1739 002444 005602

BA.FS::

.WORD

B.FS

;POINTER TO FS REGISTER BIT NAMES

1740 002446 005702

BA.CS2::

.WORD

B.CS2

;POINTER TO CS2 REGISTER BIT NAMES

1741 002450 005776

BA.IS::

.WORD

B.IS

;POINTER TO IS REGISTER BIT NAMES

1742 002452 006134

BA.IB::

.WORD

B.BIT

;POINTER TO DEFAULT REGISTER BIT NAMES

1743 002454 006064

BA.AS::

.WORD

B.AS

;POINTER TO AS REGISTER BIT NAMES

1744 002456 006134

BA.OB::

.WORD

B.BIT

;POINTER TO DEFAULT REGISTER BIT NAMES

1745 002460 006134

BA.DT::

.WORD

B.BIT

;POINTER TO DEFAULT REGISTER BIT NAMES

1746 002462 006134

BA.BAE::

.WORD

B.BIT

;POINTER TO DEFAULT REGISTER BIT NAMES

1747 002464 006134

BA.CS3::

.WORD

B.BIT

;POINTER TO DEFAULT REGISTER BIT NAMES

1748

1749 000030

BA.SIZ

==

.-BA.TBL

;TABLE SIZE

ZDRMA0 DR70 REPAIR DIAGNOSTIC MACRO M1200 23-MAY-83 15:51 PAGE 49
GLOBAL DATA SECTION

```

1751
1752 ; REGISTER TEST SELECTION MASK STORAGE
1753
1754 002466 000000 R.MAX:: .WORD 0 ;MAXIMUM REGISTER INDEX VALUE
1755 002470 000000 R.ERR:: .WORD 0
1756
1757 002472 000000 R.SST:: .WORD 0 ;STATUS REGISTER SELECT
1758 002474 001777 R.SAD:: .WORD 1777 ;ADDRESS RESPONSE SELECT
1759 002476 001271 R.SIN:: .WORD 1271 ;INITIALIZTION SELECT
1760 002500 000027 R.SRH:: .WORD 27 ;CONTROLLER STATUS SELECT
1761 002502 001750 R.SDR:: .WORD 1750 ;INTERFACE STATUS SELECT
1762
1763 ; DATA PARAMETER STORAGE
1764
1765 002504 000000 D.FILPTR:: .WORD 0 ;POINTER TO FILE NAME
1766 002506 000000 D.BLOCK:: .WORD 0 ;TRANSFER BLOCK SIZE
1767 002510 000000 D.LPCNT:: .WORD 0 ;TRANSFER LOOP COUNTER
1768 002512 000000 D.MAX:: .WORD 0 ;DATA COMPARISON MAX INDEX
1769 002514 000000 D.WDP:: .WORD 0 ;USER WORD DATA PATTERN
1770 002516 000000 D.BDP:: .WORD 0 ;USER BYTE DATA PATTERN
1771
1772 ; REPORT SUMMARY TABLES
1773
1774 002520 RP.PASS:: .BLKW 32. ;PASS COUNT TABLE
1775
1776 000100 RP.SIZ == .-RP.PASS ;TABLE SIZE
1777
1778 002620 RP.ERROR:: .BLKW 32. ;ERROR COUNT TABLE
1779
1780 ; LOCAL P-TABLE VALUES
1781
1782 002720 000000 PT.CSR:: .WORD 0 ;CSR ADDRESS
1783 002722 000000 PT.VEC:: .WORD 0 ;VECTOR ADDRESS
1784 002724 000000 PT.PRI:: .WORD 0 ;BUS REQUEST PRICRITY
1785 002726 000000 PT.DRI:: .WORD 0 ;DRIVE SELECT

```

ZDRMA0 DR70 REPAIR DIAGNOSTIC MACRO M1200 23-MAY-83 15:51 PAGE 50
GLCBAL DATA SECTION

1787					
1788			:	FORMAT PARAMETER STORAGE	
1789					
1790	002730	000000	FP.NAM::	.WORD 0	:REGISTER NAME FORMAT ADDRESS
1791	002732	000000	FP.ADR::	.WORD 0	:ADDRESS PARAMETER
1792					
1793	002734	000000	FP.EXP::	.WORD 0	:EXPECTED VALUE
1794	002736	000000	FP.ACT::	.WORD 0	:ACTUAL VALUE
1795	002740	000000	FP.XOR::	.WORD 0	:XOR VALUE
1796	002742	000000	FP.NDX::	.WORD 0	:DATA INDEX VALUE
1797	002744	000000	FP.DPAT::	.WORD 0	:DATA PATTERN
1798					
1799	002746	000000	FP.TBL::	.WORD 0	:BIT EXPAND TABLE ADDRESS
1800	002750	005054	FP.BIT::	.WORD BFR	:REGISTER BITS PRINT BUFFER ADDRESS

ZDRMA0 DR70 REPAIR DIAGNOSTIC MACRO M1200 23-MAY-83 15:51 PAGE 51
GLOBAL DATA SECTION

1802				
1803				
1804				
1805	002752	000000	REG0::	.WORD 0
1806	002754	000000	REG1::	.WORD 0
1807	002756	000000	REG2::	.WORD 0
1808	002760	000000	REG3::	.WORD 0
1809	002762	000000	REG4::	.WORD 0
1810	002764	000000	REG5::	.WORD 0
1811	002766	000000	REG6::	.WORD 0
1812	002770	000000	REG7::	.WORD 0

ZDRMA0 DR70 REPAIR DIAGNOSTIC MACRO M1200 23-MAY-83 15:51 PAGE 52
GLOBAL DATA SECTION

```

1814
1815 ; MONITOR LOCATIONS
1816
1817 002772 000000 HRDTBL:: .WORD 0 ;P-TABLE ADDRESS
1818 002774 000000 LOGUNIT:: .WORD 0 ;LOGICAL UNIT NUMBER
1819 002776 000000 UNITPOS:: .WORD 0 ;UNIT BIT POSITION
1820 003000 000000 DRIVE:: .WORD 0 ;DRIVE SELECT
1821 003002 000000 ERRNDX:: .WORD 0 ;DATA ERROR INDEX
1822 003004 000000 ERRCNT:: .WORD 0 ;ERROR COUNTER
1823 003006 000000 BITCNT:: .WORD 0 ;BIT EXPAND COUNT
1824
1825 003010 000000 SELECT:: .WORD 0 ;OPTION SELECT WORD
1826 ;BIT7= REV 'A' BOARD
1827 ;BIT4= INPUT PARITY DISABLE
1828 ;BIT3= BYTE MODE TRANSFER
1829 ;BIT2= AT03 ABORT DISABLE
1830 ;BIT1= AT03 ATTN DISABLE
1831 ;BIT0= AT00 ATTN DISABLE
1832
1833 ; FLAG WORDS
1834
1835 003012 000000 CPUFLG:: .WORD 0 ;PDP-11/70 CPU FLAG
1836 003014 000000 INIFLG:: .WORD 0 ;DIAGNOSTIC INITIALIZE FLAG
1837 003016 000000 HLPFLG:: .WORD 0 ;HELP REQUEST PROMPT FLAG
1838 003020 000000 TABFLG:: .WORD 0 ;TABULAR COUNT
1839 003022 000000 INTFLG:: .WORD 0 ;INTERRUPT FLAG
1840 003024 000000 TRPFLG:: .WORD 0 ;ADDRESS TRAP FLAG
1841 003026 000000 ERRFLG:: .WORD 0 ;ERROR FLAG / COUNTER
1842 003030 000000 MBCFLG:: .WORD 0 ;MASSBUS CONTROLLER ERROR FLAG
1843 003032 000000 DRIFLG:: .WORD 0 ;INTERFACE ERROR FLAG
1844
1845 ; DELAY SUBROUTINE PARAMETERS
1846
1847 003034 000000 DLYCNT:: .WORD 0 ;SPARE DELAY COUNTER
1848 003036 000010 DMACNT:: .WORD 10 ;DMA DELAY COUNT: T = 96 USEC
1849 003040 000012 SILOCNT:: .WORD 12 ;SILO FILL DELAY COUNT: T = 16-128 USEC
1850
1851 ; MESSAGE PRINT FLAGS
1852
1853 003042 000000 CSRFLG:: .WORD 0 ;CSR ADDRESS MSG FLAG
1854 003044 000000 NEDFLG:: .WORD 0 ;DRIVE SELECT MSG FLAG
1855 003046 000000 PWRFLG:: .WORD 0 ;POWER ON MSG FLAG
1856 003050 000000 CBLFLG:: .WORD 0 ;CABLE MSG FLAG
1857 003052 000000 PERFLG:: .WORD 0 ;PARITY MSG FLAG
1858
1859 ; BUFFERS
1860
1861 003054 IBUF:: .BLKW 400 ;INPUT BUFFER (256 WORDS)
1862 004054 OBUF:: .BLKW 400 ;OUTPUT BUFFER (256 WORDS)
1863
1864 001000 BFRSIZ == . - OBUF ;BUFFER SIZE
1865
1866 005054 BFR:: .BLKW 44 ;TEXT BUFFER (72 BYTES)
1867 005164 000000 .WORD 0 ;EOB

```

ZDRMA0 DR70 REPAIR DIAGNOSTIC MACRO M1200 23-MAY-83 15:51 PAGE 53
ERROR TABLE DEFINITION

1869			.SBTTL	ERROR TABLE DEFINITION
1870				
1871	005166			ERRTBL
	005166		L\$ERRTBL::	
	005166	000000	ERRTYP::	.WORD 0
	005170	000000	ERRNBR::	.WORD 0
	005172	000000	ERRMSG::	.WORD 0
	005174	000000	ERRBLK::	.WORD 0

ZDRMAO DR70 REPAIR DIAGNOSTIC MACRO M1200 23-MAY-83 15:51 PAGE 54
GLOBAL TEXT SECTION

```

1873          .SBTTL  GLOBAL TEXT SECTION
1874 005176    STARS
               :*****
1875          :
1876          :      GLOBAL TEXT SECTION
1877 005176    STARS
               :*****
1878          :
1879          :      .NLIST  BEX                                ;DON'T EXPAND STRINGS
1880          :
1881          :      NAMES OF DEVICES SUPPORTED BY PROGRAM
1882          :
1883 005176      DEVTYP  <DR70 MASSBUS INTERFACE>
1884 005176      L$DVTYP::
1885 005176      .ASCIZ  /DR70 MASSBUS INTERFACE/
1886          :      TEST DESCRIPTION
1887 005226      DESCRIPT      <DR70 REPAIR DIAGNOSTIC>
1888 005226      L$DESC::
1889 005226      .ASCIZ  /DR70 REPAIR DIAGNOSTIC/
1890          :      HELP FILE PRINT BUFFER
1891 005256      LINE::      .ASCII  /%A/      ;ALPHA NUMERIC BUFFER FLAG
1892 005260      LINBUF::    .BLKB   70        ;SEVENTY CHARACTER BUFFER
1893 005350      EOL::      .WORD    0        ;END OF LINE

```

ZDRMAO DR70 REPAIR DIAGNOSTIC MACRO M1200 23-MAY-83 15:51 PAGE 55
GLOBAL TEXT SECTION

```

1895 005352      STARS
1896              :*****
1897              :
1898              :   REGISTER NAME FORMAT STRINGS:           (N.*** )
1899 005352      STARS
                  :*****
1900              ;
1901              ;   REGISTER NAMES
1902              ;
1903 005352      N.TBL::                                     ;TABLE START ADDRESS
1904
1905 005352      122    110    056  N.CS1::                .ASCIZ      /RH.CS1/
1906              .EVEN
1907 005362      122    110    056  N.WC::                .ASCIZ      /RH.WC /
1908              .EVEN
1909 005372      122    110    056  N.BA::                .ASCIZ      /RH.BA /
1910              .EVEN
1911 005402      104    122    056  N.FS::                .ASCIZ      /DR.FS /
1912              .EVEN
1913 005412      122    110    056  N.CS2::               .ASCIZ      /RH.CS2/
1914              .EVEN
1915 005422      104    122    056  N.IS::                .ASCIZ      /DR.IS /
1916              .EVEN
1917 005432      104    122    056  N.IB::                .ASCIZ      /DR.IB /
1918              .EVEN
1919 005442      104    122    056  N.AS::                .ASCIZ      /DR.AS /
1920              .EVEN
1921 065452      104    122    056  N.OB::                .ASCIZ      /DR.OB /
1922              .EVEN
1923 005462      104    122    056  N.DT::                .ASCIZ      /DR.DT /
1924              .EVEN
1925 005472      122    110    056  N.BAE::               .ASCIZ      /RH.BAE/
1926              .EVEN
1927 005502      122    110    056  N.CS3::               .ASCIZ      /RH.CS3/
1928              .EVEN
1929
1930              000140      N.SIZ      ==      .-N.TBL      ;TABLE SIZE

```

ZDRMA0 DR70 REPAIR DIAGNOSTIC MACRO M1200 23-MAY-83 15:51 PAGE 56
GLOBAL TEXT SECTION

1932 005512

STARS

:*****

1933

1934

1935 005512

: REGISTER BIT NAME DEFINITIONS (B.***)

STARS

:*****

1936

1937 005512

123

103

054

B.CS1:: .ASCIZ /SC,TRE,MCPE,,DVA,PSEL,A17,A16,RDY,IE,F4,F3,F2,F1,F0,GO/

1938

1939 005606

106

122

067

B.FS:: .ASCII /FR7,FR6,FR5,FR4,FR3,FR2,FR1,FR0,/

1940 005642

104

123

067

.ASCIZ /DS7,DS6,DS5,DS4,DS3,DS2,DS1,DS0/

1941

1942 005702

104

114

124

B.CS2:: .ASCIZ /DLT,WCE,UPE,NED,NEM,PGE,MXF,MDPE,OR,IR,CLR,PAT,BAI,U2,U1,U0/

1943

1944 005776

101

124

101

B.IS:: .ASCIZ /ATA,ERR,,,XABT,ERO,ICP,IDP,IRY,,,CYC,AT3,AT2,AT1,AT0/

1945

1946 006064

054

054

054

B.AS:: .ASCIZ /,,,,,,AS7,AS6,AS5,AS4,AS3,AS2,AS1,AS0/

1947

1948 006134

102

061

065

B.BIT:: .ASCII /B15,B14,B13,B12,B11,B10,B09,B08,/

1949 006174

102

060

067

.ASCIZ /B07,B06,B05,B04,B03,B02,B01,B00/

1950

.EVEN

ZDRMA0 DR70 REPAIR DIAGNOSTIC MACRO M1200 23-MAY-83 15:51 PAGE 57
GLOBAL TEXT SECTION

					;	ERROR MESSAGES
1952						
1953						
1954						
1955	006234	122	105	107	M.ADR1::	.ASCIIZ 'REGISTER ADDRESS ERROR'
1956	006263	116	117	116	M.ADR2::	.ASCIIZ 'NON-EXISTENT DRIVE ERROR'
1957						
1958	006314	101	124	124	M.ASB1::	.ASCIIZ 'ATTENTION SUMMARY BIT NOT SET BY UNIT UNDER TEST'
1959						
1960	006375	116	117	040	M.ABT1::	.ASCIIZ 'NO WORD TRANSFER ABORT ON INTERFACE WRITE'
1961	006447	116	117	040	M.ABT2::	.ASCIIZ 'NO WORD TRANSFER ABORT ON INTERFACE READ'
1962	006520	116	117	040	M.ABT3::	.ASCIIZ 'NO BYTE TRANSFER ABORT ON INTERFACE WRITE'
1963	006572	116	117	040	M.ABT4::	.ASCIIZ 'NO BYTE TRANSFER ABORT ON INTERFACE READ'
1964						
1965	006643	101	124	101	M.ATA1::	.ASCIIZ 'ATA NOT SET ON USER ATTN CONDITION'
1966	006706	101	124	101	M.ATA2::	.ASCIIZ 'ATA NOT SET BY ERR ACTIVE'
1967	006740	101	124	101	M.ATA3::	.ASCIIZ 'ATA NOT RESET BY INTERFACE CLEAR CMD'
1968	007005	116	117	040	M.ATA4::	.ASCIIZ 'NO INTERRUPT WHEN INTERFACE STATUS ATA SET'
1969	007060	101	124	101	M.ATA5::	.ASCIIZ 'ATA NOT RESET BY WRITING TO ATTN SUMMARY BIT'
1970	007135	101	124	101	M.ATA6::	.ASCIIZ 'ATA NOT RESET BY LOADING DATA TRANSFER CMD'
1971						
1972	007210	103	123	061	M.CSR1::	.ASCIIZ 'CS1 FUNCTION BIT ERROR'
1973	007237	103	123	061	M.CSR2::	.ASCIIZ 'CS1 REGISTER STATUS ERROR'
1974						
1975	007271	127	117	122	M.WRD1::	.ASCIIZ 'WORD TRANSFER NOT COMPLETE'
1976	007324	127	117	122	M.WRD2::	.ASCIIZ 'WORD TRANSFER ERROR ON INTERFACE WRITE'
1977	007373	127	117	122	M.WRD3::	.ASCIIZ 'WORD TRANSFER ERROR ON INTERFACE READ'
1978	007441	127	117	122	M.WRD4::	.ASCIIZ 'WORD TRANSFER COMPARISON ERROR'
1979						
1980	007500	102	131	124	M.BYT1::	.ASCIIZ 'BYTE TRANSFER NOT COMPLETE'
1981	007533	102	131	124	M.BYT2::	.ASCIIZ 'BYTE TRANSFER ERROR ON INTERFACE WRITE'
1982	007602	102	131	124	M.BYT3::	.ASCIIZ 'BYTE TRANSFER ERROR ON INTERFACE READ'
1983	007650	102	131	124	M.BYT4::	.ASCIIZ 'BYTE TRANSFER COMPARISON ERROR'
1984						
1985	007707	104	101	124	M.DLT1::	.ASCIIZ 'DATA LATE ERROR; ADJUST BANDWIDTH'
1986						
1987	007751	105	122	117	M.ERO1::	.ASCIIZ 'ERO NOT SET THROUGH M8432 TEST MODULE'
1988	010017	105	122	117	M.ERO2::	.ASCIIZ 'ERO NOT RESET BY INTERFACE CLEAR CMD'
1989						
1990	010064	105	122	122	M.ERR1::	.ASCIIZ 'ERR NOT SET BY ERO ACTIVE'
1991	010116	105	122	122	M.ERR2::	.ASCIIZ 'ERR NOT RESET BY INTERFACE CLEAR CMD'
1992						
1993	010163	106	125	116	M.FSR1::	.ASCIIZ 'FUNCTION STATUS BIT ERROR'
1994						
1995	010215	111	116	124	M.IDP1::	.ASCIIZ 'INTERFACE STATUS IDP NOT SET BY DATA PARITY ERROR'
1996	010277	111	116	124	M.IDP2::	.ASCIIZ 'INTERFACE STATUS IDP NOT RESET BY INTERFACE CLEAR CMD'
1997	010365	111	116	124	M.IDP3::	.ASCIIZ 'INTERFACE STATUS IDP NOT RESET BY WRITE TO IDP BIT'
1998						
1999	010450	111	116	124	M.ICP1::	.ASCIIZ 'INTERFACE STATUS ICP NOT SET BY CONTROL PARITY ERROR'
2000	010535	111	116	124	M.ICP2::	.ASCIIZ 'INTERFACE STATUS ICP NOT RESET BY INTERFACE CLEAR CMD'
2001	010623	111	116	124	M.ICP3::	.ASCIIZ 'INTERFACE STATUS ICP NOT RESET BY WRITE TO ICP BIT'
2002						
2003	010706	116	117	040	M.INT1::	.ASCIIZ 'NO INTERRUPT ON WORD TRANSFER END OF BLOCK'
2004	010761	116	117	040	M.INT2::	.ASCIIZ 'NO INTERRUPT ON BYTE TRANSFER END OF BLOCK'

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GLOBAL TEXT SECTION

2006						
2007	011034	111	116	124	M.IRY1::	.ASCIZ "INTERFACE STATUS IRY NOT SET ON ERROR"
2008	011102	111	116	124	M.IRY2::	.ASCIZ "INTERFACE STATUS IRY BIT RESET WHEN CYC BIT SET"
2009	011162	111	116	124	M.IRY3::	.ASCIZ "INTERFACE STATUS IRY NOT RESET BY DATA TRANSFER CMD"
2010	011246	111	122	131	M.IRY4::	.ASCIZ "IRY NOT SET BY WORD TRANSFER END OF BLOCK"
2011	011320	111	122	131	M.IRY5::	.ASCIZ "IRY NOT SET BY WORD TRANSFER ABORT"
2012	011363	111	122	131	M.IRY6::	.ASCIZ "IRY NOT SET BY INTERFACE CLEAR CMD"
2013	011426	111	122	131	M.IRY7::	.ASCIZ "IRY NOT SET BY BYTE TRANSFER END OF BLOCK"
2014	011500	111	122	131	M.IRY8::	.ASCIZ "IRY NOT SET BY BYTE TRANSFER ABORT"
2015						
2016	011543	111	116	124	M.ISR1::	.ASCIZ "INTERFACE STATUS ERROR"
2017	011572	111	116	124	M.ISR2::	.ASCIZ "INTERFACE STATUS ERROR ON INTERFACE CLEAR CMD"
2018						
2019	011650	103	117	116	M.MBC1::	.ASCIZ "CONTROLLER NOT CLEARED BY MASSBUS INIT"
2020	011717	115	101	123	M.MBC2::	.ASCIZ "MASSBUS CONTROLLER ERROR"
2021						
2022	011750	115	101	123	M.RDY1::	.ASCIZ "MASSBUS CONTROLLER RDY BIT NOT RESET BY IRY"
2023	012024	115	101	123	M.RDY2::	.ASCIZ "MASSBUS CONTROLLER RDY BIT NOT SET BY IRY"
2024						
2025	012076	122	105	107	M.REG1::	.ASCIZ "REGISTER INITIALIZATION ERROR"
2026	012134	122	105	107	M.REG2::	.ASCIZ "REGISTER ERROR"
2027						
2028	012153	123	127	064	M.SW4::	.ASCIZ "SW4 DOES NOT DISABLE ATO INPUT TO INTERFACE ATA"
2029	012233	123	127	065	M.SW5::	.ASCIZ "SW5 DOES NOT DISABLE AT3 INPUT TO INTERFACE ATA"
2030	012313	123	127	066	M.SW6::	.ASCIZ "SW6 DOES NOT DISABLE AT3 TRANSFER ABORT LOGIC"
2031						
2032	012371	103	117	116	M.TRE1::	.ASCIZ "CONTROLLER TRE BIT NOT SET BY TRANSFER ABORT LOGIC"
2033						
2034	012454	111	116	124	M.UAT1::	.ASCIZ "INTERFACE STATUS USER ATTN BIT NOT SET/RESET"
2035	012531	111	116	124	M.UAT2::	.ASCIZ "INTERFACE STATUS USER ATTENTION BIT NOT RESET"

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GLOBAL TEXT SECTION

2037 012607

STARS

:*****

2038

2039

2040 012607

STARS

:*****

ERROR FORMAT STRINGS:

(F.***)

2041

2042

2043

2044 012607

045

124

045

F.NAM::

; FORMAT STATEMENTS

.ASCIZ '%T%S2'

.EVEN

2045

2046 012616

045

117

066

F.VAL::

.ASCIZ '%O6%S2'

.EVEN

2047

2048 012626

045

116

061

F.ADR1::

.ASCIZ '%N1%AREG%S5%AADRS'

.EVEN

2049

2050 012650

045

116

061

F.ADR2::

.ASCIZ '%N1%T%S2%O6'

.EVEN

2051

2052 012664

045

116

061

F.DMP1::

.ASCIZ '%N1%ACONTROLLER STATUS%N1'

.EVEN

2053

2054 012716

045

116

061

F.DMP2::

.ASCIZ '%N1%AINTERFACE STATUS%N1'

.EVEN

2055

2056 012750

045

116

061

F.DMP3::

.ASCIZ '%N1%O6%S2%O6%S2%O6%S2%O6%S2%O6%S2%O6%N1'

.EVEN

2057

2058 013020

045

116

061

F.DMP4::

.ASCIZ '%N1%T%S2%A[%O6%A]S2%O6%S2%A;'

.EVEN

2059

2060 013056

045

116

061

F.REG1::

.ASCIZ '%N1%AREG%S5%AACT%S5%AEXP%S5%AXOR%S5%ABIT(S)'

.EVEN

2061

2062 013132

045

116

061

F.REG2::

.ASCIZ '%N1%T%S2%O6%S2%O6%S2%O6%S2'

.EVEN

2063

2064 013166

045

116

061

F.DAT1::

.ASCIZ '%N1%AADRS%S4%AWRD%S3%ARECVD%S3%AEXPTD%S3%AXOR'

.EVEN

2065

2066 013244

045

116

061

F.DAT2::

.ASCIZ '%N1%O6%S2%D3%S3%O6%S2%O6%S2%O6'

.EVEN

2067

2068 013304

045

116

062

F.ERCNT::

.ASCIZ '%N2%ATOTAL ERRORS: %D3%N1'

.EVEN

2069

2070 013340

045

116

061

F.MODE::

.ASCIZ '/%N1%ACHECK SW1-7 SET TO 'OFF' POSITION%N1/'

.EVEN

2071

2072 013412

045

116

061

F.PERR::

.ASCIZ '/%N1%ACHECK SW1-8 SET TO 'ON' POSITION%N1/'

.EVEN

2073

2074 013464

045

116

061

F.CBL::

.ASCIZ '%N1%ACHECK M8432 TEST MODULE LOOP-BACK CABLE%N1'

.EVEN

2075

2076 013544

045

116

061

F.BW::

.ASCIZ '%N1%ABANDWIDTH ADJUST: TYPE CNTRL/C TO EXIT%N1'

.EVEN

2077

2078 013624

045

116

061

F.DPAT::

.ASCIZ '%N1%ADATA PATTERN: %O6%N1'

.EVEN

2079

2080 013660

045

116

061

F.CSR::

.ASCIZ '%N1%ACHECK MASSBUS CONTROLLER CSR ADDRESS'

.EVEN

2081

2082 013732

045

116

061

F.NED::

.ASCIZ '%N1%ACHECK DRIVE SELECT SWITCHES 1-3'

.EVEN

2083

2084 014000

045

116

061

F.PWR::

.ASCIZ '%N1%ACHECK UNIT FOR POWER ON'

.EVEN

2085

2086 014036

045

116

061

F.UNIT::

.ASCIZ '%N1%AP-TABLE ERROR ON UNIT%D4'

.EVEN

2087

ZDRMA0 DR70 REPAIR DIAGNOSTIC MACRO M1200 23-MAY-83 15:51 PAGE 60
GLOBAL TEXT SECTION

2089						
2090	014074	045	116	061	F.RPT1::	.ASCII '%N1%ADIAGNOSTIC SUMMARY:'
2091	014124	045	116	062		.ASCIIZ '%N2%ATEST%S4%APASSES%S2%AERRORS'
2092						.EVEN
2093	014164	045	116	061	F.RPT2::	.ASCIIZ '%N1%D2%S6%D6%S2%D6'
2094						.EVEN
2095	014210	045	124	000	F.BITS::	.ASCIIZ '%T'
2096						.EVEN
2097	014214	045	116	000	F.CRLF::	.ASCIIZ '%N'
2098						.EVEN
2099						
2100	014220	105	116	124	Q.WDP::	.ASCIIZ 'ENTER TEST DATA WORD'
2101						.EVEN
2102	014246	105	116	124	Q.BDP::	.ASCIIZ 'ENTER TEST DATA BYTE'
2103						.EVEN
2104	014274	127	117	122	Q.WBL::	.ASCIIZ 'WORDS PER BLOCK'
2105						.EVEN
2106	014314	102	131	124	Q.BBL::	.ASCIIZ 'BYTES PER BLOCK'
2107						.EVEN
2108						
2109					:	SUPERVISOR HELP FILE
2110	014334	120	122	111	Q.HLP1::	.ASCII 'PRINT SUPERVISOR HELP FILE: ''
2111	014371	104	122	123	D.FIL1::	.ASCIIZ 'DRS.HLP'
2112						.EVEN
2113						
2114					:	DIAGNOSTIC HELP FILE
2115	014402	120	122	111	Q.HLP2::	.ASCII 'PRINT DIAGNOSTIC HELP FILE: ''
2116	014437	132	104	122	D.FIL2::	.ASCIIZ 'ZDRMA0.HLP'
2117						.EVEN
2118						
2119						.LIST BEX ;EXPAND
2120						.ENABL AMA

ZDRMAO DR70 REPAIR DIAGNOSTIC
DEVICE ADDRESS ERROR ROUTINE

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```

2122 .SBTTL DEVICE ADDRESS ERROR ROUTINE
2123 014452 STARS
2124 :*****
2125 :
2126 : REPORT ADDRESS ERROR (EXTENDED PRINT)
2127 :
2128 : INPUT: A.TBL:: REGISTER ADDRESS POINTER TABLE
2129 : R.ERR:: REGISTER ADDRESS ERROR MASK
2130 : R.MAX:: MAXIMUM REGISTER TABLE INDEX
2131 :
2132 014452 OUTPUT: ERRCNT:: INCREMENT
2133 STARS
2134 :*****
2135 :
2136 014452 BGNMSG ER.ADR
2137 014452 ER.ADR::
2138 :
2139 014462 010237 002756 MOV R2,REG2 ;SAVE REGISTER 2
2140 014464 010437 002762 MOV R4,REG4 ;SAVE REGISTER 4
2141 :
2142 014462 005002 CLR R2 ;CLEAR REGISTER INDEX
2143 014464 012704 000001 MOV #1,R4 ;INITIALIZE REGISTER TEST BIT
2144 :
2145 014470 PRINTB #F.ADR1 ;PRINT ADDRESS ERROR HEADER
2146 014470 012746 012626 MOV #F.ADR1,-(SP)
2147 014474 012746 000001 MOV #1,-(SP)
2148 014500 010600 MOV SP,R0
2149 014502 104414 TRAP C$PNTB
2150 014504 062706 000004 ADD #4,SP
2151 :
2152 014510 030457 002470 100$: BIT R4,R.ERR ;TEST ERROR MASK
2153 014514 001424 200$ BEQ 200$ ;BRANCH IF BIT NOT SET
2154 :
2155 014516 005237 003004 INC ERRCNT ;BUMP ERROR COUNT
2156 014522 016237 002406 002730 MOV NA.TBL(R2),FP.NAM ;LOAD REGISTER NAME ADDRESS
2157 014530 016237 002276 002732 MOV A.TBL(R2),FP.ADR ;SAVE REGISTER ADDRESS
2158 :
2159 014536 PRINTB #F.ADR2,FP.NAM,FP.ADR ;PRINT ADDRESS ERROR
2160 014536 013746 002732 MOV FP.ADR,-(SP)
2161 014542 013746 002730 MOV FP.NAM,-(SP)
2162 014546 012746 012650 MOV #F.ADR2,-(SP)
2163 014552 012746 000003 MOV #3,-(SP)
2164 014556 010600 MOV SP,R0
2165 014560 104414 TRAP C$PNTB
2166 014562 062706 000010 ADD #10,SP
2167 :
2168 014566 006304 200$: ASL R4 ;SHIFT TEST BIT TO NEXT REGISTER
2169 014570 062702 000002 ADD #2,R2 ;BUMP INDEX COUNTER
2170 014574 020237 002466 CMP R2,R.MAX ;AND COMPARE WITH MAX INDEX VALUE
2171 014600 002743 BLT 100$ ;CONTINUE IF LESS THAN MAXIMUM
2172 :
2173 014602 PRINTB #F.CRLF ;PRINT CARRAGE RETURN/LINE FEED
2174 014602 012746 014214 MOV #F.CRLF,-(SP)
2175 014606 012746 000001 MOV #1,-(SP)
2176 014612 010600 MOV SP,R0
2177 014614 104414 TRAP C$PNTB
2178 014616 062706 000004 ADD #4,SP

```

ZDRMA0 DR70 REPAIR DIAGNOSTIC MACRO M1200 23-MAY-83 15:51 PAGE 61-1
DEVICE ADDRESS ERROR ROUTINE

```
2159
2160 014622 013702 002756      MOV    REG2,R2      ;RESTORE REGISTER 2
2161 014626 013704 002762      MOV    REG4,R4      ;RESTORE REGISTER 4
2162
2163 014632      EXIT    MSG
      014632 000167      .WORD  JSJMP
      014634 000000      .WORD  L10002-2-.
2164
2165 014636      L10002:  ENDMSG
      014636      TRAP    C$MSG
      014636 104423
```

ZDRMAO DR70 REPAIR DIAGNOSTIC MACRO M1200 23-MAY-83 15:51 PAGE 62
REGISTER INITIALIZATION ERROR ROUTINE

```

2167          .SBTTL REGISTER INITIALIZATION ERROR ROUTINE
2168 014640     STARS
                *****
2169          :
2170          : REPORT REGISTER INITIALIZATION ERROR          (EXTENDED PRINT)
2171          :
2172          : INPUT:  A.TBL::          REGISTER ADDRESS POINTER TABLE
2173          :          R.ERR::          REGISTER ADDRESS ERROR MASK
2174          :
2175          : OUTPUT: ERRCNT::          INCREMENT
2176          :
2177          : EXTERNALS:          DSPREG
2178 014640     STARS
                *****
2179          :
2180 014640     BGNMSG ER.INI
2181 014640     ER.INI::
2182 014640 010237 002756      MOV     R2,REG2          ;SAVE REGISTER 2
2183 014644 010437 002762      MOV     R4,REG4          ;SAVE REGISTER 4
2184          :
2185 014650 005002          CLR     R2          ;CLEAR REGISTER INDEX
2186 014652 012704 000001      MOV     #1,R4          ;INITIALIZE REGISTER TEST BIT
2187          :
2188 014656          PRINTX  #F.REG1          ;PRINT REGISTER ERROR HEADER
2189          :
2190          : 014656 012746 013056      MOV     #F.REG1,-(SP)
2191          : 014662 012746 000001      MOV     #1,-(SP)
2192          : 014666 010600      MOV     SP,R0
2193          : 014670 104415      TRAP    C$PNTX
2194          : 014672 062706 000004      ADD     #4,SP
2195          :
2196          : 100$: BIT     R4,R.ERR          ;TEST ERROR MASK
2197          : BEQ     200$          ;BRANCH IF BIT NOT SET
2198          :
2199          : INC     ERRCNT          ;BUMP ERROR COUNT
2200          : MOV     NA.TBL(R2),FP.NAM      ;MOVE REGISTER NAME ADDRESS
2201          : MOV     R.TBL(R2),FP.ACT      ;MOVE ACTUAL VALUE
2202          : MOV     IN.TBL(R2),FP.EXP      ;MOVE EXPECTED VALUE
2203          : MOV     BA.TBL(R2),FP.TBL      ;PARAMETERS
2204          :
2205          : JSR     PC,DSPREG          ;DISPLAY REGISTER CONTENTS
2206          :
2207          : 200$: ASL     R4          ;SHIFT TEST BIT TO NEXT REGISTER
2208          : ADD     #2,R2          ;BUMP INDEX COUNTER
2209          : CMP     R2,R.MAX          ;AND COMPARE WITH MAX INDEX VALUE
2210          : BLT     100$          ;CONTINUE IF LESS

```

ZDRMAO DR70 REPAIR DIAGNOSTIC MACRO M1200 23-MAY-83 15:51 PAGE 63
REGISTER INITIALIZATION ERROR ROUTINE

```
2206
2207 014760          PRINTX  #F.CRLF ;PRINT CARRAGE RETURN/LINE FEED
      014760 012746 014214  MOV    #F.CRLF,-(SP)
      014764 012746 000001  MOV    #1,-(SP)
      014770 010600          MOV    SP,R0
      014772 104415          TRAP   C$PNTX
      014774 062706 000004  ADD     #4,SP
2208
2209 015000 013702 002756  MOV     REG2,R2          ;RESTORE REGISTER 2
2210 015004 013704 002762  MOV     REG4,R4          ;RESTORE REGISTER 4
2211
2212 015010          EXIT    MSG
      015010 000167      .WORD  JS$JMP
      015012 000000      .WORD  L10003-2-.
2213
2214 015014          ENDMSG
      015014          L10003: TRAP   C$MSG
      015014 104423
```

ZDRMAO DR70 REPAIR DIAGNOSTIC MACRO M1200 23-MAY-83 15:51 PAGE 64
REGISTER VALUE ERROR ROUTINE

```

2216 .SBTTL REGISTER VALUE ERROR ROUTINE
2217 015016 STARS
2218 :*****
2219 :
2220 : REPORT REGISTER VALUE ERROR (EXTENDED PROINT)
2221 :
2222 : INPUT: FP.NAM:: POINTER TO NAME FORMAT
2223 : FP.EXP:: EXPECTED REGISTER CONTENTS
2224 : FP.ACT:: ACTUAL REGISTER CONTENTS
2225 : FP.TBL:: BIT EXPAND TABLE ADDRESS
2226 : FP.BIT:: PRINT BUFFER ADDRESS
2227 :
2228 : OUTPUT: ERRCNT:: INCREMENT
2229 :
2230 015016 EXTERNALS: DSPREG
2231 STARS
2232 :*****
2233 :
2234 015016 BGNMSG ER.REG
2235 015016 ER.REG::
2236 015016 PRINTX #F.REG1 ;PRINT REGISTER ERROR HEADER
2237 015016 MOV #F.REG1,-(SP)
2238 015022 MOV #1,-(SP)
2239 015026 MOV SP,R0
2240 015030 TRAP C$PNTX
2241 015032 ADD #4,SP
2242 015036 INC ERRCNT ;BUMP ERROR COUNT
2243 015042 JSR PC,DSPREG ;DISPALY REGISTER CONTENTS
2244 015046 PRINTX #F.CRLF ;NEW LINE
2245 015046 MOV #F.CRLF,-(SP)
2246 015052 MOV #1,-(SP)
2247 015056 MOV SP,R0
2248 015060 TRAP C$PNTX
2249 015062 ADD #4,SP
2250 015066 EXIT MSG ;AND RETURN
2251 015066 .WORD JSJMP
2252 015070 .WORD L10004-2-.
2253 015072 ENDMSG
2254 015072 L10004: TRAP C$MSG
2255 015072 104423

```

ZDRMAO DR70 REPAIR DIAGNOSTIC MACRO M1200 23-MAY-83 15:51 PAGE 65
REGISTER DUMP ROUTINE

```

2245          .SBTTL REGISTER DUMP ROUTINE
2246 015074    STARS
                *****
2247          .: REGISTER DUMP ROUTINE          (EXTENDED PRINT)
2248          .:
2249          .: INPUT:  R.SRH::          CONTROLLER REGISTER SELECT MASK
2250          .:          R.SDR::          INTERFACE REGISTER SELECT MASK
2251          .:
2252          .: OUTPUT: ERRCNT::          INCREMENT
2253          .:
2254          .: EXTERNALS:          DSPSTAT
2255          .: STARS
2256 015074    .: *****
                *****
2257          .: BGNMSG  ER.DMP
2258 015074    ER.DMP::
2259          .:
2260 015074    100$: PRINTB #F.DMP1          ;PRINT CONTROLLER HEADER
                MOV      #F.DMP1,-(SP)
                MOV      #1,-(SP)
                MOV      SP,R0
                TRAP     C$PNTB
                ADD      #4,SP
2261          .:
2262 015114    005237 003004          INC      ERRCNT          ;BUMP ERROR COUNT
2263 015120    013737 002500 002472 MOV      R.SRH,R.SST      ;LOAD CONTROLLER REGISTER SELECT MASK
2264 015126    004737 016164          JSR      PC,DSPSTAT      ;DISPLAY CONTROLLER REGISTERS
2265          .:
2266 015132    012746 012716          PRINTB #F.DMP2          ;PRINT INTERFACE HEADER
                MOV      #F.DMP2,-(SP)
                MOV      #1,-(SP)
                MOV      SP,R0
                TRAP     C$PNTB
                ADD      #4,SP
2267          .:
2268 015152    013737 002502 002472 MOV      R.SDR,R.SST      ;LOAD INTERFACE REGISTER SELECT MASK
2269 015160    004737 016164          JSR      PC,DSPSTAT      ;DISPLAY INTERFACE REGISTERS
2270          .:
2271 015164    000167          EXIT      MSG          ;AND RETURN
                .WORD    JSJMP
                .WORD    L10005-2-.
2272          .:
2273 015170    000000          L10005: ENDMSG
                015170    104423          TRAP     C$MSG

```

ZDRMA0 DR70 REPAIR DIAGNOSTIC MACRO M1200 23-MAY-83 15:51 PAGE 66
 DATA TRANSFER ERROR ROUTINE

```

2275      .SBTTL DATA TRANSFER ERROR ROUTINE
2276 015172 STARS
          *****
2277      :
2278      :      REPORT DATA TRANSFER ERROR      (EXTENDED PRINT)
2279      :
2280      :      INPUT:          NONE
2281      :
2282      :      OUTPUT:         PRINTS HEADER ONLY
2283 015172 STARS
          *****
2284
2285 015172      BGNMSG ER.DATA
2286 015172      ER.DATA::
2287 015172      PRINTX #F.DAT1          ;PRINT DATA ERROR HEADER
          MOV      #F.DAT1,-(SP)
          MOV      #1,-(SP)
          MOV      SP,R0
          TRAP     C$PNTX
          ADD      #4,SP
2288
2289 015212      EXIT MSG          ;AND RETURN
          .WORD    JSJMP
          .WORD    L10006-2-.
2290
2291 015216      ENDMSG
          L10006: TRAP     C$MSG
          015216 012746 013166
          015176 012746 000001
          015202 010600
          015204 104415
          015206 062706 000004
          015212 000167
          015214 000000
          015216 104423
  
```

ZDRMA0 DR70 REPAIR DIAGNOSTIC MACRO M1200 23-MAY-83 15:51 PAGE 67
GLOBAL SUBROUTINES SECTION

```

2293      .SBTTL GLOBAL SUBROUTINES SECTION
2294 015220 STARS
          ;*****
2295      ;
2296      ; ADDRESS TIME-OUT SERVICE ROUTINE
2297      ;
2298      ; OUTPUT: TRPFLG:: INCREMENT
2299 015220 STARS
          ;*****
2300      ;
2301 015220      BGNSRV TRAP4
2302 015220      TRAP4::
2303 015220 005237 003024      INC TRPFLG      ;SET TRAP FLAG
2304      ;
2305 015224      ENDSRV      ;RETURN FROM INTERRUPT
2306 015224 000002      L10007: RTI
          STARS
          ;*****
2307      ;
2308      ; DEVICE INTERRUPT SERVICE ROUTINE
2309      ;
2310      ; OUTPUT: INTFLG:: INCREMENT
2311 015226 STARS
          ;*****
2312      ;
2313 015226      BGNSRV INTSRV
2314 015226      INTSRV::
2315 015226 005237 003022      INC INTFLG      ;SET INTERRUPT FLAG
2316      ;
2317 015232      ENDSRV      ;RETURN FROM INTERRUPT
          L10010: RTI
          015232 000002

```

ZDRMAO DR70 REPAIR DIAGNOSTIC MACRO M1200 23-MAY-83 15:51 PAGE 68
SET/CLEAR TRAP VECTOR

```

2319      .SBTTL SET/CLEAR TRAP VECTOR
2320 015234 STARS
          ;*****
2321      :
2322      : DESCRIPTION:      SET TRAP VECTOR
2323      :
2324      : CALLING SEQUENCE: JSR      PC,SETRAP
2325 015234 STARS
          ;*****

2326      SETRAP::
2327 015234
2328
2329 015234      SETVEC #4,#TRAP4,#PRI07      ;SETUP VECTOR
          015234      MOV      #PRI07,-(SP)
          015240      MOV      #TRAP4,-(SP)
          015244      MOV      #4,-(SP)
          015250      MOV      #3,-(SP)
          015254      TRAP     C$SVEC
          015256      ADD      #10,SP

2330
2331 015262      RTS      PC      ;RETURN
2332 015264 STARS
          ;*****
2333      :
2334      : DESCRIPTION:      CLEAR TRAP VECTOR
2335      :
2336      : CALLING SEQUENCE: JSR      PC,CLRTRAP
2337 015264 STARS
          ;*****

2338      CLRTRAP::
2339 015264
2340
2341 015264      CLRVEC #4      ;CLEAR VECTOR
          015264      MOV      #4,R0
          015270      TRAP     C$CVEC

2342
2343 015272      RTS      PC      ;RETURN

```

ZDRMA0 DR70 REPAIR DIAGNOSTIC MACRO M1200 23-MAY-83 15:51 PAGE 69
 SET/CLEAR INTERRUPT SERVICE ROUTINE VECTOR

```

2345          .SBTTL SET/CLEAR INTERRUPT SERVICE ROUTINE VECTOR
2346 015274    STARS
                *****
2347          :
2348          : DESCRIPTION:          SET INTERRUPT SERVICE ROUTINE VECTOR
2349          :
2350          : CALLING SEQUENCE:  JSR      PC,SETISR
2351 015274    STARS
                *****
2352          SETISR::
2353 015274
2354
2355 015274      SETVEC PT.VEC,#INTSRV,PT.PRI ;SETUP VECTOR
                MOV     PT.PRI,-(SP)
                MOV     #INTSRV,-(SP)
                MOV     PT.VEC,-(SP)
                MOV     #3,-(SP)
                TRAP    C$SVEC
                ADD     #10,SP
2356
2357 015322      RTS      PC                      ;RETURN
2358 015324    STARS
                *****
2359          :
2360          : DESCRIPTION:          CLEAR INTERRUPT SERVICE ROUTINE VECTOR
2361          :
2362          : CALLING SEQUENCE:  JSR      PC,CLRISR
2363 015324    STARS
                *****
2364          CLRISR::
2365 015324
2366
2367 015324      MOV      #0,QA.CS1                ;CLEAR MBC INTERRUPT ENABLE
2368
2369 015332      CLRVEC PT.VEC
                MOV     PT.VEC,RO                ;CLEAR VECTOR
                TRAP    C$CVEC
2370
2371 015340      RTS      PC                      ;RETURN
2372

```

ZDRMAO DR70 REPAIR DIAGNOSTIC MACRO M1200 23-MAY-83 15:51 PAGE 70
 MASSBUS CONTROLLER CLEAR

2374
 2375 015342

.SBTTL MASSBUS CONTROLLER CLEAR
 STARS

2376
 2377
 2378
 2379
 2380
 2381
 2382
 2383
 2384
 2385
 2386
 2387

DESCRIPTION: CLEAR MASSBUS CONTROLLER AND TEST STATUS
 STEPS: SET CONTROLLER CLEAR BIT IN CS2 REGISTER
 RESET DRIVE SELECT IN CS2 REGISTER
 READ REGISTERS AND COMPARE CS1 REGISTER WITH EXP VALUE
 OUTPUT: MBCFLG:: INCREMENT IF UNEXPECTED STATUS (ERROR)
 CALLING SEQ: JSR PC,CLRMBC
 EXTERNALS: DLY,RDREG

2388 015342

STARS

2389

2390 015342

CLRMBC::

2391 015342 005037 003030
 2392 015346 012777 000040 164732
 2393 015354 013777 003000 164724
 2394
 2395 015362 004737 016042
 2396 015366 004737 015606
 2397
 2398 015372 022737 004200 002326
 2399 015400 001402
 2400
 2401 015402 005237 003030
 2402
 2403 015406 000207

CLR MBCFLG ;RESET ERROR FLAG
 MOV #CS2.CLR,@A.CS2 ;SET CONTROLLER CLEAR
 MOV DRIVE,@A.CS2 ;RESET UNIT SELECT
 JSR PC,DLY ;DELAY A FEW CYCLES
 JSR PC,RDREG ;READ REGISTERS
 CMP #4200,R.CS1 ;COMPARE EXPECTED STATUS WITH NEW
 BEQ 100\$;BRANCH IF IDENTICAL
 INC MBCFLG ;UNEXPECTED STATUS: INCR ERROR FLAG
 100\$: RTS PC ;AND RETURN

ZDRMA0 DR70 REPAIR DIAGNOSTIC MACRO M1200 23-MAY-83 15:51 PAGE 71
 TEST MASSBUS CONTROLLER STATUS

2405
 2406 015410

.SBTTL TEST MASSBUS CONTROLLER STATUS
 STARS

2407
 2408
 2409
 2410
 2411
 2412
 2413
 2414
 2415
 2416
 2417
 2418
 2419
 2420
 2421 015410

DESCRIPTION: TEST MASSBUS CONTROLLER FOR READY AND NO ERRORS
 STEPS: CLEAR MBC ERROR FLAG AND READ REGISTERS
 TEST FOR CS1 REGISTER RDY BIT SET
 TEST FOR CS1 REGISTER SC STATUS BIT RESET
 INPUT: R.CS1: CONTENTS OF CS1 REGISTER
 OUTPUT: INCREMENT MBCFLG IF SC STATUS SET (ERROR)
 CALLING SEQ: JSR PC,TSTMBC
 EXTERNALS: RDREG

STARS

2422
 2423 015410
 2424 015410 005037 003030
 2425 015414 004737 015606
 2426
 2427 015420 013700 002326
 2428 015424 042700 000076
 2429 015430 022700 004200
 2430 015434 001402
 2431
 2432 015436 005237 003030
 2433
 2434 015442 000207

TSTMBC::

CLR	MBCFLG	;CLEAR ERROR FLAG
JSR	PC,RDREG	;READ REGISTERS
MOV	R.CS1,R0	;RELOAD CS1 REGISTER
BIC	#76,R0	;CLEAR FUNCTION BITS F4->F0
CMP	#4200,R0	;EXPECTED: DVA & RDY
BEQ	100\$	;BRANCH IF IDENTICAL
INC	MBCFLG	;UNEXPECTED STATUS: INCR ERROR FLAG
100\$:	RTS PC	;AND RETURN

ZDRMAO DR70 REPAIR DIAGNOSTIC MACRO M1200 23-MAY-83 15:51 PAGE 72
 TEST INTERRUPT RECEIVED

2436
 2437 015444

.SBITL TEST INTERRUPT RECEIVED

STARS

2438

2439

2440

2441

2442

2443

2444

2445

2446

2447

2448

2449

2450

2451

2452 015444

DESCRIPTION: TIME OUT ON TEST FOR INTERRUPT RECEIVED

STEPS: LOAD TIME OUT VALUE
 REPEAT UNTIL TIME OUT:
 IF INTERRUPT RECEIVED: EXIT

INPUT: INTFLG:: SET TO ZERO

OUTPUT: NONE

CALLING SEQ: JSR PC,TSTINT

EXTERNALS: NONE

STARS

2453

2454 015444

2455

2456 015444 012700 002000

2457

2458 015450 005737 003022

2459 015454 001002

2460

2461 015456 005300

2462 015460 001373

2463

2464 015462 000207

TSTINT::

MOV #2000,R0 ;LOAD TIME-OUT VALUE

100\$: TST INTFLG ;TEST INTERRUPT RECEIVED
 BNE 200\$;EXIT IF NOT ZERO

DEC R0 ;DECREMENT COUNTER
 BNE 100\$;AND CONTINUE IF NOT ZERO

200\$: RTS PC ;AND RETURN

ZDRMAO DR70 REPAIR DIAGNOSTIC MACRO M1200 23-MAY-83 15:51 PAGE 73
 DR70 INTERFACE CLEAR

2466
 2467 015464

.SBTTL DR70 INTERFACE CLEAR
 STARS

2468
 2469
 2470
 2471
 2472
 2473
 2474
 2475
 2476
 2477
 2478
 2479 015464

DESCRIPTION: CLEAR DR70 INTERFACE AND TEST IRY STATUS
 STEPS: ISSUE INTERFACE CLEAR COMMAND THROUGH CS1
 READ REGISTERS AND TEST INTERFACE STATUS
 OUTPUT: INCREMENT CLRDRI FLAG IF IRY NOT SET (ERROR)
 CALLING SEQ: JSR PC,CLRDRI
 EXTERNALS: DLY,RDREG

STARS

2480

2481 015464
 2482 015464 005037 003032
 2483 015470 012777 000011 164600
 2484 015476 013777 003000 164602
 2485 015504 012777 000020 164576
 2486 015512 004737 016042
 2487 015516 004737 015606
 2488
 2489 015522 032737 000001 002326
 2490 015530 001004
 2491
 2492 015532 022737 000200 002340
 2493 015540 001402
 2494
 2495 015542 005237 003032
 2496
 2497 015546 000207

CLRDRI::

CLR	DRIFLG	;CLEAR ERROR FLAG
MOV	#CLR.CMD,@A.CS1	;ISSUE INTERFACE CLEAR COMMAND
MOV	DRIVE,@A.CS2	;RESET UNIT SELECT
MOV	#IS.CYC,@A.IS	;AND SET CYCLE REQUEST
JSR	PC,DLY	;DELAY A FEW MICROSECONDS
JSR	PC,RDREG	;READ REGISTERS
BIT	#CS1.GO,R.CS1	;TEST GO BIT RESET (REV 'A')
BNE	50\$	;ERROR IF GO NOT RESET
CMP	#IS.IRY,R.IS	;AND COMPARE WITH IRY
BEQ	100\$	;BRANCH IF INTERFACE STATUS GOOD
50\$:	INC	DRIFLG
100\$:	RTS	PC

;ERROR: SET FLAG

;AND RETURN

ZDRMAO DR70 REPAIR DIAGNOSTIC MACRO M1200 23-MAY-83 15:51 PAGE 74
 CLEAR TEST ROUTINE

```

2499          .SBTTL  CLEAR TEST ROUTINE
2500 015550    STARS
                *****
2501          :
2502          :      CLEAR TEST ROUTINE
2503          :
2504          :      INPUT  L$TEST::      CURRENT TEST NUMBER
2505          :      ERRCNT::      TEST ERROR COUNT
2506          :
2507          :      OUTPUT  RP.PASS::      INCREMENT
2508          :      RP.ERRCR::      SUMMED
2509          :      ERRCNT::      CLEARED
2510          :
2511          :      CALLING SEQ:      JSR      PC,CLRTST
2512 015550    STARS
                *****
2513          :
2514 015550    CLRTST::
2515          :
2516          :      COMPUTE TEST INDEX
2517 015550 013700 002114      MOV      L$TEST,RO      ;LOAD TEST NO.
2518 015554 005300      DEC      RO      ;SUBTRACT ONE
2519 015556 006300      ASL      RO      ;TIMES TWO FOR WORD INDEX
2520          :
2521 015560 022700 000100      CMP      #RP.SIZ,RO      ;QC TEST INDEX
2522 015564 003407      BLE      200$      ;EXIT IF TOO LARGE
2523          :
2524          :      UPDATE REPORT TABLES
2525 015566 005260 002520      ;100$: INC      RP.PASS(RO)      ;INCREMENT PASS COUNT
2526 015572 063760 003004 002620      ADD      ERRCNT,RP.ERROR(RO)      ;SUM TEST ERROR COUNT
2527 015600 005037 003004      CLR      ERRCNT      ;CLEAR ERROR COUNT
2528          :
2529 015604 000207      200$: RTS      PC      ;RETURN

```

ZDRMA0 DR70 REPAIR DIAGNOSTIC MACRO M1200 23-MAY-83 15:51 PAGE 75
 READ REGISTER CONTENTS ROUTINE

```

2531          .SBTTL  READ REGISTER CONTENTS ROUTINE
2532 015606    STARS
                *****
2533          :
2534          : DESCRIPTION:          ROUTINE TO READ REGISTER CONTENTS
2535          :
2536          : INPUT:  R.MAX::        MAXIMUM REGISTER INDEX
2537          :          A.TBL::        REGISTER ADDRESS TABLE
2538          :
2539          : OUTPUT: R.TBL::        TABLE OF REGISTER VALUES
2540          :
2541          : CALLING SEQUENCE:  JSR    PC,RDREG
2542 015606    STARS
                *****
2543          :
2544 015606          RDREG::
2545 015606 010237 002756          MOV    R2,REG2          ;SAVE REGISTER 2
2546 015612 005002          CLR     R2                    ;CLEAR INDEX REGISTER
2547          :
2548 015614 017262 002276 002326 100$: MOV    @A.TBL(R2),R.TBL(R2) ;READ REGISTER
2549 015622 062702 000002          ADD    #2,R2          ;BUMP INDEX
2550 015626 020237 002466          CMP    R2,R MAX        ;AND COMPARE WITH MAX INDEX
2551 015632 002770          BLT     100$                   ;BRANCH IF LESS
2552          :
2553 015634 013702 002756          MOV    REG2,R2          ;RESTORE REGISTER
2554 015640 000207          RTS     PC                    ;RETURN
  
```

ZDRMA0 DR70 REPAIR DIAGNOSTIC MACRO M1200 23-MAY-83 15:51 PAGE 76
BLOCK READ ROUTINE

```

2556      .SBTTL BLOCK READ ROUTINE
2557 015642 STARS
          *****
2558      :
2559      : DESCRIPTION:      ROUTINE TO READ A 64 WORD BLOCK FROM THE INTERFACE
2560      :
2561      : STEPS:            INITIALIZE FOR READ
2562      :                   ISSUE READ W/INT ENABLED AND SET CYCLE REQUEST
2563      :                   TEST FOR INTERRUPT RECEIVED OR TIME OUT
2564      :
2565      : OUTPUT:           NONE
2566      :
2567      : EXTERNALS:        RDINI,TSTINT
2568      :
2569      : CALLING SEQ:      JSR      PC,RDBLK
2570 015642 STARS
          *****
2571
2572 015642 RDBLK::
2573
2574 015642 005037 003022      CLR      INTFLG      ;CLEAR INTERRUPT FLAG
2575 015646 004737 015726      JSR      PC,RDINI      ;INITIALIZE FOR READ
2576
2577 015652 012777 000171 164416 100$: MOV      #RIE.CMD,@A.CS1      ;ISSUE INTERFACE READ
2578 015660 012777 000020 164422      MOV      #IS.CYC,@A.IS      ;AND SET CYCLE REQUEST
2579
2580 015666 004737 015444      JSR      PC,TSTINT      ;TEST INTERRUPT OR TIME OUT
2581
2582 015672 000207      RTS      PC      ;RETURN

```

ZDRMAO DR70 REPAIR DIAGNOSTIC MACRO M1200 23-MAY-83 15:51 PAGE 77
BLOCK WRITE ROUTINE

```

2584      .SBTTL BLOCK WRITE ROUTINE
2585 015674 STARS
          ;*****
2586      ;
2587      ; DESCRIPTION:      ROUTINE TO WRITE ONE 64 WORD BLOCK FROM THE INTERFACE
2588      ;
2589      ; STEPS:            INITIALIZE FOR WRITE
2590      ;                   ISSUE WRITE W/INT ENABLED AND SET CYCLE REQUEST
2591      ;                   TEST FOR INTERRUPT RECEIVED OR TIME OUT
2592      ;
2593      ; OUTPUT:           NONE
2594      ;
2595      ; EXTERNALS:        WRTINI,TSTINT
2596      ;
2597      ; CALLING SEQ:      JSR      PC,WRTBLK
2598 015674 STARS
          ;*****
2599
2600 015674 WRTBLK::
2601
2602 015674 005037 003022      CLR      INTFLG      ;CLEAR INTERRUPT FLAG
2603 015700 004737 015762      JSR      PC,WRTINI    ;INITIALIZE FOR WRITE
2604
2605 015704 012777 000161 164364 100$: MOV      #WIE.CMD,@A.CS1    ;ISSUE INTERFACE WRITE
2606 015712 012777 000020 164370      MOV      #IS.CYC,@A.IS      ;AND SET CYCLE REQUEST
2607
2608 015720 004737 015444      JSR      PC,TSTINT    ;TEST INTERRUPT OR TIME OUT
2609
2610 015724 000207      RTS      PC                  ;RETURN

```

ZDRMA0 DR70 REPAIR DIAGNOSTIC MACRO M1200 23-MAY-83 15:51 PAGE 78
 DR70 INTERFACE READ INITIALIZE

```

2612      .SBTTL DR70 INTERFACE READ INITIALIZE
2613 015726 STARS
          ;*****
2614      :
2615      : DESCRIPTION:      ROUTINE TO INITIALIZE READ FROM DR70 INTERFACE
2616      :
2617      : STEPS:            CLEAR INTERRUPT FLAG
2618      :                   LOAD WORD COUNT REGISTER
2619      :                   LOAD INPUT BUFFER ADDRESS INTO BUS ADDRESS REGISTER
2620      :                   ZERO BUS ADDRESS EXTENTION REGISTER FOR 11/70 CPU'S
2621      :
2622      : INPUT:            D.BLOCK::      TRANSFER BLOCK SIZE
2623      :
2624      : OUTPUT:          NONE
2625 015726 STARS
          ;*****
2626
2627 015726 RDINI::
2628 015726 005037 003022      CLR      INTFLG      ;CLEAR INTERRUPT FLAG
2629 015732 010077 164342      MOV      R0,@A.WC      ;INITIALIZE NUMBER WORDS TO READ
2630 015736 012777 003054 164336 MOV      #IBUF,@A.BA      ;LOAD INPUT BUFFER ADDRESS
2631
2632 015744 005737 003012      TST      CPUFLG      ;TEST FOR 11/70 CPU
2633 015750 001403           BEQ      100$          ;NO: CONTINUE
2634
2635 015752 012777 000000 164342 MOV      #0,@A.BAE      ;11/70: ZERO BUFFER ADDRESS EXTENTION
2636
2637 015760 000207           100$: RTS      PC      ;RETURN
  
```

ZDRMAO DR70 REPAIR DIAGNOSTIC MACRO M1200 23-MAY-83 15:51 PAGE 79
 DR70 INTERFACE WRITE INITIALIZE

```

2639      .SBTTL DR70 INTERFACE WRITE INITIALIZE
2640 015762 STARS
          ;*****
2641      :
2642      : DESCRIPTION:      ROUTINE TO INITIALIZE WRITE FROM DR70 INTERFACE
2643      :
2644      : STEPS:           CLEAR INTERRUPT FLAG
2645      :                   LOAD WORD COUNT REGISTER
2646      :                   LOAD OUTPUT BUFFER ADDRESS INTO BUS ADDRESS REGISTER
2647      :                   ZERO BUS ADDRESS EXTENSION REGISTER FOR 11/70 CPU'S
2648      :
2649      : INPUT:           D.BLOCK::      TRANSFER BLOCK SIZE
2650      :
2651      : OUTPUT:          NONE
2652 015762 STARS
          ;*****
2653      :
2654 015762 WRTINI::
2655 015762 005037 003022      CLR      INTFLG      ;CLEAR INTERRUPT FLAG
2656 015766 010077 164306      MOV      R0, @A.WC    ;INITIALIZE NUMBER WORDS TO READ
2657 015772 012777 004054 164302 MOV      #OBUF, @A.BA ;LOAD OUTPUT BUFFER ADDRESS
2658      :
2659 016000 005737 003012      TST      CPUFLG      ;TEST FOR 11/70 CPU
2660 016004 001403          BEQ      100$          ;NO: CONTINUE
2661      :
2662 016006 012777 000000 164306 MOV      #0, @A.BAE ;11/70: ZERO BUFFER ADDRESS EXTENSION
2663      :
2664 016014 000207          100$: RTS      PC          ;RETURN
  
```

ZDRMA0 DR70 REPAIR DIAGNOSTIC MACRO M1200 23-MAY-83 15:51 PAGE 80
 DELAY ROUTINES

```

2666 .SBTTL DELAY ROUTINES
2667 016016 STARS
          *****
2668 :
2669 : DESCRIPTION: DMA TRANSFER DELAY ROUTINE
2670 :
2671 : CALLING SEQUENCE: JSR PC,DMADLY
2672 :
2673 : INPUT: DMACNT=DELAY COUNT FOR THIS CPU.
2674 : OUTPUT: NONE
2675 : REGISTER USAGE: RO=SCRATCH
2676 016016 STARS
          *****

2677 DMADLY::
2678 016016
2679
2680 016016 013700 003036      MOV    DMACNT,RO      ;INITIALIZE DELAY COUNT
2681 016022      10$:      DEC    RO              ;DECREMENT COUNT REGISTER
2682 016022 005300      BNE    10$              ;CONTINUE UNTIL ZERO
2683 016024 001376
2684
2685 016026 000207      RTS    PC              ;RETURN
2686
2687 016030 STARS
          *****

2688 :
2689 : DESCRIPTION: SILO FILL DELAY ROUTINE
2690 :
2691 : CALLING SEQUENCE: JSR PC,SILODLY
2692 :
2693 : INPUT: SILOCNT=DELAY COUNT FOR THIS RH ADAPTER.
2694 : OUTPUT: NONE
2695 : REGISTER USAGE: RO=SCRATCH
2696 016030 STARS
          *****

2697 SILODLY::
2698 016030
2699
2700 016030 013700 003040      MOV    SILOCNT,RO      ;INITIALIZE DELAY COUNT
2701 016034      10$:      DEC    RO              ;DECREMENT COUNT REGISTER
2702 016034 005300      BNE    10$              ;CONTINUE UNTIL ZERO
2703 016036 001376
2704
2705 016040 000207      RTS    PC              ;RETURN
2706
2707 016042 STARS
          *****

2708 :
2709 : DESCRIPTION: ROUTINE TO DELAY A FEW CYCLES
2710 :
2711 : CALLING SEQUENCE: JSR PC,DLY
2712 :
2713 : INPUT: NONE
2714 : OUTPUT: NONE
2715 : REGISTER USAGE: RO=SCRATCH
2716 016042 STARS
          *****

```

ZDRMA0 DR70 REPAIR DIAGNOSTIC MACRO M1200 23-MAY-83 15:51 PAGE 80-1
DELAY ROUTINES

2717					
2718	016042				
2719	016042	012700	000004	DLY::	
2720	016046			MOV	#4,R0
2721	016046	005300		10\$:	
2722	016050	001376		DEC	R0
2723				BNE	10\$
2724	016052	000207		RTS	PC

;LOAD DELAY COUNT
;DECREMENT COUNT
;CONTINUE UNTIL ZERO
;RETURN

ZDRMA0 DR70 REPAIR DIAGNOSTIC MACRO M1200 23-MAY-83 15:51 PAGE 81
REGISTER DISPLAY ROUTINE

```

2726          .SBTTL REGISTER DISPLAY ROUTINE
2727 016054    STARS
                *****
2728          ::
2729          :: DISPLAY REGISTER CONTENTS          (EXTENDED PRINT)
2730          ::
2731          :: INPUT:          FP.NAM::          REGISTER NAME PTR
2732          ::                FP.ACT::          ACTUAL VALUE
2733          ::                FP.EXP::          EXPECTED VALUE
2734          ::                FP.BFR::          BIT EXPAND TABLE PTR
2735          ::
2736          :: OUTPUT:         FP.XOR::          COMPUTED XOR VALUE
2737          ::
2738          :: EXTERNALS:      DSPBITS
2739 016054    STARS
                *****
2740          DSPREG::
2741 016054
2742
2743 016054 013700 002734          MOV    FP.EXP,R0          ;LOAD EXPECTED VALUE
2744 016060 013737 002736 002740  MOV    FP.ACT,FP.XOR      ;LOAD ACTUAL VALUE
2745 016066 074037 002740          XOR     R0,FP.XOR          ;COMPUTE XOR VALUE
2746
2747 016072          PRINTB   #F.REG2,FP.NAM,FP.ACT,FP.EXP,FP.XOR      ;PRINT VALUES
2748 016072 013746 002740          MOV     FP.XOR,-(SP)
2749 016076 013746 002734          MOV     FP.EXP,-(SP)
2750 016102 013746 002736          MOV     FP.ACT,-(SP)
2751 016106 013746 002730          MOV     FP.NAM,-(SP)
2752 016112 012746 013132          MOV     #F.REG2,-(SP)
2753 016116 012746 000005          MOV     #5,-(SP)
2754 016122 010600          MOV     SP,R0
2755 016124 104414          TRAP    C$PNTB
2756 016126 062706 000014          ADD     #14,SP
2757
2758 016132 004737 017006          JSR     PC,DSPBITS          ;EXPAND BITS
2759
2760 016136          PRINTB   #F.BITS,FP.BIT          ;PRINT BITS
2761 016136 013746 002750          MOV     FP.BIT,-(SP)
2762 016142 012746 014210          MOV     #F.BITS,-(SP)
2763 016146 012746 000002          MOV     #2,-(SP)
2764 016152 010600          MOV     SP,R0
2765 016154 104414          TRAP    C$PNTB
2766 016156 062706 000006          ADD     #6,SP
2767
2768 016162 000207          RTS     PC          ;RETURN

```

ZDRMA0 DR70 REPAIR DIAGNOSTIC MACRO M1200 23-MAY-83 15:51 PAGE 82
REGISTER STATUS DISPLAY ROUTINE

```

2755 .SBTTL REGISTER STATUS DISPLAY ROUTINE
2756 016164 STARS
*****
2757 DISPLAY REGISTER STATUS (EXTENDED PRINT)
2758
2759 INPUT: R.SST:: REGISTER SELECT MASK
2760 R.MAX:: MAX REGISTER TABLE INDEX
2761 R.TBL:: REGISTER VALUE TABLE
2762 NA.TBL:: REGISTER NAME TABLE
2763 A.TBL:: REGISTER ADDRESS TABLE
2764 BA.TBL:: BIT DEFINITION TABLE
2765
2766 CALLING SEQ: JSR PC,DSPSTAT
2767 STARS
*****
2769 DSPSTAT::
2770 016164
2771
2772 016164 010237 002756 MOV R2,REG2 ;SAVE
2773 016170 010437 002762 MOV R4,REG4 ;REGISTERS
2774
2775 ; PRINT REGISTER NAMES
2776
2777 016174 005002 100$: CLR R2 ;CLEAR TABLE INDEX
2778 016176 012704 000001 MOV #1,R4 ;INITIALIZE SELECT BIT
2779
2780 016202 03 002472 125$: BIT R4,R.SST ;TEST SELECT MASK
2781 016206 001. 00 BEQ 150$ ;BRANCH IF BIT RESET
2782
2783 016210 PRINTB #F.DMP4,NA.TBL(R2),A.TBL(R2),R.TBL(R2) ;PRINT NAME,ADDR,VALUE
2784 016210 016246 002326 MOV R.TBL(R2),-(SP)
2785 016214 016246 002276 MOV A.TBL(R2),-(SP)
2786 016220 016246 002406 MOV NA.TBL(R2),-(SP)
2787 016224 012746 013020 MOV #F.DMP4, -(SP)
2788 016230 012746 000004 MOV #4, -(SP)
2789 016234 010600 MOV SP,R0
2790 016236 104414 TRAP C$PNTB
2791 016240 062706 000012 ADD #12,SP
2792
2793 016244 005762 002326 TST R.TBL(R2) ;TEST VALUE
2794 016250 001426 BEQ 150$ ;SKIP BITS IF ZERO
2795
2796 016252 022762 006134 002436 CMP #B.BIT,BA.TBL(R2) ;TEST FOR NULL BIT DEFS
2797 016260 001422 BEQ 150$ ;IF NULL SKIP DISPLAY
2798
2799 016262 016237 002326 002740 MOV R.TBL(R2),FP.XOR ;LOAD VALUE
2800 016270 016237 002436 002746 MOV BA.TBL(R2),FP.TBL ;LOAD TABLE ADDRESS
2801 016276 004737 017006 JSR PC,DSPBITS ;FORMAT BITS
2802 016302 PRINTB #F.BITS,FP.BIT ;PRINT BITS
2803 016302 013746 002750 MOV FP.BIT, -(SP)
2804 016306 012746 014210 MOV #F.BITS, -(SP)
2805 016312 012746 000002 MOV #2, -(SP)
2806 016316 010600 MOV SP,R0
2807 016320 104414 TRAP C$PNTB
2808 016322 062706 000006 ADD #6,SP
2809
2810 2795

```

ZDRMA0 DR70 REPAIR DIAGNOSTIC MACRO M1200 23-MAY-83 15:51 PAGE 82-1
REGISTER STATUS DISPLAY ROUTINE

2796	016326	006304		150\$:	ASL	R4		;SHIFT SELECT
2797	016330	062702	000002		ADD	#2,R2		;INCREMENT INDEX
2798	016334	020237	002466		CMP	R2,R.MAX		;COMPARE WITH MAX
2799	016340	002720			BLT	125\$		;CONTINUE IF LESS THAN MAX
2800								
2801	016342				PRINTB	#F.CRLF		;NEW LINE
	016342	012746	014214		MOV	#F.CRLF,-(SP)		
	016346	012746	000001		MOV	#1,-(SP)		
	016352	010600			MOV	SP,R0		
	016354	104414			TRAP	C\$PNTB		
	016356	062706	000004		ADD	#4,SP		
2802								
2803	016362	013702	002756	300\$:	MOV	REG2,R2		;RESTORE
2804	016366	013704	002762		MOV	REG4,R4		;REGISTERS
2805								
2806	016372	000207			RTS	PC		;RETURN

ZDRMA0 DR70 REPAIR DIAGNOSTIC MACRO M1200 23-MAY-83 15:51 PAGE 83
DATA TRANSFER ERROR ROUTINE

```

2808      .SBTTL DATA TRANSFER ERROR ROUTINE
2809 016374 STARS
          *****
2810      :
2811      : DISPLAY DATA TRANSFER ERROR          (EXTENDED PRINT)
2812      :
2813      : INPUT:  FP.NDX::          BUFFER INDEX
2814      :          FP.EXP::          EXPECTED (SENT) DATA VALUE
2815      :          FP.ACT::          ACTUAL (RECEIVED) DATA VALUE
2816      :
2817      : OUTPUT: FP.ADR::          DATA ADDRESS
2818      :          FP.NDX::          WORD NUMBER
2819      :          FP.XOR::          EXCLUSIVE OR VALUE
2820      :
2821      : CALLING SEQ:          JSR    PC,DSPDATA
2822 016374 STARS
          *****
2823      DSPDATA::
2824 016374      MOV    FP.EXP,R0          ;LOAD EXPECTED VALUE
2825 016374 013700 002734      MOV    FP.ACT,FP.XOR      ;LOAD ACTUAL VALUE
2826 016400 013737 002736 002740      XOR    R0,FP.XOR      ;COMPUTE EXCLUSIVE OR
2827 016406 074037 002740
2828      MOV    #IBUF,FP.ADR          ;LOAD BUFFER START ADDRESS
2829 016412 012737 003054 002732      ADD    FP.NDX,FP.ADR      ;ADD INDEX
2830 016420 063737 002742 002732
2831      MOV    FP.NDX,R0          ;LOAD INDEX
2832 016426 013700 002742      ASR    R0          ;DIVIDE BY TWO
2833 016432 006200          INC    R0          ;RELATIVE TO ONE
2834 016434 005200          MOV    R0,FP.NDX      ;SAVE AS WORD NUMBER
2835 016436 010037 002742
2836      PRINTX #F.DAT2,FP.ADR,FP.NDX,FP.ACT,FP.EXP,FP.XOR
2837 016442      MOV    FP.XOR,-(SP)
          016442 013746 002740      MOV    FP.EXP,-(SP)
          016446 013746 002734      MOV    FP.ACT,-(SP)
          016452 013746 002736      MOV    FP.NDX,-(SP)
          016456 013746 002742      MOV    FP.ADR,-(SP)
          016462 013746 002732      MOV    #F.DAT2,-(SP)
          016466 012746 013244      MOV    #6,-(SP)
          016472 012746 000006      MOV    SP,R0
          016476 010600          TRAP   C$PNTX
          016500 104415          ADD    #16,SP
          016502 062706 000016
2838      RTS    PC
2839 016506 000207

```

ZDRMA0 DR70 REPAIR DIAGNOSTIC MACRO M1200 23-MAY-83 15:51 PAGE 84
 DATA TRANSFER ERROR ROUTINE

```

2841      .SBTTL DATA TRANSFER ERROR ROUTINE
2842 016510 STARS
          ;*****
2843      ;
2844      ; DISPLAY DATA TRANSFER ERROR          (EXTENDED PRINT)
2845      ;
2846      ; INPUT:          FP.DPAT::          DATA PATTERN
2847      ;                F.DPAT::          DISPLAY FORMAT ADDRESS
2848      ;
2849      ; OUTPUT:         DATA PATTERN DISPLAYED
2850      ;
2851      ; CALLING SEQ:    JSR      PC,DSPDPAT
2852 016510 STARS
          ;*****
2853
2854 016510 DSPDPAT::
2855
2856 016510      PRINTB #F.DPAT,FP.DPAT          ;DISPLAY DATA
          MOV      FP.DPAT,-(SP)
          MOV      #F.DPAT,-(SP)
          MOV      #2,-(SP)
          MOV      SP,R0
          TRAP     C$PNTB
          ADD      #6,SP
2857
2858 016534      RTS      PC
  
```

ZDRMA0 DR70 REPAIR DIAGNOSTIC MACRO M1200 23-MAY-83 15:51 PAGE 85
 HELP FILE DUMP ROUTINE

2860
 2861 016536

.SBTTL HELP FILE DUMP ROUTINE

STARS

2862

/// SUBROUTINE TO DUMP DOS HELP FILE TO CONSOLE

2863

///

INPUT: D.FILPTR: POINTER TO 'FILNAM.EXT'

2864

///

OUTPUT: PRINTS 72 CHARACTER BUFFER TO CONSOLE

2865

///

REGISTER USAGE: R1 = POINTER TO LINE TEXT BUFFER

2866

///

R2 = TAB POSITION COUNTER

2867

///

R4 = CHARACTER FROM FILE

2868

///

CALLING SEQ: MOV #FILNAM,D.FILPTR

2869

///

JSR PC,DPSFILE

2870

///

FUNCTION: DPSFILE WILL OPEN, READ AND CLOSE THE SELETED FILE
 USING THE DIAG SUPERVISOR MACROS. CHARACTERS
 ARE READ ONE AT A TIME AND TRANSFERRED TO THE
 LINE BUFFER, WHICH IS DUMPED TO THE CONSOLE
 WHEN FULL.

2871

///

2872

///

2873

///

2874

///

2875

///

2876

///

2877

///

2878

///

2879

///

2880

///

2881 016536

///

STARS

2882

2883

000040

2884

000015

2885

000012

2886

000011

BLK

=

40

;BLANK CHAR

CR

=

15

;CARRAGE RETURN CHAR

LF

=

12

;LINE FEED CHAR

TAB

=

11

;TAB CHAR

ZDRMA0 DR70 REPAIR DIAGNOSTIC MACRO M1200 23-MAY-83 15:51 PAGE 86
HELP FILE DUMP ROUTINE

```

2888 016536
2889
2890 016536 010137 002754      MOV      R1,REG1      ;SAVE
2891 016542 010237 002756      MOV      R2,REG2      ;REGISTERS
2892 016546 010437 002762      MOV      R4,REG4
2893 016552 005037 003020      CLR      TABFLG      ;CLEAR TAB ACTIVE FLAG
2894
2895      ;      OPEN FILE AND PRINT NULL LINE
2896
2897 016556      100$: OPEN      D.FILPTR      ;OPEN FILE
      016556 013700 002504      MOV      D.FILPTR,R0
      016562 104434      TRAP      C$OPEN
2898 016564 012701 005260      MOV      #LINBUF,R1      ;AND LOAD POINTER TO BUFFER
2899 016570 112721 000015      MOV      #CR,(R1)+      ;MOVE CARRAGE RETURN
2900 016574 112721 000012      MOV      #LF,(R1)+      ;AND LINE FEED TO BUFFER
2901 016600 112704 000000      MOV      #0,R4      ;FOLLOWED BY NULL
2902 016604 004737 016714      JSR      PC,600$      ;PRINT BUFFER, RESET R1
2903
2904      ;      GET NEXT CHARACTER FROM SUPERVISOR, AND TEST FOR END OF FILE
2905
2906 016610      200$: GETBYTE R4      ;GET NEXT CHAP IN R4
      016610 104426      TRAP      C$GETB
      016612 110004      MOV      R0,R4
2907 016614      BNCOMplete 400$      ;EOF IF INCOMPLETE
      016614 103013      BCC      400$
2908 016616 001414      BEQ      425$      ;OR IF CHARACTER = ZERO
2909
2910      ;      TEST AND PROCESS TAB CHARACTER
2911
2912 016620 122704 000011      300$: CMPB      #TAB,R4      ;COMPARE WITH TAB
2913 016624 001004      BNE      350$      ;NO: CONTINUE
2914 016626 112704 000040      MOV      #BLK,R4      ;YES: LOAD R4 WITH A BLANK
2915 016632 005237 003020      INC      TABFLG      ;AND SET TAB ACTIVE
2916
2917 016636 004737 016714      350$: JSR      PC,600$      ;PRINT SPACES FOR TAB
2918 016642 000762      BR      200$      ;AND RETRIEVE NEXT CHARACTER
2919
2920      ;      LAST CHAR OR END OF FILE
2921
2922 016644 112704 000000      400$: MOV      #0,R4      ;INSURE NULL CHAR
2923
2924 016650 004737 016714      425$: JSR      PC,600$      ;EMPTY BUFFER
2925 016654 112721 000015      MOV      #CR,(R1)+      ;OUTPUT CARRAGE RETURN
2926 016660 112721 000012      MOV      #LF,(R1)+      ;AND LINE FEED
2927 016664 112704 000000      MOV      #0,R4      ;FOLLOWED BY NULL
2928 016670 004737 016714      JSR      PC,600$      ;PRINT
2929
2930      ;      CLOSE FILE AND RETURN TO MAIN
2931
2932 016674      500$: CLOSE      ;CLOSE FILE
      016674 104435      TRAP      C$CLOS
2933 016676 013701 002754      MOV      REG1,R1      ;RESTORE
2934 016702 013702 002756      MOV      REG2,R2      ;REGISTERS
2935 016706 013704 002762      MOV      REG4,R4
2936 016712 000207      RTS      PC      ;AND RETURN

```

ZDRMA0 DR70 REPAIR DIAGNOSTIC MACRO M1200 23-MAY-83 15:51 PAGE 87
HELP FILE DUMP ROUTINE

2938 016714

STARS

2939

2940

2941

2942 016714

STARS

SUBROUTINE TO TRANSFER CHARACTERS TO PRINT BUFFER AND DUMP
BUFFER WHEN FULL.

2943

2944

2945

2946 016714 110421

2947 016716 001403

2948 016720 022701 005350

2949 016724 001012

2950

2951

2952

2953 016726

016726 012746 005256

016732 012746 000001

016736 010600

016740 104414

016742 062706 000004

2954 016746 012701 005260

2955

2956

2957

2958 016752 120427 000040

2959 016756 100406

2960

2961 016760 005302

2962 016762 001404

2963 016764 005737 003020

2964 016770 001351

2965 016772 000207

2966

2967

2968

2969 016774 012702 000010

2970 017000 005037 003020

2971 017004 000207

; MOVE CHAR TO BUFFER, TEST FOR NULL CHAR OR END OF BUFFER

600\$: MOVB R4,(R1)+ ;MOVE CHAR TO BUFFER
BEQ 700\$;PRINT BUFFER IF NULL
CMP #EOL,R1 ;TEST FOR END OF BUFFER
BNE 800\$;NO: CONTINUE

; PRINT BUFFER AND RESET POINTER

700\$: PRINTB #LINE ;PRINT LINE AT CONSOLE
MOV #LINE,-(SP)
MOV #1,-(SP)
MOV SP,R0
TRAP C\$PNTB
ADD #4,SP
MOV #LINBUF,R1 ;AND RESET POINTER

; TEST FOR CONTROL CHARS, TAB ACTIVE OR RETURN

800\$: CMPB R4,#BLK ;COMPARE CHAR WITH BLANK
BMI 850\$;BRANCH IF CONTROL CHAR

DEC R2 ;DEC TAB COUNTER
BEQ 850\$;BRANCH TO RESET
TST TABFLG ;NOW TEST TAB FLAG
BNE 600\$;ACTIVE: MOVE ANOTHER BLANK
RTS PC ;NO: JUST RETURN

; RESET TAB COUNTER, TAB ACTIVE FLAG AND RETURN

850\$: MOV #8,R2 ;RESET TAB
CLR TABFLG ;CLEAR TAB ACTIVE FLAG
RTS PC ;AND RETURN

ZDRMA0 DR70 REPAIR DIAGNOSTIC MACRO M1200 23-MAY-83 15:51 PAGE 88
EXPAND BIT NAMES

```

2973          .SBTTL EXPAND BIT NAMES
2974 017006    STARS
                *****
2975          :
2976          : ROUTINE TO EXPAND REGISTER BIT NAMES
2977          :
2978          : INPUT:          FP.BIT::      POINTER TO 72 BYTE PRINT BUFFER
2979          :                FP.TBL::      POINTER TO BIT EXPAND TABLE
2980          :                FP.XOR::      VALUE TO EXPAND
2981          :
2982          : CALLING SEQUENCE: JSR      PC,DSPBITS
2983 017006    STARS
                *****
2984          :
2985 017006    DSPBITS::
2986          :
2987          :      SAVE REGISTERS R1,R2 & R4
2988          :
2989 017006 010137 002754      MOV      R1,REG1          ;SAVE
2990 017012 010237 002756      MOV      R2,REG2          ;REGISTERS
2991 017016 010437 002762      MOV      R4,REG4
2992          :
2993          :      INITIALIZE PARAMETERS
2994          :
2995 017022 005000          CLR      R0                  ;CLEAR CHARACTER
2996 017024 013701 002746      MOV      FP.TBL,R1        ;LOAD EXPAND TABLE ADDRESS
2997 017030 013702 002750      MOV      FP.BIT,R2        ;LOAD PRINT BUFFER ADDRESS
2998 017034 012704 100000      MOV      #100000,R4       ;INITIALIZE BIT SELECT
2999 017040 012737 000110 003006  MOV      #72.,BITCNT    ;AND INITIALIZE CHARACTER COUNT
3000          :
3001 017046 005000          CLR      R0                  ;PRIME REGISTER WITH NULL
3002 017050 005737 002740      TST      FP.XOR          ;TEST FOR NON ZERO VALUE
3003 017054 001434          BEQ      400$              ;BRANCH IF ZERO
3004 017056 000403          BR       150$              ;TEST FIRST BIT

```

ZDRMA0 DR70 REPAIR DIAGNOSTIC MACRO M1200 23-MAY-83 15:51 PAGE 89
EXPAND BIT NAMES

```

3006
3007      ;      SHIFT BIT SELECT AND TEST
3008
3009 017060 000241      100$: CLC      ;CLEAR CARRY BEFORE SHIFT
3010 017062 006004      ROR      R4      ;SHIFT SELECT TO NEXT BIT
3011 017064 001432      BEQ      450$     ;BRANCH IF SELECT REGISTER ZERO
3012
3013 017066 030437 002740      150$: BIT      R4,FP.XOR      ;TEST FOR SELECT BIT SET
3014 017072 001006      BNE      300$     ;BRANCH IF BIT SET
3015
3016      ;      ADVANCE TABLE POINTER PAST NEXT DELIMETER
3017
3018 017074 112100      200$: MOVB     (R1)+,R0      ;READ CHAR FROM TABLE & BUMP PTR
3019 017076 001425      BEQ      450$     ;BRANCH IF NULL CHARACTER
3020
3021 017100 120027 000054      210$: CMPB     R0,#54      ;COMPARE WITH DELIMETER
3022 017104 001373      BNE      200$     ;BRANCH BACK IF NOT DELIMETER
3023 017106 000764      BR       100$     ;CONTINUE WITH NEXT BIT
3024
3025      ;      MOVE EXPANDED NAME TO PRINT BUFFER AND ADVANCE TABLE PTR
3026
3027 017110 112100      300$: MOVB     (R1)+,R0      ;READ CHAR FROM TABLE & BUMP PTR
3028 017112 001417      BEQ      450$     ;BRANCH IF NULL CHARACTER
3029
3030 017114 120027 000054      310$: CMPB     R0,#54      ;COMPARE WITH DELIMETER
3031 017120 001405      BEQ      350$     ;BRANCH IF DELIMETER
3032
3033 017122 110022      325$: MOVB     R0,(R2)+      ;MOVE CHAR TO BUFFER & BUMP PTR
3034 017124 005337 003006      DEC      BITCNT      ;DECREMENT CHARACTER COUNT
3035 017130 001367      BNE      300$     ;MOVE NEXT CHAR IF COUNT NOT ZERO
3036 017132 000405      BR       400$     ;COUNT EXPIRED: ADD PROMPT CHAR
3037
3038 017134 112722 000040      350$: MOVB     #40,(R2)+      ;MOVE BLANK CHAR TO BUFFER & BUMP PTR
3039 017140 005337 003006      DEC      BITCNT      ;DECREMENT CHARACTER COUNT
3040 017144 001345      BNE      100$     ;TEST NEXT BIT IF COUNT NOT ZERO
3041
3042      ;      CHARACTER COUNT EXPIRED: MOVE PROMPT CHAR TO BUFFER
3043
3044 017146 112722 000077      400$: MOVB     #77,(R2)+      ;MOVE PROMPT & BUMP PTR

```

ZDRMA0 DR70 REPAIR DIAGNOSTIC MACRO M1200 23-MAY-83 15:51 PAGE 90
EXPAND BIT NAMES

```
3046
3047      ;      LAST CHARACTER TO MOVE:  NULL
3048
3049 017152 110012      450$:  MOVB      R0,(R2)      ;MOVE NULL INTO BUFFER
3050
3051      ;      RESTORE REGISTERS R1,R2 & R4
3052
3053 017154 013701 002754      500$:  MOV      REG1,R1      ;RESTORE
3054 017160 013702 002756      MOV      REG2,R2      ;REGISTERS
3055 017164 013704 002762      MOV      REG4,R4
3056
3057 017170 000207      RTS      PC      ;AND RETURN
3058
3059 017172      ENDMOD
3060
3061      .SBTTL
```

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REPORT CODING SECTION

```

3074          .SBTTL REPORT CODING SECTION
3102          BGNMOD
3103 017172
3104
3105          .SBTTL REPORT CODING SECTION
3106 017172
3107          STARS
3108          :*****
3109          :
3110          : REPORT SECTION GENERATES SUMMARY
3111          : AND CLEARS TABLES FOR EACH TEST EXECUTED.
3112          :
3113          : INPUT      RP.SIZ      MAX NUMBER OF TESTS
3114          :           RP.PASS::   PASS COUNT TABLE
3115          :           RP.ERROR::  ERROR COUNT TABLE
3116 017172
3117          :
3118          : OUTPUT      TEST NO., PASS COUNT & ERROR COUNT
3119          : STARS
3120          :*****
3121          :
3122          : BGNRPT
3123          : LSRPT::
3124          :
3125          : PRINTS  #F.RPT1      ;PRINT REPORT HEADER
3126          : MOV     #F.RPT1,-(SP)
3127          : MOV     #1,-(SP)
3128          : MOV     SP,R0
3129          : TRAP    C$PNTS
3130          : ADD     #4,SP
3131          :
3132          : MOV     #1,R1      ;INITIALIZE TEST NUMBER
3133          : MOV     #0,R2      ;INITIALIZE TEST INDEX
3134          :
3135          : 100$: TST     RP.PASS(R2)      ;TEST FOR MORE THAN ONE PASS
3136          : BEQ     200$      ;CONTINUE IF NO PASS
3137          :
3138          : PRINTS  #F.RPT2,R1,RP.PASS(R2),RP.ERROR(R2)
3139          : MOV     RP.ERROR(R2),-(SP)
3140          : MOV     RP.PASS(R2),-(SP)
3141          : MOV     R1,-(SP)
3142          : MOV     #F.RPT2,-(SP)
3143          : MOV     #4,-(SP)
3144          : MOV     SP,R0
3145          : TRAP    C$PNTS
3146          : ADD     #12,SP
3147          :
3148          : 200$: CLR     RP.PASS(R2)      ;CLEAR PASS COUNT
3149          : CLR     RP.ERROR(R2)      ;CLEAR ERROR COUNT
3150          :
3151          : INC     R1      ;INCREMENT TEST NO.
3152          : ADD     #2,R2      ;BUMP INDEX
3153          : CMP     #MAXTST,R1      ;COMPARE WITH LAST TEST NO
3154          : BPL     100$      ;AND CONTINUE UNTIL DONE
3155          :
3156          : EXIT     RPT
3157          : .WORD    JSJMP
3158          : .WORD    L10011-2-.
3159
3139

```

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REPORT CODING SECTION

3140

.EVEN

3141

3142 017312

ENDRPT

017312

L10011:

017312 104425

TRAP

CSRPT

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PROTECTION TABLE

```
3144 .SBTTL PROTECTION TABLE
3145 :++
3146 : THIS TABLE IS USED BY THE RUNTIME SERVICES
3147 : TO PROTECT THE LOAD MEDIA.
3148 :--
3149
3150 017314 BGNPROT
      017314 L$PROT::
3151
3152 017314 177777 -1 ;OFFSET INTO P-TABLE FOR CSR ADDRESS
3153 017316 177777 -1 ;OFFSET INTO P-TABLE FOR MASSBUS ADDRESS
3154 017320 177777 -1 ;OFFSET INTO P-TABLE FOR DRIVE NUMBER
3155
3156 017322 ENDPROT
```

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PROGRAM INITIALIZATION SECTION

```

3158          .SBTTL PROGRAM INITIALIZATION SECTION
3159 017322    STARS
               *****
3160          .INITIALIZATION SECTION:
3161
3162          .STEPS:      IF NOT INIFLG THEN:
3163                      ASK FOR & PRINT SUPERVISOR HELP FILE
3164                      ASK FOR & PRINT DIAGNOSTIC HELP FILE
3165
3166                      RETRIEVE P-TABLE ADDRESS & SAVE DATA LOCALLY
3167
3168                      IF PROGRAM START THEN:
3169                          RESET UNIBUS
3170                          CLEAR PRINT MSG FLAGS AND REPORT TABLES
3171                          DETERMINE CPU TYPE & GENERATE REGISTER SELECT MASKS
3172                          INITIALIZE REGISTER ADDRESS TABLE
3173                          PROCESS INTERFACE DRIVE NO. & COMPUTE ATTN BIT POSITION
3174
3175                      DETERMINE BOARD REV & INITIALIZE DRIVE TYPE
3176                      BUILD TEST SELECT MASK FROM SOFTWARE QUESTION DATA
3177                      ENABLE INTERRUPTS AND BEGIN TESTING
3178
3179 017322    STARS
               *****
3180
3181 017322    BGNINIT
3182 017322    L$INIT::
3183
3184          .PROCESS PROGRAM INITIALIZATION
3185
3186 100$:      TST      INIFLG          ;TEST FOR PROGRAM INITIALIZATION
3187           BNE      200$          ;INITIALIZED: CONTINUE
3188
3189 120$:      INC      INIFLG          ;SET INITIALIZATION FLAG
3190           CLR      HLPFLG         ;CLEAR OPERATOR HELP FLAG
3191           GMANIL    Q.HLP1,HLPFLG,1,YES ;ASK OPERATOR FOR SUPERVISOR HELP
3192           TRAP      C$GMAN
3193           BR        10000$
3194           .WORD     HLPFLG
3195           .WORD     T$CODE
3196           .WORD     Q.HLP1
3197           .WORD     1
3198
3199 10000$:    TST      HLPFLG          ;TEST RESPONSE
3200           BEQ      150$          ;NO: CONTINUE
3201
3202           MOV      #D.FILE1,D.FILEPTR ;LOAD FILE NAME PTR
3203           JSR      PC,DSPFILE      ;DISPLAY FILE
3204
3205 150$:      CLR      HLPFLG          ;CLEAR FLAG
3206           GMANIL    Q.HLP2,HLPFLG,1,YES ;ASK OPERATOR FOR DIAGNOSTIC HELP
3207           TRAP      C$GMAN
3208           BR        10001$
3209           .WORD     HLPFLG
3210           .WORD     T$CODE
3211           .WORD     Q.HLP2
3212           .WORD     1

```

ZDRMAO DR70 REPAIR DIAGNOSTIC MACRO M1200 23-MAY-83 15:51 PAGE 93-1
PROGRAM INITIALIZATION SECTION

3199	017414	005737	003016	10001\$:	TST	HLPFLG	;TEST RESPONSE
3200	017420	001405			BEQ	200\$	;NO: CONTINUE
3201							
3202	017422	012737	014437	002504	MOV	#D.FIL2,D.FILPTR	;LOAD FILE NAME PTR
3203	017430	004737	016536		JSR	PC,DSPFILE	;DISPLAY FILE

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PROGRAM INITIALIZATION SECTION

```

3205 017434          STARS
                      :*****
3206                :
3207                :
3208 017434          STARS
                      :*****
3209
3210 017434          200$:  GPWARD  LOGUNIT,HRDTBL      ;RETRIEVE P-TABLE ADDRESS
017434 013700 002774      MOV      LOGUNIT,R0
017440 104442      TRAP      C$GPWRD
017442 010037 002772      MOV      R0,HRDTBL
3211
3212 017446          BCOMPLETE 220$                  ;CONTINUE IF SUCCESSFUL
017446 103413      BCS      220$
3213
3214 017450          PRINTF  #F.UNIT,LOGUNIT          ;REPORT P-TABLE ERROR
017450 013746 002774      MOV      LOGUNIT,-(SP)
017454 012746 014036      MOV      #F.UNIT,-(SP)
017460 012746 000002      MOV      #2,-(SP)
017464 010600      MOV      SP,R0
017466 104417      TRAP      C$PNTF
017470 062706 000006      ADD      #6,SP
3215
3216 017474          DOCLN   ;ABORT THIS PASS
017474 104444      TRAP      C$DCLN
3217
3218 017476 013701 002772      220$:  MOV      HRDTBL,R1      ;LOAD TABLE ADDRESS
3219 017502 012137 002720      MOV      (R1)+,PT.CSR        ;AND MOVE
3220 017506 012137 002722      MOV      (R1)+,PT.VEC        ;PARAMETERS
3221 017512 012137 002724      MOV      (R1)+,PT.PRI        ;TO LOCAL
3222 017516 012137 002726      MOV      (R1)+,PT.DRI        ;STORAGE

```

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PROGRAM INITIALIZATION SECTION

```

3224 017522      STARS
3225      :*****
3226      :
3227 017522      :
3228      :
3229 017522      300$:  READEF  #EF.START      ;TEST FOR OPERATOR START
      017522      MOV      #EF.START,R0
      017526      104447  TRAP      C$REFG
3230
3231 017530      BNCOMPLETE 400$      ;CONTINUE IF NOT
      017530      103150  BCC      400$
3232
3233 017532      BRESET      ;BUS RESET
      017532      104433  TRAP      C$RESET
3234
3235      :  CLEAR PRINT FLAGS
3236
3237 017534      005037  003042  CLR      CSRFLG      ;ENABLE CSR ADDRESS MSG
3238 017540      005037  003044  CLR      NEDFLG      ;ENABLE DRIVE SELECT MSG
3239 017544      005037  003046  CLR      PWRFLG      ;ENABLE POWER ON MSG
3240 017550      005037  003050  CLR      CBLFLG      ;ENABLE CABLE MSG
3241 017554      005037  003052  CLR      PERFLG      ;ENABLE PARITY MSG
3242
3243      :  INITIALIZE REPORT TABLES
3244
3245 017560      005000  CLR      R0      ;CLEAR INDEX REGISTER
3246
3247 017562      005060  002520  310$:  CLR      RP.PASS(R0)      ;CLEAR PASS COUNT
3248 017566      005060  002620  CLR      RP.ERROR(R0)      ;CLEAR ERROR COUNT
3249 017572      062700  000002  ADD      #2,R0      ;BUMP INDEX
3250 017576      022700  000100  CMP      #RP.SIZ,R0      ;COMPARE WITH MAX TEST INDEX
3251 017602      003367  BGT      310$      ;CONTINUE UNTIL TABLES CLEAR
3252
3253      :  DETERMINE PROCESSOR & MASSBUS CONTROLLER TYPE
3254
3255 017604      320$:  SETVEC  #4,#TRAP4,#PRI07      ;SETUP ADDRESS TRAP SERVICE
      017604      MOV      #PRI07,-(SP)
      017610      MOV      #TRAP4,-(SP)
      017614      MOV      #4,-(SP)
      017620      MOV      #3,-(SP)
      017624      TRAP      C$SVEC
      017626      062706  000010  ADD      #10,SP
3256
3257 017632      005037  003024  CLR      TRPFLG      ;CLEAR TRAP FLAG
3258 017636      013700  177764  MOV      CPUID,R0      ;TEST PDP-11/70 LOCATION
3259 017642      005737  003024  TST      TRPFLG      ;TEST FOR ADDRESS TRAP
3260 017646      001002  BNE      340$      ;NO TRAP: CONTINUE
3261
3262 017650      005237  003012  INC      CPUFLG      ;SET PDP-11/70 FLAG
3263
3264 017654      340$:  CLRVEC  #4      ;CLEAR TRAP SERVICE
      017654      MOV      #4,R0
      017660      104436  TRAP      C$CVEC
3265
3266      :  GENERATE REGISTER SELECTION MASKS

```

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PROGRAM INITIALIZATION SECTION

```

3267
3268 017662 012737 000024 002466 350$: MOV #24,R.MAX ;INITIALIZE MAX REGISTER INDEX
3269 017670 012737 001777 002474 MOV #1777,R.SAD ;INITIALIZE REGISTER ADDRESS SELECT
3270 017676 012737 001271 002476 MOV #1271,R.SIN ;INITIALIZE INITIAL VALUE SELECT
3271 017704 012737 000027 002500 MOV #27,R.SRH ;INITIALIZE CONTROLLER REG SELECT
3272 017712 012737 001750 002502 MOV #1750,R.SDR ;INITIALIZE INTERFACE REG SELECT
3273
3274 017720 005737 003012 TST CPUFLG ;TEST FOR PDP-11/70 CPU
3275 017724 001411 BEQ 360$ ;NO: CONTINUE
3276
3277 017726 012737 000030 002466 MOV #30,R.MAX ;ADD TWO REGISTERS TO MAX INDEX
3278 017734 012737 007777 002474 MOV #7777,R.SAD ;ADD TWO REGISTERS TO ADDRESS SELECT
3279 017742 012737 006027 002500 MOV #6027,R.SRH ;ADD TWO REGISTERS TO CNTRLR SELECT
3280
3281 ; INITIALIZE REGISTER ADDRESS TABLE
3282
3283 017750 013701 002720 360$: MOV PT.CSR,R1 ;LOAD UNIBUS BASE ADDRESS
3284 017754 005002 CLR R2 ;AND CLEAR INDEX REGISTER
3285
3286 017756 010104 370$: MOV R1,R4 ;LOAD BASE ADDRESS
3287 017760 066204 002246 ADD D.TBL(R2),R4 ;ADD OFFSET FROM TABLE
3288 017764 010462 002276 MOV R4,A.TBL(R2) ;AND STORE INTO TABLE
3289 017770 062702 000002 ADD #2,R2 ;BUMP REGISTER INDEX
3290 017774 020237 002466 CMP R2,R.MAX ;COMPARE WITH MAX INDEX
3291 020000 002766 BLT 370$ ;AND CONTINUE IF LESS THAN MAX
3292
3293 ; PROCESS INTERFACE DRIVE NO. & COMPUTE ATTN BIT POSITION
3294
3295 020002 013701 002726 380$: MOV PT.DRI,R1 ;LOAD DRIVE SELECT NUMBER
3296 020006 042737 000007 002366 BIC #7,IN.CS2 ;CLEAR DRIVE SELECT IN CS2 INITIAL VAL
3297 020014 050137 002366 BIS R1,IN.CS2 ;SET DRIVE SELECT BITS ONLY
3298 020020 010137 003000 MOV R1,DRIVE ;SAVE DRIVE SELECT
3299
3300 020024 012737 000001 002776 MOV #BIT00,UNITPOS ;INITIALIZE ATTN BIT POSITION
3301 020032 013701 003000 MOV DRIVE,R1 ;RELOAD DRIVE NO.
3302 020036 001423 BEQ 420$ ;STOP NOW IF DRIVE ZERO
3303
3304 020040 006337 002776 390$: ASL UNITPOS ;SHIFT TO NEXT POSITION
3305 020044 005301 DEC R1 ;DECREMENT UNIT NUMBER
3306 020046 001374 BNE 390$ ;CONTINUE UNTIL ZERO
3307 020050 000416 BR 420$ ;PROCESS RESTART

```

ZDRMA0 DR70 REPAIR DIAGNOSTIC
PROGRAM INITIALIZATION SECTION

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```

3309 020052      STARS
3310      ;*****
3311      ;
3312 020052      ;
3313      ;
3314      ;
3315      ;
3316 020052      ;
3317      ;
3318 020060      ;
3319      ;
3320 020062      ;
3321      ;
3322 020064      ;
3323 020070      ;
3324 020074      ;
3325 020100      ;
3326 020104      ;
3327      ;
3328      ;
3329      ;
3330 020106      ;
3331 020114      ;
3332 020120      ;
3333 020122      ;
3334      ;
3335      ;
3336      ;
3337      ;
3338      ;
3339 020126      ;
3340 020130      ;
3341 020134      ;
3342 020136      ;
3343 020140      ;
3344 020142      ;
3345 020146      ;
3346 020150      ;
3347 020154      ;
3348 020156      ;
3349 020162      ;
3350 020164      ;
3351 020170      ;
3352 020172      ;
3353 020176      ;
3354      ;
3355      ;
3356      ;
3357 020202      ;
3358      ;

```

012700 000037
 010447
 020060 103022
 020062 005000
 020064 005060 002520
 020070 005060 002620
 020074 062700 000002
 020100 022700 000100
 020104 003367
 020106 012737 000005 002400
 020114 005737 002226
 020120 001402
 020122 005337 002400
 020126 005001
 020130 053701 002226
 020134 006301
 020136 006301
 020140 006301
 020142 053701 002240
 020146 006301
 020150 053701 002236
 020154 006301
 020156 053701 002234
 020162 006301
 020164 053701 002232
 020170 006301
 020172 053701 002230
 020176 010137 003012
 020202
 020202 013700 000000
 020206 104441

COMMON INITIALIZATION SECTIONS
 STARS
 ;*****
 ;
 INITIALIZE REPORT TABLES
 400\$: READEF #EF.RESTART ;TEST FOR OPERATOR RESTART
 MOV #EF.RESTART,R0
 TRAP C\$REFG
 BNCOMPLETE 440\$;CONTINUE IF NOT
 BCC 440\$
 CLR R0 ;CLEAR INDEX REGISTER
 410\$: CLR RP.PASS(R0) ;CLEAR PASS COUNT
 CLR RP.ERROR(R0) ;CLEAR ERROR COUNT
 ADD #2,R0 ;BUMP INDEX
 CMP #RP.SIZ,R0 ;COMPARE WITH MAX TEST INDEX
 BGT 410\$;CONTINUE UNTIL TABLES CLEAR
 ;
 PROCESS BOARD REVISION LEVEL
 420\$: MOV #5,IN.DT ;REV B DRIVE TYPE
 TST REVFLG ;TEST FOR REV A BOARD
 BEQ 440\$;NO: CONTINUE
 DEC IN.DT ;DECREMENT DRIVE TYPE FOR REV A
 ;
 BUILD TEST SELECT WORD: BITS 0-7
 ;
 : REVA : NU : NU : UPAR : BYTE : ABOR : AT03 : AT00 :
 440\$: CLR R1 ;CLEAR SELECT
 BIS REVFLG,R1 ;SET/RESET REV 'A' BIT
 ASL R1 ;SHIFT PAST
 ASL R1 ;UNUSED BIT POSITIONS
 ASL R1 ;AND SHIFT SELECT
 BIS PARFLG,R1 ;SET/RESET PARITY ERROR BIT
 ASL R1 ;AND SHIFT SELECT
 BIS BYTFLG,R1 ;SET/RESET BYTE MODE XFER BIT
 ASL R1 ;AND SHIFT SELECT
 BIS ABOFLG,R1 ;SET/RESET XFER ABORT BIT
 ASL R1 ;AND SHIFT SELECT
 BIS AT3FLG,R1 ;SET/RESET AT3 ATTN BIT
 ASL R1 ;AND SHIFT SELECT
 BIS AT0FLG,R1 ;SET/RESET AT0 ATTN BIT
 MOV R1,SELECT ;AND SAVE SELECT
 ;
 ENABLE INTERRUPTS AND BEGIN TESTING
 500\$: SETPRI PRI00 ;ENABLE INTERRUPTS
 MOV PRI00,R0
 TRAP C\$SPRI

ZDRMAO DR70 REPAIR DIAGNOSTIC MACRO M1200 23-MAY-83 15:51 PAGE 96-1
PROGRAM INITIALIZATION SECTION

3359 020210
020210
020210 104411

L10013: ENDINIT
TRAP CSINIT

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AUTODROP SECTION

```
3361 .SBTTL AUTODROP SECTION
3362 :++
3363 : THIS CODE IS EXECUTED IMMEDIATELY AFTER THE INITIALIZE CODE IF
3364 : THE 'ADR' FLAG WAS SET. THE UNIT(S) UNDER TEST ARE CHECKED TO
3365 : SEE IF THEY WILL RESPOND. THOSE THAT DON'T ARE IMMEDIATELY
3366 : DROPPED FROM TESTING.
3367 :--
3368
3369 020212 BGNAUTO
020212 L$AUTO::
3370
3371 020212 ENDAUTO
020212 L10014:
020212 104461 TRAP C$AUTO
```

ZDRMA0 DR70 REPAIR DIAGNOSTIC MACRO M1200 23-MAY-83 15:51 PAGE 98
 CLEANUP CODING SECTION100

```

3373      .SBTTL  CLEANUP CODING SECTION100
3374 020214  STARS
          .....
3375      :
3376      :      CLEANUP CODING SECTION:
3377      :
3378      :      (1)      DISABLE INTERRUPTS
3379      :      (2)      RESTORE DEVICE INTERRUPT SERVICE VECTOR
3380 020214  STARS
          .....
3381
3382 020214      BGNCLN
3383 020214  L$CLEAN::
3384 020214      SETPRI  PRI07      ;DISABLE INTERRUPTS
          020214 013700 000340  MOV    PRI07,R0
          020220 104441      TRAP    C$SPRI
3385
3386 020222      EXIT    CLN
          020222 104432  TRAP    C$EXIT
          020224 000002  .WORD    L10015-.
3387
3388      .EVEN
3389
3390 020226      ENDCLN
          020226      L10015:
          020226 104412  TRAP    C$CLEAN

```

ZDRMA0 DR70 REPAIR DIAGNOSTIC MACRO M1200 23-MAY-83 15:51 PAGE 99
DROP UNIT SECTION

```
3392          .SBTTL  DROP UNIT SECTION
3393          :++
3394          : THE DROP-UNIT SECTION CONTAINS THE CODING THAT CAUSES A DEVICE
3395          : TO NO LONGER BE TESTED.
3396          :--
3397
3398 020230          BGNDU
3399 020230
3400 020230 000240          NCP                      ;DROP UNIT NOT IMPLEMENTED
3401
3402 020232          ENDDU
3403 020232
3404 020232 104453      L10016: TRAP  C$DU
```

ZDRMAO DR70 REPAIR DIAGNOSTIC MACRO M1200 23-MAY-83 15:51 PAGE 100
ADD UNIT SECTION

```
3404 .SBTTL ADD UNIT SECTION
3405 :++
3406 : THE ADD-UNIT SECTION CONTAINS ANY CODE THE PROGRAMMER WISHES
3407 : TO BE EXECUTED IN CONJUNCTION WITH THE ADDING OF A UNIT BACK
3408 : TO THE TEST CYCLE.
3409 :--
3410
3411 020234 BGNAU
      020234 L$AU::
3412
3413 020234 000240 NOP ;ADD UNIT NOT IMPLEMENTED
3414
3415 020236 ENDAU
      020236 L10017:
      020236 104452 TRAP C$AU
3416
3417 020240 ENDMOD
3418
3419 .SBTTL
```

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3460 020240

BGNMOD

ZDRMAO DR70 REPAIR DIAGNOSTIC
TEST 1: REGISTER ADDRESSING

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3462
3463 020240

3464
3465
3466
3467
3468
3469
3470
3471
3472
3473
3474
3475

3476 020240

3477
3478 020240
020240

.SBTTL TEST 1: REGISTER ADDRESSING

STARS

TEST DESCRIPTION:

CHECK DEVICE REGISTER ADDRESSING

TEST STEPS:

EXECUTE SUBTEST 1-2

ERROR CONDITIONS:

MEMORY ADDRESS TRAP ON REGISTER ACCESS

STARS

BGNTST

;REGISTER ADDRESSING

T1::

ZDRMAO DR70 REPAIR DIAGNOSTIC
TEST 1: REGISTER ADDRESSING

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3480 020240

STARS

3481

3482

3483

3484

3485

3486

3487

3488 020240

STARS

3489

3490 020240

020240

020240 104402

T1.1:

BGNSUB

;UNIBUS ADDRESS TRAP

TRAP C\$BSUB

3491

3492 020242 004737 015234

JSR PC,SETRAP

;SETUP ADDRESS TRAP SERVICE

3493

3494 020246 005037 003024

100\$:

CLR TRPFLG

;CLEAR TRAP FLAG

3495 020252 005002

CLR R2

;CLEAR TABLE INDEX

3496 020254 005037 002470

CLR R.ERR

;CLEAR ERROR FLAG

3497 020260 012704 000001

MOV #1,R4

;LOAD REGISTER ADDR SELECT BIT

3498

3499 020264 030437 002474

200\$:

BIT R4,R.SAD

;TEST THIS REGISTER?

3500 020270 001411

BEQ 300\$

;NO: MOVE TO NEXT

3501

3502 020272 005772 002276

TST @A.TBL(R2)

;ADDRESS REGISTER

3503 020276 005737 003024

TST TRPFLG

;TEST FOR TIME-OUT

3504 020302 001404

BEQ 300\$

;NO: CONTINUE

3505

3506 020304 005037 003024

CLR TRPFLG

;YES: CLEAR FLAG

3507 020310 050437 002470

BIS R4,R.ERR

;SET REGISTER ADDR ERROR BIT

3508

3509 020314 006304

300\$:

ASL R4

;ADJUST SELECT BIT

3510 020316 062702 000002

ADD #2,R2

;BUMP INDEX REGISTER

3511 020322 020237 002466

CMP R2,R.MAX

;COMPARE INDEX TO TABLE SIZE

3512 020326 002756

BLT 200\$

;AND CONTINUE IF NOT DONE

3513

3514 020330 004737 015264

400\$:

JSR PC,CLRTRAP

;CLEAR TRAP VECTOR

3515 020334 005737 002470

TST R.ERR

;TEST FOR ERRORS

3516 020340 001422

BEQ 500\$

;FLAG ZERO: CONTINUE

3517

3518 020342

ERRDF 1,M.ADR1,ER.ADR

; 'DEVICE ADDRESS ERROR'

020342 104455

TRAP C\$ERDF

020344 000001

.WORD 1

020346 006234

.WORD M.ADR1

020350 014452

.WORD ER.ADR

3519

3520 020352 005737 003042

TST CSRFLG

;TEST PRINT FLAG

3521 020356 001012

BNE 450\$

;CONTINUE IF SET

3522

3523 020360

PRINTF #F.CSR

;PRINT CSR ADDRESS MSG

020360 012746 013660

MOV #F.CSR,-(SP)

020364 012746 000001

MOV #1,-(SP)

020370 010600

MOV SP,R0

020372 104417

TRAP C\$PNTF

020374 062706 000004

ADD #4,SP

ZDRMAO DR70 REPAIR DIAGNOSTIC
TEST 1: REGISTER ADDRESSING

MACRO M1200 23-MAY-83 15:51 PAGE 103-1

3524 020400 005237 003042

INC CSRFLG

;SET FLAG

3525

3526 020404

450\$:

DOCLN

;CLEAN UP AND EXIT

020404 104444

TRAP CSDCLN

3527

3528 020406

500\$:

ENDSUB

;UNIBUS ADDRESS TRAP

020406

L10021:

020406 104403

TRAP CSESUB

ZDRMAO DR70 REPAIR DIAGNOSTIC
TEST 1: REGISTER ADDRESSING

MACRO M1200 23-MAY-83 15:51 PAGE 104

3530 020410

STARS

SUBTEST 2:

READ INTERFACE REGISTER
TEST FOR NON-EXISTENT DRIVE STATUS
PROCESS ANY ADDRESS ERROR(S)

ISSUE MASSBUS CONTROLLER CLEAR AND TEST FOR ERROR

STARS

3540

3541 020410

020410

020410 104402

T1.2: BGNSUB

TRAP C\$BSUB

3542

3543 020412 005002

3544 020414 005037 002470

3545 020420 005037 003026

3546 020424 012704 000001

3547

3548 020430 030437 002502

3549 020434 001412

3550

3551 020436 004737 015342

3552

3553 020442 005772 002276

3554 020446 032777 010000 161632

3555 020454 001402

3556

3557 020456 050437 002470

3558

3559 020462 006304

3560 020464 062702 000002

3561 020470 020237 002466

3562 020474 002755

3563

3564 020476 005737 002470

3565 020502 001421

3566

3567 020504 005237 003026

3568 020510

020510 104455

020512 000002

020514 006263

020516 014452

BIS R4,R.ERR

;SET REGISTER ADDR ERROR BIT

300\$:

ASL R4
ADD #2,R2
CMP R2,R.MAX
BLT 200\$

;ADJUST SELECT BIT
;BUMP INDEX REGISTER
;COMPARE INDEX TO TABLE SIZE
;AND CONTINUE IF NOT DONE

400\$:

TST R.ERR
BEQ 600\$

;TEST FOR ERRORS
;FLAG ZERO: CONTINUE

INC ERRFLG
ERRDF 2,M.ADR2,ER.ADR
TRAP C\$ERDF
.WORD 2
.WORD M.ADR2
.WORD ER.ADR

;SET FLAG FOR LATER
;'NON-EXISTENT DEVICE STATUS'

3569

3570 020520

020520 012746 013732

020524 012746 000001

020530 010600

020532 104415

020534 062706 000004

3571 020540 005237 003044

3572

3573 020544

PRINTX #F.NED
MOV #F.NED,-(SP)
MOV #1,-(SP)
MOV SP,R0
TRAP C\$PNTX
ADD #4,SP
INC NEDFLG

;CHECK DRIVE SELECT SWITCHES 1-3

;SET FLAG

500\$: DOCLN

;CLEAN UP AND EXIT

ZDRMAO DR70 REPAIR DIAGNOSTIC
TEST 1: REGISTER ADDRESSING

MACRO M1200 23-MAY-83 15:51 PAGE 104-1

3574	020544	104444	TRAP	CSDCLN	
3575	020546		600\$: ENDSUB		;NON-EXISTENT DEVICE
	020546		L10022:		
	020546	104403	TRAP	CSESUB	
3576					
3577	020550	004737 015550	JSR	PC,CLRTST	;AND CLEAR TEST DATA
3578					
3579	020554		ENDTST		
	020554		L10020:		
	020554	104401	TRAP	CSETST	

ZDRMAO DR70 REPAIR DIAGNOSTIC MACRO M1200 23-MAY-83 15:51 PAGE 105
TEST 2: REGISTER INITIALIZATION

```

3581 .SBTTL TEST 2: REGISTER INITIALIZATION
3582 020556 STARS
3583 :*****
3584 :
3585 : TEST DESCRIPTION:
3586 : TEST REGISTER INITIALIZATION
3587 :
3588 : TEST STEPS:
3589 : INITIALIZE THE MASSBUS CONTROLLER
3590 : READ REGISTER AND TEST FOR EXPECTED VALUE
3591 : PROCESS ANY INITIAL VALUE ERRORS
3592 :
3593 : ERROR CONDITIONS:
3594 : UNEXPECTED/IMPROPER REGISTER VALUE
3595 :
3596 : STARS
3597 020556 :*****
3598 :
3599 020556 T2:: BGNTST ;REGISTER INITIALIZATION
020556 :
3600 :
3601 020556 004737 015342 JSR PC,CLRMBC ;CLEAR THE MASSBUS CONTROLLER
3602 020562 005737 003030 TST MBCFLG ;TEST CLEAR FLAG
3603 020566 001405 BEQ 100$ ;CONTINUE IF ZERO
3604 :
3605 020570 ERRDF 1,M.MBC1,ER.DMP ;'MASSBUS CONTROLLER CLEAR ERROR'
020570 104455 TRAP C$ERDF
020572 000001 .WORD 1
020574 011650 .WORD M.MBC1
020576 015074 .WORD ER.DMP
3606 020600 DOCLN ;CLEAN UP AND EXIT
020600 104444 TRAP C$DCLN
3607 :
3608 020602 004737 015606 100$: JSR PC,RDREG ;READ REGISTERS INTO R.TBL
3609 020606 005002 CLR R2 ;CLEAR TABLE INDEX
3610 020610 005037 002470 CLR R.ERR ;CLEAR ERROR FLAG
3611 020614 012704 000001 MOV #1,R4 ;LOAD REGISTER INIT SELECT BIT
3612 :
3613 020620 030437 002476 200$: BIT R4,R.SIN ;TEST SELECTION BIT
3614 020624 001406 BEQ 300$ ;NO: MOVE TO NEXT REGISTER
3615 :
3616 020626 026262 002326 002356 CMP R.TBL(R2),IN.TBL(R2) ;COMPARE WITH EXPECTED INIT VALUE
3617 020634 001402 BEQ 300$ ;SAME: CONTINUE
3618 :
3619 020636 050437 002470 BIS R4,R.ERR ;SET CORRESPONDING REGISTER ERROR BIT
3620 :
3621 020642 006304 300$: ASL R4 ;SHIFT REGISTER SELECT BIT
3622 020644 062702 000002 ADD #2,R2 ;BUMP TABLE INDEX
3623 020650 020237 002466 CMP R2,R.MAX ;COMPARE WITH MAXIMUM REGISTER INDEX
3624 020654 002761 BLT 200$ ;NO: CONTINUE

```

ZDRMAO DR70 REPAIR DIAGNOSTIC MACRO M1200 23-MAY-83 15:51 PAGE 106
TEST 2: REGISTER INITIALIZATION

3626	020656	005737	002470	400\$:	TST	R.ERR	;TEST ERROR FLAG
3627	020662	001404			BEQ	500\$	;BRANCH IF NO ERRORS
3628							
3629	020664				ERRHRD	2,M.REG1,ER.INI	;'REGISTER INITIALIZATION ERROR''
	020664	104456			TRAP	C\$ERHRD	
	020666	000002			.WORD	2	
	020670	012076			.WORD	M.REG1	
	020672	014640			.WORD	ER.INI	
3630							
3631	020674	004737	015550	500\$:	JSR	PC,CLRTST	;AND CLEAR TEST DATA
3632							
3633	020700				ENDTST		;REGISTER INITIALIZATION
	020700			L10023:			
	020700	104401			TRAP	C\$ETST	

ZDRMAO DR70 REPAIR DIAGNOSTIC MACRO M1200 23-MAY-83 15:51 PAGE 107
 TEST 3: CHECK CONTROL/STATUS 1 FUNCTION BITS

```

3635 .SBTTL TEST 3: CHECK CONTROL/STATUS 1 FUNCTION BITS
3636 020702 STARS
      *****
3637
3638 TEST DESCRIPTION:
3639
3640 TEST CS1 REGISTER FOR FUNCTION BITS F4->F1
3641 STUCK AT ONE, ZERO OR STUCK TOGETHER
3642
3643 TEST STEPS:
3644
3645 CLEAR THE MASSBUS CONTROLLER AND CHECK FOR ERROR STATUS
3646 EXECUTE SUB TESTS 1-4
3647
3648 ERROR CONDITIONS:
3649
3650 MASSBUS CONTROLLER CLEAR ERROR
3651 CS1 REGISTER BITS STUCK
3652 020702 STARS
      *****
3653 020702 BGNTST
      020702 T3::
3654
3655 020702 004737 015342 JSR PC,CLRMBC ;CLEAR THE MASSBUS CONTROLLER
3656 020706 005737 003030 TST MBCFLG ;TEST CLEAR FLAG
3657 020712 001405 BEQ 100$ ;CONTINUE IF ZERO
3658
3659 020714 ERRDF 1,M.MBC1,ER.DMP ;'MASSBUS CONTROLLER CLEAR ERROR'
      020714 104455 TRAP C$ERDF
      020716 000001 .WORD 1
      020720 011650 .WORD M.MBC1
      020722 015074 .WORD ER.DMP
3660 020724 DOCLN ;CLEAN UP AND EXIT
      020724 104444 TRAP C$DCLN
3661
3662 020726 013737 002406 002730 100$: MOV NA.CS1,FP.NAM ;LOAD REGISTER NAME ADDRESS
3663 020734 013737 002436 002746 MOV BA.CS1,FP.TBL ;LOAD REGISTER EXPAND TABLE ADDRESS
3664 ;EXECUTE SUB TESTS
  
```

ZDRMAO DR70 REPAIR DIAGNOSTIC MACRO M1200 23-MAY-83 15:51 PAGE 108
 TEST 3: CHECK CONTROL/STATUS 1 FUNCTION BITS

```

3666 020742          STARS
                      *****
3667          :
3668          :
3669          :
3670          :
3671          :
3672 020742          STARS
                      *****
3673 020742          BGNSUB                      ;LOAD ALL ONE'S
020742          T3.1:
020742 104402          TRAP      C$BSUB
3674          :
3675 020744 112777 000076 161324 100$:  MOV      #76,@A.CS1          ;SET ALL FUNCTION BITS
3676 020752 012737 004276 002734      MOV      #4276,FP.EXP        ;LOAD INIT EXPECTED CONTENTS
3677 020760 017737 161312 002736      MOV      @A.CS1,FP.ACT       ;READ CS1 REGISTER
3678 020756 023737 002736 002734      CMP      FP.ACT,FP.EXP       ;AND COMPARE WITH EXPECTED VALUE
3679 020774 001404          BEQ      400$          ;IDENTICAL: CONTINUE
3680          :
3681 020776          ERRHRD  2,M.CSR1,ER.REG          ;'CS1 FUNCTION BIT ERROR'
020776 104456          TRAP      C$ERHRD
021000 000002          .WORD     2
021002 007210          .WORD     M.CSR1
021004 015016          .WORD     ER.REG
3682          :
3683 021006          400$:  ENDSUB                      ;ALL ONE'S
021006          L10025:
021006 104403          TRAP      C$ESUB

```

ZDRMAO DR70 REPAIR DIAGNOSTIC MACRO M1200 23-MAY-83 15:51 PAGE 109
 TEST 3: CHECK CONTROL/STATUS 1 FUNCTION BITS

```

3685 021010          STARS
                      ;*****
3686                  ;
3687                  ;
3688                  ;
3689                  ;
3690                  ;
3691 021010          STARS
                      ;*****
                      ;
3692 021010          BGNSUB                      ;LOAD ALL ZERO'S
021010
021010 104402        T3.2:
                      TRAP      C$BSUB
3693
3694 021012 112777 000000 161256 100$:  MOVB    #0,@A.CS1          ;WRITE TO CS1 REGISTER LSB
3695 021020 012737 004200 002734      MOV     #4200,FP.EXP        ;LOAD INIT EXPECTED VAL
3696 021026 017737 161244 002736      MOV     @A.CS1,FP.ACT       ;READ CS1 REGISTER
3697 021034 023737 002736 002734      CMP     FP.ACT,FP.EXP       ;AND COMPARE WITH EXPECTED VALUE
3698 021042 001404                      BEQ     400$              ;IDENTICAL: CONTINUE
3699
3700 021044          ERRHRD 3,M.CSR1,ER.REG          ;'CS1 FUNCTION BIT ERROR'
021044 104456        TRAP    C$ERHRD
021046 000003        .WORD   3
021050 007210        .WORD   M.CSR1
021052 015016        .WORD   ER.REG
3701
3702 021054          400$: ENDSUB                      ;LOAD ZERO'S
021054
021054 104403        L10026: TRAP    C$ESUB

```

ZDRMAO DR70 REPAIR DIAGNOSTIC MACRO M1200 23-MAY-83 15:51 PAGE 110
 TEST 3: CHECK CONTROL/STATUS 1 FUNCTION BITS

```

3704 021056          STARS
                      ;*****
3705
3706          SUBTEST 3:
3707
3708          LOAD CS1 REGISTER FUNCTION BITS WITH MOVING ONE BIT
3709          READ REGISTER AND TEST FOR BITS STUCK AT ZERO
3710 021056          STARS
                      ;*****
3711 021056          BGNSUB                                ;LOAD MOVING ONE
      021056
      021056 104402  T3.3:
3712
3713 021060 005037 002470 100$: CLR      R.ERR              ;CLEAR ERROR FLAG
3714 021064 012702 000002      MOV     #CS1.F0,R2          ;INITIALIZE CS1 BIT F0
3715 021070 012705 000005      MOV     #5,R5              ;INITIALIZE BIT COUNTER
3716
3717 021074 110277 161176 200$: MOVB    R2,@A.CS1          ;WRITE TO CS1 REGISTER LSB
3718 021100 012737 004200 002734      MOV     #4200,FP.EXP  ;LOAD CS1 INIT EXPECTED CONTENTS
3719 021106 060237 002734      ADD     R2,FP.EXP          ;SET FUNCTION BIT
3720 021112 017737 161160 002736 250$: MOV     @A.CS1,FP.ACT ;READ REGISTER
3721 021120 023737 002736 002734      CMP     FP.ACT,FP.EXP ;AND COMPARE BIT PATTERNS
3722 021126 001423          BEQ     400$                  ;IDENTICAL: CONTINUE
3723
3724 021130 005737 002470      TST     R.ERR              ;TEST ERROR FLAG
3725 021134 001016          BNE     300$                  ;BRANCH IF NOT ZERO
3726
3727 021136 005237 002470      INC     R.ERR              ;INCREMENT ERROR FLAG
3728 021142          ERRHRD  4,M.CSR1                      ;"CS1 FUNCTION BIT ERROR"
      021142 104456      TRAP    C$ERHRD
      021144 000004      .WORD   4
      021146 007210      .WORD   M.CSR1
      021150 000000      .WORD   0
3729 021152          PRINTX #F.REG1                      ;PRINT REGISTER HEADER
      021152 012746 013056      MOV     #F.REG1,-(SP)
      021156 012746 000001      MOV     #1,-(SP)
      021162 010600      MOV     SP,R0
      021164 104415      TRAP    C$PNTX
      021166 062706 000004      ADD     #4,SP
3730
3731 021172 004737 016054 300$: JSR     PC,DSPREG          ;DISPLAY REGISTER CONTENTS
3732
3733 021176 006302 400$: ASL     R2                      ;AND SHIFT TO NEXT POSITION
3734 021200 005305      DEC     R5                      ;DECREMENT COUNTER
3735 021202 001334      BNE     200$                    ;CONTINUE WITH NEXT BIT POSITION
3736
3737 021204 005737 002470 500$: TST     R.ERR              ;TEST FOR ANY ERRORS
3738 021210 001410      BEQ     600$                    ;NO: EXIT TEST
3739 021212          PRINTX #F.CRLF                      ;NEW LINE
      021212 012746 014214      MOV     #F.CRLF,-(SP)
      021216 012746 000001      MOV     #1,-(SP)
      021222 010600      MOV     SP,R0
      021224 104415      TRAP    C$PNTX
      021226 062706 000004      ADD     #4,SP
3740
3741 021232 600$: ENDSUB
      021232 L10027:

```

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TEST 3: CHECK CONTROL/STATUS 1 FUNCTION BITS

021232 104403

TRAP CSESUB

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 TEST 3: CHECK CONTROL/STATUS 1 FUNCTION BITS

```

3743 021234          STARS
                      ;*****
3744
3745          SUBTEST 4:
3746
3747          LOAD CS1 REGISTER FUNCTION BITS WITH MOVING ZERO BIT
3748          READ REGISTER AND TEST FOR BITS STUCK AT ONE
3749 021234          STARS
                      ;*****
3750 021234          BGNSUB                                ;MOVING ZERO
    021234
    021234 104402
3751
3752 021236 005037 002470          100$: CLR      R.ERR          ;CLEAR ERROR FLAG
3753 021242 012702 000074          MOV      #74,R2          ;INITIALIZE CS1 BITS F4->F1
3754 021246 012705 000005          MOV      #5,R5          ;INITIALIZE BIT COUNTER
3755
3756 021252 110277 161020          200$: MOVB     R2,@A.CS1      ;WRITE TO CS1 REGISTER LSB
3757 021256 012737 004200 002734  MOV      #4200,FP.EXP      ;LOAD CS1 INIT EXPECTED CONTENTS
3758 021264 060237 002734          ADD      R2,FP.EXP        ;SET/RESET FUNCTION BITS
3759 021270 017737 161002 002736  250$: MOV      @A.CS1,FP.ACT  ;READ REGISTER
3760 021276 023737 002736 002734  CMP      FP.ACT,FP.EXP    ;AND COMPARE BIT PATTERNS
3761 021304 001423          BEQ      400$          ;IDENTICAL: CONTINUE
3762
3763 021306 005737 002470          TST      R.ERR          ;TEST ERROR FLAG
3764 021312 001016          BNE      300$          ;BRANCH IF NOT ZERO
3765
3766 021314 005237 002470          INC      R.ERR          ;INCREMENT ERROR FLAG
3767 021320          ERRHRD  5,M.CSR1          ;'CS1 FUNCTION BIT ERROR'
    021320 104456          TRAP     C$ERHRD
    021322 000005          .WORD    5
    021324 007210          .WORD    M.CSR1
    021326 000000          .WORD    0
3768 021330          PRINTX  #F.REG1          ;PRINT REGISTER HEADER
    021330 012746 013056          MOV      #F.REG1,-(SP)
    021334 012746 000001          MOV      #1,-(SP)
    021340 010600          MOV      SP,R0
    021342 104415          TRAP     C$PNTX
    021344 062706 000004          ADD      #4,SP
3769
3770 021350 004737 016054          300$: JSR      PC,DSPREG      ;DISPLAY REGISTER CONTENTS
3771
3772 021354 006302          400$: ASL      R2          ;MOVE ZERO BIT TO NEXT POSITION
3773 021356 042702 000100          BIC      #CS1.IE,R2      ;CLEAR HIGH ORDER BIT
3774 021362 052702 000002          BIS      #CS1.F0,R2      ;AND SET INCOMING FUNCTION BIT
3775
3776 021366 005305          DEC      R5          ;DECREMENT COUNTER
3777 021370 001330          BNE      200$          ;CONTINUE WITH NEXT BIT POSITION
3778
3779 021372 005737 002470          500$: TST      R.ERR          ;TEST FOR ANY ERRORS
3780 021376 001410          BEQ      600$          ;NO: EXIT TEST
3781 021400          PRINTX  #F.CRLF          ;NEW LINE
    021400 012746 014214          MOV      #F.CRLF,-(SP)
    021404 012746 000001          MOV      #1,-(SP)
    021410 010600          MOV      SP,R0
    021412 104415          TRAP     C$PNTX
    021414 062706 000004          ADD      #4,SP
  
```

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TEST 3: CHECK CONTROL/STATUS 1 FUNCTION BITS

3782					
3783	021420		600\$:	ENDSUB	
	021420		L10030:		
	021420	104403		TRAP	C\$ESUB
3784					
3785	021422	004737	015550	JSR	PC,CLRTST ;AND CLEAR TEST DATA
3786					
3787	021426			ENDTST	
	021426		L10024:		
	021426	104401		TRAP	C\$ETST

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 TEST 4: CHECK INTERFACE FUNCTION/STATUS BITS

```

3789 .SBTTL TEST 4: CHECK INTERFACE FUNCTION/STATUS BITS
3790 021430 STARS
          *****
3791          TEST DESCRIPTION:
3792          CHECK FS REGISTER FOR FUNCTION BITS F7->F0
3793          STUCK AT ONE, ZERO OR STUCK TOGETHER
3794          TEST STEPS:
3795          EXECUTE SUB TESTS 1-4
3796          ERROR CONDITIONS:
3797          FUNCTION/STATUS BITS STUCK
3798          LOOP-BACK CABLE NOT INSTALLED
3799          STARS
3800          *****
3801          BGNTST
3802          T4::
3803          JSR      PC,CLRMBC          ;CLEAR THE MASSBUS CONTROLLER
3804          TST      MBCFLG            ;TEST CLEAR FLAG
3805          BEQ      100$              ;CONTINUE IF ZERO
3806          ERRDF    1,M.MBC1,ER.DMP  ;'MASSBUS CONTROLLER CLEAR ERROR'
3807          TRAP     C$ERDF
3808          .WORD    1
3809          .WORD    M.MBC1
3810          .WORD    ER.DMP
3811          DOCLN
3812          TRAP     C$DCLN          ;CLEAN UP AND EXIT
3813          104444
3814          104455
3815          000001
3816          011650
3817          015074
3818          021452
3819          104444
3820          021454 013737 002414 002730 100$: MOV      NA.FS,FP.NAM      ;LOAD FS REGISTER NAME ADDRESS
3821          021462 013737 002444 002746      MOV      BA.FS,FP.TBL      ;LOAD REGISTER EXPAND TABLE ADDRESS
3822          ;EXECUTE SUBTEST

```

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 TEST 4: CHECK INTERFACE FUNCTION/STATUS BITS

```

3819 021470      STARS
                 ;*****
3820      ;
3821      ;
3822      ;
3823      ;
3824      ;
3825      ;
3826 021470      STARS
                 ;*****
3827 021470      BGNSUB                                ;LOAD ONE'S
021470      T4.1:
021470 104402      TRAP      C$BSUB
3828
3829 021472 012777 177400 160604 100$: MOV      #177400, @A.FS      ;SET FUNCTION STATUS BITS F7->F0
3830 021500 012737 177777 002734      MOV      #-1, FP.EXP      ;INITIALIZE EXPECTED CONTENTS
3831 021506 017737 160572 002736      MOV      @A.FS, FP.ACT      ;READ REGISTER
3832 021514 023737 002736 002734      CMP      FP.ACT, FP.EXP      ;COMPARE WITH EXPECTED VALUE
3833 021522 001424      BEQ      500$      ;IDENTICAL: CONTINUE
3834
3835 021524      300$: ERRHRD 2, M.FSR1, ER.REG      ;'FUNCTION/STATUS BIT ERROR'
021524 104456      TRAP      C$ERHRD
021526 000002      .WORD     2
021530 010163      .WORD     M.FSR1
021532 015016      .WORD     ER.REG
3836
3837 021534 105737 002736      TSTB      FP.ACT      ;TEST STATUS BITS ONLY
3838 021540 001015      BNE      500$      ;AT LEAST ONE SET: CONTINUE
3839 021542      STARS
                 ;*****
3840      ;
3841      ;
3842      ;
3843 021542      STARS
                 ;*****
3844
3845 021542 005737 003050      TST      CBLFLG      ;TEST MESSAGE FLAG
3846 021546 001012      BNE      500$      ;SKIP PRINT IF NOT FIRST TIME
3847
3848 021550 005237 003050      INC      CBLFLG      ;BUMP FLAG
3849 021554      PRINTF  #F.CBL      ;'CHECK 8432 MODULE LOOP-BACK CABLE'
021554 012746 013464      MOV      #F.CBL, -(SP)
021560 012746 000001      MOV      #1, -(SP)
021564 010600      MOV      SP, R0
021566 104417      TRAP      C$PNTF
021570 062706 000004      ADD      #4, SP
3850
3851 021574      500$: ENDSUB                                ;ALL ONE'S
021574 L10032:
021574 104403      TRAP      C$ESUB

```

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 TEST 4: CHECK INTERFACE FUNCTION/STATUS BITS

3853 021576

STARS

3854

3855

3856

3857

3858

3859

3860 021576

STARS

3861 021576

021576

021576 104402

T4.2:

BGNSUB

;LOAD ALL ZERO'S

TRAP C\$BSUB

3862

3863 021600 012777 000000 160476

100\$:

MOV #0, @A.FS

;CLEAR FUNCTION BITS F7->F0

3864 021606 012737 000000 002734

MOV #0, FP.EXP

;INITIALIZE EXPECTED VALUE

3865 021614 017737 160464 002736

MOV @A.FS, FP.ACT

;READ FS REGISTER

3866 021622 023737 002736 002734

CMP FP.ACT, FP.EXP

;AND COMPARE VALUES

3867 021630 001404

BEQ 400\$

;IDENTICAL: CONTINUE

3868

3869 021632

ERRHRD 3, M.FSR1, ER.REG

;'FUNCTION/STATUS BIT ERROR'

021632 104456

TRAP C\$ERHRD

021634 000003

.WORD 3

021636 010163

.WORD M.FSR1

021640 015016

.WORD ER.REG

3870

3871 021642

400\$:

ENDSUB

;ALL ZERO'S

021642

L10033:

021642 104403

TRAP C\$ESUB

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 TEST 4: CHECK INTERFACE FUNCTION/STATUS BITS

```

3873 021644      STARS
3874      :*****
3875      :
3876      :      SUBTEST 3:
3877      :      LOAD FS REGISTER BITS F7-F0 WITH MOVING ONE.
3878      :      READ REGISTER CONTENTS AND CHECK FOR
3879      :      FUNCTION/STATUS BITS STUCK AT ZERO.
3880 021644      STARS
3881      :*****
3881 021644      BGNSUB                                ;MOVING ONE BIT
3881 021644      T4.3:                                ;
3881 021644      104402      TRAP      C$BSUB
3882      :
3883 021646 005037 002470      50$:      CLR      R.ERR      ;CLEAR ERROR FLAG
3884 021652 012702 000400      MOV      #FS.F0,R2      ;INIT FUNCTION BIT F0
3885 021656 012704 000401      MOV      #401,R4      ;INIT EXPECTED BITS F0 & STO
3886 021662 012705 000010      MOV      #8.,R5      ;AND BIT COUNTER
3887      :
3888 021666 010277 160412      100$:     MOV      R2,QA.FS      ;LOAD FS FUNCTION BIT
3889 021672 010437 002734      MOV      R4,FP.EXP      ;LOAD EXPECTED CONTENTS
3890 021676 017737 160402 002736      MOV      QA.FS,FP.ACT      ;READ REGISTER
3891 021704 023737 002736 002734      CMP      FP.ACT,FP.EXP      ;AND COMPARE VALUES
3892 021712 001423      BEQ      200$      ;IDENTICAL: CONTINUE
3893      :
3894 021714 005737 002470      TST      R.ERR      ;TEST ERROR FLAG
3895 021720 001016      BNE      150$      ;BRANCH IF NOT ZERO
3896      :
3897 021722 005237 002470      INC      R.ERR      ;INCREMENT ERROR FLAG
3898 021726      ERRHRD 4,M.FSR1      ;'FUNCTION/STATUS BIT ERROR'
3898      :
3898      021726 104456      TRAP      C$ERHRD
3898      021730 000004      .WORD      4
3898      021732 010163      .WORD      M.FSR1
3898      021734 000000      .WORD      0
3899 021736      PRINTX #F.REG1      ;PRINT REGISTER HEADER
3899 021736 012746 013056      MOV      #F.REG1,-(SP)
3899 021742 012746 000001      MOV      #1,-(SP)
3899 021746 010600      MOV      SP,R0
3899 021750 104415      TRAP      C$PNTX
3899 021752 062706 000004      ADD      #4,SP
3900      :
3901 021756 004737 016054      150$:     JSR      PC,DSPREG      ;DISPLAY REGISTER CONTENTS
3902      :
3903 021762 006302      200$:     ASL      R2      ;SHIFT TO NEXT TEST PATTERN
3904 021764 006304      ASL      R4      ;SHIFT TO NEXT EXPECTED POSITION
3905 021766 005305      DEC      R5      ;DECREMENT COUNTER
3906 021770 001336      BNE      100$      ;AND CONTINUE UNTIL ZERO
3907      :
3908 021772 005737 002470      400$:     TST      R.ERR      ;TEST FOR ANY ERRORS
3909 021776 001410      BEQ      600$      ;NO: EXIT TEST
3910 022000      PRINTX #F.CRLF      ;NEW LINE
3910 022000 012746 014214      MOV      #F.CRLF,-(SP)
3910 022004 012746 000001      MOV      #1,-(SP)
3910 022010 010600      MOV      SP,R0
3910 022012 104415      TRAP      C$PNTX
3910 022014 062706 000004      ADD      #4,SP
3911

```

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TEST 4: CHECK INTERFACE FUNCTION/STATUS BITS

3912 022020
022020
022020 104403

600\$: ENDSUB
L10034: TRAP C\$ESUB

;MOVING ONE

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TEST 4: CHECK INTERFACE FUNCTION/STATUS BITS

```

3914 022022          STARS
                      ::*****
3915                      ::
3916                      ::
3917                      ::
3918                      ::
3919                      ::
3920                      ::
3921 022022          STARS
                      ::*****
3922 022022          BGNSUB                                ;LOAD MOVING ZERO
022022          T4.4:
022022 104402          TRAP      C$BSUB
3923
3924 022024 005037 002470 50$:   CLR      R.ERR              ;CLEAR ERROR FLAG
3925 022030 012702 177000      MOV      #177000,R2          ;INIT TEST BITS F7->F1
3926 022034 012704 177376      MOV      #177376,R4          ;INIT EXPECTED BITS F7->F1 & ST7->ST1
3927 022040 012705 000010      MOV      #8.,R5              ;LOAD BIT COUNTER
3928
3929 022044 010277 160234 100$:  MOV      R2,QA.FS           ;WRITE TO FS REGISTER
3930 022050 010437 002734      MOV      R4,FP.EXP           ;LOAD EXPECTED CONTENTS
3931 022054 017737 160224 002736 MOV      QA.FS,FP.ACT        ;READ REGISTER
3932 022062 023737 002736 002734 CMP      FP.ACT,FP.EXP      ;AND COMPARE VALUES
3933 022070 001423              BEQ      200$                ;IDENTICAL: CONTINUE
3934
3935 022072 005737 002470      TST      R.ERR              ;TEST ERPOR FLAG
3936 022076 001016              BNE      150$                ;BRANCH IF NOT ZERO
3937
3938 022100 005237 002470      INC      R.ERR              ;INCREMENT ERROR FLAG
3939 022104              ERRHRD  5,M.FSR1                    ;'FUNCTION/STATUS BIT ERROR'
022104              TRAP      C$ERHRD
022106              .WORD     5
022110              .WORD     M.FSR1
022112              .WORD     0
3940 022114              PRINTX  #F.REG1                      ;PRINT REGISTER HEADER
022114 012746 013056      MOV      #F.REG1,-(SP)
022120 012746 000001      MOV      #1,-(SP)
022124 010600              MOV      SP,R0
022126 104415              TRAP      C$PNTX
022130 062706 000004      ADD      #4,SP
3941
3942 022134 004737 016054 150$:  JSR      PC,DSPREG          ;DISPLAY REGISTER CONTENTS
3943
3944 022140 006302 200$:  ASL      R2                        ;SHIFT TO NEXT TEST POSITION
3945 022142 052702 000400      BIS      #FS.F0,R2          ;SET INCOMING BIT F0
3946 022146 006304          ASL      R4                        ;SHIFT TO NEXT EXPECTED POSITION
3947 022150 052704 000001      BIS      #FS.ST0,R4          ;SET INCOMING BIT ST0
3948 022154 005305          DEC      R5                        ;DECREMENT COUNTER
3949 022156 001332          BNE      100$                    ;AND CONTINUE UNTIL ZERO
3950
3951 022160 005737 002470 400$:  TST      R.ERR              ;TEST FOR ANY ERRORS
3952 022164 001410          BEQ      600$                    ;NO: EXIT TEST
3953 022166              PRINTX  #F.CRLF                      ;NEW LINE
022166 012746 014214      MOV      #F.CRLF,-(SP)
022172 012746 000001      MOV      #1,-(SP)
022176 010600              MOV      SP,R0
022200 104415              TRAP      C$PNTX

```

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TEST 4: CHECK INTERFACE FUNCTION/STATUS BITS

3954	022202	062706	000004	ADD	#4,SP	
3955	022206			6008: ENDSUB		;MOVING ZERO
	022206			L10035:		
	022206	104403		TRAP	C\$ESUB	
3956						
3957	022210	004737	015550	JSR	PC,CLRTST	;AND CLEAR TEST DATA
3958						
3959	022214			ENDTST		
	022214			L10031:		
	022214	104401		TRAP	C\$ETST	

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 TEST 5: CHECK INTERFACE STATUS ATTN BIT

```

3961 .SBTTL TEST 5: CHECK INTERFACE STATUS ATTN BIT
3962 022216 STARS
*****
3963
3964 TEST DESCRIPTION:
3965
3966 CHECK IS REGISTER USER ATTN BITS FOR BITS
3967 STUCK AT ONE, ZERO OR STUCK TOGETHER
3968
3969 TEST STEPS:
3970
3971 IF ATO & AT3 ATTN NOT DISABLED THEN:
3972 CLEAR MASSBUS CONTROLLER AND CHECK FOR ERROR
3973 EXECUTE SUB TESTS 1-4
3974
3975 ERROR CONDITIONS:
3976
3977 INTERFACE STATUS REGISTER BITS STUCK
3978 022216 STARS
*****
3979 022216 BGNTST ;ATTN LOOP-BACK
022216
3980
3981 SELMASK = B.REVA + B.UPAR + B.BYTE + B.ABORT
3982
3983 022216 013700 003010 MOV SELECT,R0 ;READ SELECT WORD
3984 022222 042700 000234 BIC #SELMASK,R0 ;CLEAR DON'T CARE SELECT BITS
3985 022226 001402 BEQ 50$ ;BRANCH IF B.ATO AND B.AT3 NOT SET
3986
3987 022230 EXIT TST ;ATO OR AT3 DISABLED: EXIT TEST
022230 104432 TRAP C$EXIT
022232 000552 .WORD L10036-.
3988
3989 022234 004737 015342 50$: JSR PC,CLRMBC ;CLEAR THE MASSBUS CONTROLLER
3990 022240 005737 003030 TST MBCFLG ;TEST CLEAR FLAG
3991 022244 001405 BEQ 100$ ;CONTINUE IF ZERO
3992
3993 022246 ERRDF 1,M.MBC1,ER.DMP ;'MASSBUS CONTROLLER CLEAR ERROR'
022246 104455 TRAP C$ERRDF
022250 000001 .WORD 1
022252 011650 .WORD M.MBC1
022254 015074 .WORD ER.DMP
3994 022256 DOCLN ;CLEAN UP AND EXIT
022256 104444 TRAP C$DCLN
3995
3996 022260 013737 002420 002730 100$: MOV NA.IS,FP.NAM ;LOAD IS REGISTER NAME ADDRESS
3997 022266 013737 002450 002746 MOV BA.IS,FP.TBL ;LOAD BIT EXPAND TABLE
3998 ;EXECUTE SUBTEST

```

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 TEST 5: CHECK INTERFACE STATUS ATTN BIT

```

4000 022274          STARS
                     ;*****
4001                 ;
4002                 ; SUBTEST 1:
4003                 ;
4004                 ; LOAD FS REGISTER FUNCTION BITS F3->F0 WITH ONE'S.
4005                 ; READ AND CHECK IS REGISTER USER ATTN BITS AT3->AT0.
4006 022274          STARS
                     ;*****
4007 022274          BGNSUB                                ;LOAD ONE'S
                     ;
                     T5.1:
                     TRAP    C$BSUB
4008
4009 022276 012777 007400 160000 100$: MOV    #7400, @A.FS      ;INITIALIZE FUNCTION BITS F3->F0
4010 022304 017737 160000 002736      MOV    @A.IS, FP.ACT    ;READ IS REGISTER
4011 022312 012737 142217 002734      MOV    #142217, FP.EXP   ;EXPECTED: ATA,ERR,ERO,IRY & AT3->AT0
4012 022320 123737 002736 002734      CMPB   FP.ACT, FP.EXP   ;AND COMPARE LSB VALUES
4013 022326 001404          BEQ    200$                       ;IDENTICAL: CONTINUE
4014
4015 022330          ERRHRD 2, M.UAT1, ER.REG                ;''ISR USER ATTN BIT NOT SET/RESET''
                     TRAP    C$ERHRD
                     .WORD   2
                     .WORD   M.UAT1
                     .WORD   ER.REG
                     200$: ENDSUB
4016
4017 022340          L10037: TRAP    C$ESUB                    ;ALL ONE'S
                     022340
                     022340 104403

```

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 TEST 5: CHECK INTERFACE STATUS ATTN BIT

```

4019 022342          STARS
                     ;*****
4020          ;
4021          ;       SUBTEST 2:
4022          ;
4023          ;       LOAD FS REGISTER FUNCTION BITS F3->F0 WITH ZERO'S.
4024          ;       READ AND CHECK IS REGISTER USER ATTN BITS AT3->AT0.
4025 022342          STARS
                     ;*****
4026 022342          BGNSUB                                ;ALL ZERO'S
      022342
      022342 104402    T5.2:
4027          TRAP      C$BSUB
4028 022344 012777 000000 157732 100$: MOV      #0,QA.FS          ;INITIALIZE BITS F7->F0 TO ZERO
4029 022352 017737 157732 002736      MOV      QA.IS,FP.ACT      ;READ IS REGISTER
4030 022360 012737 142200 002734      MOV      #142200,FP.EXP     ;EXPECTED: ATA,ERR,ERO & IRY
4031 022366 123737 002736 002734      CMPB     FP.ACT,FP.EXP     ;AND COMPARE LSB VALUES
4032 022374 001404          BEQ      200$                       ;IDENTICAL: CONTINUE
4033
4034 022376          ERRHRD 3,M.UAT1,ER.REG          ;'ISR USER ATTN BIT NOT SET/RESET'
      022376 104456      TRAP      C$ERHRD
      022400 000003      .WORD     3
      022402 012454      .WORD     M.UAT1
      022404 015016      .WORD     ER.REG
4035
4036 022406          200$: ENDSUB                                ;ALL ZERO'S
      022406
      022406 104403    L10040: TRAP      C$ESUB

```

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TEST 5: CHECK INTERFACE STATUS ATTN BIT

```

4038 022410          STARS
                     ;*****
4039                     ;
4040                     ; SUBTEST 3:
4041                     ;
4042                     ; LOAD FS REGISTER BITS F3->F0 WITH MOVING ONE BIT.
4043                     ; READ AND CHECK IS REGISTER USER ATTN BITS AT3->AT0.
4044 022410          STARS
                     ;*****
4045 022410          BGNSUB                                ;MOVING ONE BIT
                     ;
                     T5.3:
                     TRAP      CSBSUB
4046
4047 022412 005037 002470 50$: CLR      R.ERR              ;CLEAR ERROR FLAG
4048 022416 012701 000400      MOV     #FS.F0,R1          ;INITIALIZE BIT F0 TO ONE
4049 022422 012702 000001      MOV     #IS.AT0,R2         ;AND EXPECTED ATTN BIT AT0 TO ONE
4050 022426 012705 000004      MOV     #4,R5              ;INITIALIZE BIT COUNTER
4051
4052 022432 010177 157646 100$: MOV     R1,QA.FS           ;WRITE TO FS REGISTER
4053 022436 017737 157646 002736 MOV     QA.IS,FP.ACT      ;READ IS REGISTER
4054 022444 012737 142200 002734 MOV     #142200,FP.EXP    ;EXPECTED: ATA,ERR,ERO & IRY
4055 022452 050237 002734      BIS     R2,FP.EXP          ;AND SET EXPECTED ATTN BIT
4056 022456 123737 002736 002734 CMPB   FP.ACT,FP.EXP    ;AND COMPARE LSB VALUES
4057 022464 001423          BEQ      200$                ;IDENTICAL: CONTINUE
4058
4059 022466 005737 002470      TST      R.ERR              ;TEST ERROR FLAG
4060 022472 001016          BNE      150$                ;BRANCH IF NOT ZERO
4061
4062 022474 005237 002470      INC      R.ERR              ;INCREMENT ERROR FLAG
4063 022500          ERRHRD  4,M.UAT1                     ;"ISR USER ATTN BIT NOT SET/RESET"
4064 022500 104456          TRAP      CSERHRD
4065 022502 000004          .WORD     4
4066 022504 012454          .WORD     M.UAT1
4067 022506 000000          .WORD     0
4068 022510          PRINTX   #F.REG1                     ;PRINT REGISTER HEADER
4069 022510 012746 013056      MOV     #F.REG1,-(SP)
4070 022514 012746 000001      MOV     #1,-(SP)
4071 022520 010600          MOV     SP,R0
4072 022522 104415          TRAP      C$PNTX
4073 022524 062706 000004      ADD     #4,SP
4074
4075 022530 004737 016054 150$: JSR     PC,DSPREG          ;DISPLAY REGISTER CONTENTS
4076
4077 022534 006301 200$: ASL      R1                      ;SHIFT TO NEXT FUNCTION BIT
4078 022536 006302          ASL      R2                      ;SHIFT TO NEXT EXPECTED ATTN BIT
4079 022540 005305          DEC      R5                      ;DECREMENT COUNTER
4080 022542 001333          BNE      100$                  ;AND CONTINUE UNTIL ZERO
4081
4082 022544 005737 002470 400$: TST      R.ERR              ;TEST FOR ANY ERRORS
4083 022550 001410          BEQ      600$                  ;NO: EXIT TEST
4084 022552          PRINTX   #F.CRLF                     ;NEW LINE
4085 022552 012746 014214      MOV     #F.CRLF,-(SP)
4086 022556 012746 000001      MOV     #1,-(SP)
4087 022562 010600          MOV     SP,R0
4088 022564 104415          TRAP      C$PNTX
4089 022566 062706 000004      ADD     #4,SP
4090
4076

```

ZDRMAO DR70 REPAIR DIAGNOSTIC MACRO M1200 23-MAY-83 15:51 PAGE 120-1
TEST 5: CHECK INTERFACE STATUS ATTN BIT

4077 022572
022572
022572 104403

600\$: ENDSUB
L10041: TRAP C\$ESUB

;MOVING ONE BIT

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TEST 5: CHECK INTERFACE STATUS ATTN BIT

```

4079 022574          STARS
                     :*****
4080          SUBTEST 4:
4081          LOAD FS REGISTER BITS F3->F0 WITH MOVING ZERO BIT.
4082          READ AND CHECK IS REGISTER USER ATTN BITS AT3->AT0.
4083          STARS
4084          :*****
4085 022574          BGNSUB                                ;MOVING ZERO BIT
4086 022574          T5.4:
4087 022574 104402          TRAP      CSBSUB
4088 022576 005037 002470 50$:      CLR      R.ERR          ;CLEAR ERROR FLAG
4089 022602 012701 007000          MOV      #7000,R1        ;INITIALIZE BITS F3-F1 TO ONE
4090 022606 012702 000016          MOV      #16,R2          ;INITIALIZE EXPECTED ATTN BITS AT3->AT1
4091 022612 012705 000004          MOV      #4,R5           ;AND BIT COUNTER
4092
4093 022616 010177 157462 100$:     MOV      R1,2A.FS        ;WRITE TO FS REGISTER
4094 022622 017737 157462 002736   MOV      2A.IS,FP.ACT    ;READ IS REGISTER
4095 022630 012737 142200 002734   MOV      #142200,FP.EXP    ;EXPECTED: ATA,ERR,ERO & IRY
4096 022636 060237 002734          ADD      R2,FP.EXP        ;SET EXPECTED AT3->AT0
4097 022642 123737 002736 002734   CMPB    FP.ACT,FP.EXP    ;AND COMPARE LSB VALUES
4098 022650 001423          BEQ      200$                   ;IDENTICAL: CONTINUE
4099
4100 022652 005737 002470          TST      R.ERR          ;TEST ERROR FLAG
4101 022656 001016          BNE      150$                   ;BRANCH IF NOT ZERO
4102
4103 022660 005237 002470          INC      R.ERR          ;INCREMENT ERROR FLAG
4104 022664          ERRHRD  5,M.UAT1                        ;"ISR USER ATTN BIT NOT SET/RESET"
4105 022664 104456          TRAP      CSERHRD
4106 022666 000005          .WORD     5
4107 022670 012454          .WORD     M.UAT1
4108 022672 000000          .WORD     0
4109 022674          PRINTX  #F.REG1                          ;PRINT REGISTER HEADER
4110 022674 012746 013056          MOV      #F.REG1,-(SP)
4111 022700 012746 000001          MOV      #1,-(SP)
4112 022704 010600          MOV      SP,R0
4113 022706 104415          TRAP      CSPNTX
4114 022710 062706 000004          ADD      #4,SP
4115
4116 022714 004737 016054 150$:     JSR      PC,DSPREG        ;DISPLAY REGISTER CONTENTS
4117
4118 022720 006301 200$:     ASL      R1                      ;SHIFT TO NEXT FUNCTION BIT
4119 022722 042701 010000          BIC      #FS.F4,R1        ;CLEAR SHIFT BIT
4120 022726 052701 000400          BIS      #FS.F0,R1        ;AND SET INCOMING FUNCTION BIT
4121 022732 006302          ASL      R2                      ;SHIFT TO NEXT ATTN BIT
4122 022734 042702 000020          BIC      #IS.CYC,R2        ;CLEAR SHIFT BIT
4123 022740 052702 000001          BIS      #IS.AT0,R2       ;AND SET INCOMING ATTN BIT
4124 022744 005305          DEC      R5                      ;DECREMENT COUNTER
4125 022746 001323          BNE      100$                   ;AND CONTINUE UNTIL ZERO
4126
4127 022750 005737 002470 400$:     TST      R.ERR          ;TEST FOR ANY ERRORS
4128 022754 001410          BEQ      600$                   ;NO: EXIT TEST
4129 022756          PRINTX  #F.CRLF                          ;NEW LINE
4130 022756 012746 014214          MOV      #F.CRLF,-(SP)
4131 022762 012746 000001          MOV      #1,-(SP)

```

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TEST 5: CHECK INTERFACE STATUS ATTN BIT

	022766	010600		MOV	SP,R0	
	022770	104415		TRAP	C\$PNTX	
	022772	062706	000004	ADD	#4,SP	
4121						
4122	022776		600\$:	ENDSUB		;MOVING ZERO BIT
	022776		L10042:			
	022776	104403		TRAP	C\$ESUB	
4123						
4124	023000	004737	015550	JSR	PC,CLRTST	;AND CLEAR TEST DATA
4125						
4126	023004			ENDTST		
	023004		L10036:			
	023004	104401		TRAP	C\$ETST	

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 TEST 6: CHECK INTERFACE STATUS USER ATTN BITS

```

4128 .SBTTL TEST 6: CHECK INTERFACE STATUS USER ATTN BITS
4129 023006 STARS
*****
4130
4131 TEST DESCRIPTION:
4132
4133 CHECK THAT USER ATTN BITS AT3->ATO SET ATA
4134 CHECK THAT MASSBUS CONTROLLER CLEAR RESETS ATA
4135
4136 TEST STEPS:
4137
4138 IF ATO & AT3 NOT DISABLED THEN:
4139 FOR EACH USER ATTN BIT: EXECUTE SUBTEST 1-2
4140
4141 ERROR CONDITIONS:
4142
4143 USER ATTN BIT DOES NOT SET ATA
4144 INTERFACE CLEAR COMMAND DOES NOT RESET ATA
4145 023006 STARS
*****
4146 023006 BGNTST
4147 023006
4148 000234
4149
4150 023006 013700 003010 MOV SELECT,R0 ;READ SELECT WORD
4151 023012 042700 000234 BIC #SELMASK,R0 ;CLEAR DON'T CARE SELECT BITS
4152 023016 001402 BEQ 50$ ;BRANCH IF NOT SET
4153
4154 023020 EXIT TST ;ATO OR AT3 DISABLED: EXIT TEST
4155 023020 104432 TRAP C$EXIT
4156 023022 000302 .WORD L10043-.
4157
4158 023024 012701 000400 50$: MOV #FS.F0,R1 ;INIT FS REGISTER TEST BIT F0
4159 023030 012702 000001 MOV #IS.ATO,R2 ;INIT IS EXPECTED BIT ATO
4160 023034 012705 000004 MOV #4,R5 ;LOAD BIT COUNTER
4161
4162 023040 013737 002420 002730 100$: MOV NA.IS,FP.NAM ;LOAD IS REGISTER NAME POINTER
4163 023046 013737 002450 002746 MOV BA.IS,FP.TBL ;LOAD REGISTER EXPAND TABLE ADDRESS
4164 023054 LP.UAT: ;EXECUTE SUBTEST
;USER ATTN LOOP LABEL

```

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 TEST 6: CHECK INTERFACE STATUS USER ATTN BITS

```

4166 023054          STARS
                     ::*****
4167          SUBTEST 1:
4168          INITIALIZE THE MASSBUS CONTROLLER AND CHECK FOR ERROR STATUS
4169          SET ONE OF F3->F0 IN THE FS REGISTER
4170          TEST CORRESPONDING USER ATTN BIT AT3->A0 SET
4171          CHECK THAT USER ATTN BIT SETS ATA
4172          STARS
4173          ::*****
4174 023054          BGNSUB                                ;SET ATTENTION
4175 023054          T6.1:
4176 023054          TRAP      C$BSUB
4177 023056 004737 015342 100$: JSR      PC,CLRMBC          ;CLEAR THE MASSBUS CONTROLLER
4178 023062 005737 003030 TST      MBCFLG          ;TEST FOR CONTROLLER ERROR
4179 023066 001405 BEQ      200$          ;CONTINUE IF MASSBUS CONTROLLER CLEARED
4180          ERRDF      1,M.MBC1,ER.DMP          ;'MASSBUS CONTROLLER CLEAR ERROR'
4181 023070          TRAP      C$ERDF
4182 023072 000001 .WORD      1
4183 023074 011650 .WORD      M.MBC1
4184 023076 015074 .WORD      ER.DMP
4185          DOCLN          ;CLEAN UP AND EXIT
4186 023100          TRAP      C$DCLN
4187 023102 010177 157176 200$: MOV      R1,@A.FS          ;WRITE USER FUNCTION BIT IN FS REGISTER
4188 023106 017737 157176 002736 MOV      @A.IS,FP.ACT          ;READ IS REGISTER
4189 023114 012737 100200 002734 MOV      #100200,FP.EXP          ;EXPECTED: ATA & IRY
4190 023122 050237 002734 BIS      R2,FP.EXP          ;SET CORRESPONDING USER ATTN BIT
4191 023126 123737 002736 002734 CMPB     FP.ACT,FP.EXP          ;COMPARE LSB VALUES ONLY
4192 023134 001405 BEQ      300$          ;IDENTICAL: CONTINUE
4193          ERRHRD      2,M.UAT1,ER.REG          ;'IS REGISTER USER ATTN BIT NOT SET'
4194 023136          TRAP      C$ERHRD
4195 023140 000002 .WORD      2
4196 023142 012454 .WORD      M.UAT1
4197 023144 015016 .WORD      ER.REG
4198 023146 000410 BR        400$          ;EXIT SUBTEST
4199 023150 023737 002736 002734 300$: CMP      FP.ACT,FP.EXP          ;USER ATTN OK: TEST ATA
4200 023156 001404 BEQ      400$          ;ATA OK IF SET
4201          ERRHRD      3,M.ISR1,ER.REG          ;'INTERFACE STATUS ERROR'
4202 023160          TRAP      C$ERHRD
4203 023162 000003 .WORD      3
4204 023164 011543 .WORD      M.ISR1
4205 023166 015016 .WORD      ER.REG
4206          400$: ENDSUB                                ;SET ATTENTION
4207          L10044: TRAP      C$ESUB

```

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 TEST 6: CHECK INTERFACE STATUS USER ATTN BITS

```

4201 023172      STARS
                  :*****
4202              :
4203              :
4204              :
4205              :
4206              :
4207              :
4208 023172      STARS
                  :*****
4209
4210 023172      500$: BGNSUB                      ;RESET ATTENTION
                  T6.2:
4211              TRAP      C$BSUB
4212 023174      005737 002226      TST      REVFLG      ;TEST FOR REVA
4213 023200      001012      BNE      550$          ;BRANCH IF REVA
4214
4215              ;      REVISION 'B'                ;ISSUE CLEAR DRIVE AND CONTINUE
4216
4217 023202      004737 015464      525$: JSR      PC,CLDRDI      ;ISSUE DRIVE CLEAR AND TEST ERROR
4218 023206      005737 003032      TST      DRIFLG      ;INTERFACE CLEAR ERROR
4219 023212      001417      BEQ      600$          ;CONTINUE IF NO ERROR
4220
4221 023214      ERRHRD 4,M.ISR2,ER.DMP      ;'INTERFACE STATUS ERROR ON CLEAR CMD'
4222 023214      104456      TRAP      C$ERHRD
4223 023216      000004      .WORD      4
4224 023220      011572      .WORD      M.ISR2
4225 023222      015074      .WORD      ER.DMP
4226 023224      000430      BR      700$          ;EXIT TEST
4227
4228              ;      REVISION 'A'                ;CLEAR MASSBUS CONTROLLER AND CONTINUE
4229
4230 023226      004737 015342      550$: JSR      PC,CLRMBC      ;CLEAR THE MASSBUS CONTROLLER
4231 023232      005737 003030      TST      MBCFLG      ;TEST FOR CONTROLLER ERROR
4232 023236      001405      BEQ      600$          ;CONTINUE IF MASSBUS CONTROLLER CLEARED
4233
4234 023240      ERRDF 5,M.MBC1,ER.DMP      ;'MASSBUS CONTROLLER CLEAR ERROR'
4235 023240      104455      TRAP      C$ERDF
4236 023242      000005      .WORD      5
4237 023244      011650      .WORD      M.MBC1
4238 023246      015074      .WORD      ER.DMP
4239
4240 023250      DOCLN      ;CLEAN UP AND EXIT
4241 023250      104444      TRAP      C$DCLN
4242
4243 023252      017737 157032 002736      600$: MOV      @A.IS,FP.ACT      ;READ IS REGISTER
4244 023260      012737 000200 002734      MOV      #IS.IRY,FP.EXP      ;LOAD EXPECTED CONTENTS
4245 023266      023737 002736 002734      CMP      FP.ACT,FP.EXP      ;COMPARE VALUES
4246 023274      001404      BEQ      700$          ;CONTINUE IF ATA RESET
4247
4248 023276      ERRHRD 6,M.ATA3,ER.REG      ;'ATA NOT RESET BY MBC CLEAR CMD'
4249 023276      104456      TRAP      C$ERHRD
4250 023300      000006      .WORD      6
4251 023302      006740      .WORD      M.ATA3
4252 023304      015016      .WORD      ER.REG
4253
4254 023306      700$: ENDSUB                      ;RESET ATTENTION

```

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TEST 6: CHECK INTERFACE STATUS USER ATTN BITS

	023306			L10045:		
	023306	104403		TRAP	C\$ESUB	
4241						
4242	023310	006301		ASL	R1	;SHIFT TO NEXT TEST POSITION
4243	023312	006302		ASL	R2	;SHIFT TO NEXT EXPECTED POSITION
4244	023314	005305		DEC	R5	;DECREMENT COUNTER
4245	023316	001256		BNE	LP.UAT	;CONTINUE LOOP UNTIL ZERO
4246						
4247	023320	004737	015550	800\$: JSR	PC,CLRTST	;AND CLEAR TEST DATA
4248						
4249	023324			ENDTST		
	023324			L10043:		
	023324	104401		TRAP	C\$ETST	

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 TEST 7: CHECK INTERFACE STATUS ERR BIT

```

4251 .SBTTL TEST 7: CHECK INTERFACE STATUS ERR BIT
4252 023326 STARS
*****
4253
4254 TEST DESCRIPTION:
4255 CHECK PROPER FUNCTION OF ERR BIT
4256
4257 TEST STEPS:
4258
4259 CLEAR MASSBUS CONTROLLER AND TEST FOR ERROR
4260 EXECUTE SUBTEST 1-4
4261
4262 ERROR CONDITIONS:
4263
4264 MASSBUS CONTROLLER ERROR STATUS
4265 INTERFACE STATUS ERROR ON DRIVE CLEAR
4266 ERO NOT SET THROUGH M8432 /NOT RESET BY INTERFACE CLEAR
4267 ERR NOT BY ERO /NOT RESET BY INTERFACE CLEAR CMD
4268 ATA NOT SET BY ERR /NOT RESET BY INTERFACE CLEAR CMD
4269
4270 023326 STARS
*****
4271 023326 BGNTST
4272 023326
4273 023326 004737 015342 50$: JSR PC,CLRMBC ;CLEAR THE MASSBUS CONTROLLER
4274 023332 005737 003030 TST MBCFLG ;TEST FOR CONTROLLER ERROR
4275 023336 001405 BEQ 100$ ;CONTINUE IF MASSBUS CONTROLLER CLEARED
4276
4277 023340 ERRDF 1,M.MBC1,ER.DMP ;'MASSBUS CONTROLLER CLEAR ERROR'
4278 023340 104455 TRAP C$ERDF
4279 023342 000001 .WORD 1
4280 023344 011650 .WORD M.MBC1
4281 023346 015074 .WORD ER.DMP
4282 023350 DOCLN ;CLEAN UP AND EXIT
4283 023350 104444 TRAP C$DCLN
4284
4285 023352 013737 002420 002730 100$: MOV NA.IS,FP.NAM ;LOAD IS REGISTER NAME POINTER
4286 023360 013737 002450 002746 MOV BA.IS,FP.TBL ;LOAD REGISTER EXPAND TABLE ADDRESS
4287 EXECUTE SUBTEST

```

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TEST 7: CHECK INTERFACE STATUS ERR BIT

```

4284 023366          STARS
                     :*****
4285                     :
4286                     :   SUBTEST 1:
4287                     :
4288                     :   SET BIT F5 OF FS REGISTER
4289                     :   CHECK IS REGISTER ERO BIT SET (8432 LOOP-BACK)
4290                     :   CHECK IS REGISTER ERR BIT SET (ERO)
4291                     :   CHECK IS REGISTER ATA BIT SET (ERR)
4292 023366          STARS
                     :*****
4293 023366          BGNSUB                                ;SET ERROR
                     :
023366          T7.1:
023366          TRAP    C$BSUB
4294
4295 023370 012777 020000 156706 100$: MOV    #FS.F5,@A.FS      ;SET FS REGISTER BIT F5
4296 023376 017737 156706 002736      MOV    @A.IS,FP.ACT      ;READ IS REGISTER
4297 023404 012737 142200 002734      MOV    #142200,FP.EXP      ;LOAD EXPECTED CONTENTS
4298 023412 012777 000000 156664      MOV    #0,@A.FS          ;CLEAR FUNCTION / STATUS BITS
4299
4300 023420 032737 002000 002736 200$: BIT    #IS.ERO,FP.ACT      ;TEST FOR ERO BIT SET
4301 023426 001005                                BNE    250$          ;YES: CONTINUE
4302
4303 023430          ERRHRD 2,M.ERO1,ER.REG      ;'ERO NOT SET WHEN FS BIT13 SET'
023430          TRAP    C$ERHRD
023432          .WORD  2
023434          .WORD  M.ERO1
023436          .WORD  ER.REG
4304 023440          BR      400$
4305                                ;CONTINUE
4306 023442 032737 040000 002736 250$: BIT    #IS.ERR,FP.ACT      ;TEST FOR ERR BIT SET
4307 023450 001005                                BNE    350$          ;YES: CONTINUE
4308
4309 023452          ERRHRD 3,M.ERR1,ER.REG      ;'ERR NOT SET ON ERO ACTIVE'
023452          TRAP    C$ERHRD
023454          .WORD  3
023456          .WORD  M.ERR1
023460          .WORD  ER.REG
4310 023462          BR      400$
4311                                ;CONTINUE
4312 023464 032737 100000 002736 350$: BIT    #IS.ATA,FP.ACT      ;TEST ATA BIT SET
4313 023472 001004                                BNE    400$          ;YES: WRAP IT UP
4314
4315 023474          ERRHRD 4,M.ATA2,ER.REG      ;'ATA NOT SET ON ERR ACTIVE'
023474          TRAP    C$ERHRD
023476          .WORD  4
023500          .WORD  M.ATA2
023502          .WORD  ER.REG
4316
4317 023504          400$: ENDSUB                                ;SET ERROR
023504          L10047:
023504          TRAP    C$ESUB
104403

```

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 TEST 7: CHECK INTERFACE STATUS ERR BIT

```

4319 023506          STARS
                     ::*****
4320
4321
4322          SUBTEST 2:
4323          IF NOT REVA THEN:  ISSUE INTERFACE CLEAR COMMAND
4324          ELSE:  CLEAR MASSBUS CONTROLLER
4325
4326          CHECK IS REGISTER ERO BIT RESET
4327          CHECK IS REGISTER ERR BIT RESET
4328          CHECK IS REGISTER ATA BIT RESET
4329 023506          STARS
                     ::*****
4330 023506          BGNSUB                                ;INTERFACE CLEAR ERROR
4331 023506          104402
4332 023510          005737 002226          50$:  TST      REVFLG          ;TEST FOR REVA
4333 023514          001012                    BNE      80$              ;BRANCH IF REVA
4334
4335 023516          004737 015464          JSR      PC,CLRDRI          ;ISSUE DRIVE CLEAR AND CHECK ERROR
4336 023522          005737 003032          TST      DRIFLG          ;TEST ERROR FLAG
4337 023526          001417                    BEQ      100$              ;CONTINUE IF NO ERROR
4338
4339 023530          ERRHRD 5,M.ISR2,ER.DMP          ;'INTERFACE STATUS ERROR ON CLEAR'
4340 023530          104456          TRAP      C$ERHRD
4341 023532          000005          .WORD      5
4342 023534          011572          .WORD      M.ISR2
4343 023536          015074          .WORD      ER.DMP
4344 023540          000452          BR        400$
4345
4346 023542          004737 015342          80$:  JSR      PC,CLRMBC          ;CLEAR THE MASSBUS CONTROLLER
4347 023546          005737 003030          TST      MBCFLG          ;TEST FOR CONTROLLER ERROR
4348 023552          001405                    BEQ      100$              ;CONTINUE IF MASSBUS CONTROLLER CLEARED
4349
4350 023554          ERRDF 6,M.MBC1,ER.DMP          ;'MASSBUS CONTROLLER CLEAR ERROR'
4351 023554          104455          TRAP      C$ERDF
4352 023556          000006          .WORD      6
4353 023560          011650          .WORD      M.MBC1
4354 023562          015074          .WORD      ER.DMP
4355 023564          104444          DOCLN
4356 023564          104444          TRAP      C$DCLN
4357
4358 023566          017737 156516 002736 100$:  MOV      @A.IS,FP.ACT          ;READ IS REGISTER
4359 023574          012737 000200 002734          MOV      #IS.IRY,FP.EXP          ;LOAD EXPECTED CONTENTS
4360
4361 023602          032737 002000 002736 200$:  BIT      #IS.ERO,FP.ACT          ;TEST ERO BIT RESET
4362 023610          001405                    BEQ      250$              ;BRANCH IF ERO RESET
4363
4364 023612          ERRHRD 7,M.ERO2,ER.REG          ;'ERO NOT RESET ON INTERFACE CLEAR CMD'
4365 023612          104456          TRAP      C$ERHRD
4366 023614          000007          .WORD      7
4367 023616          010017          .WORD      M.ERO2
4368 023620          015016          .WORD      ER.REG
4369 023622          000421          BR        400$
4370
4371 023624          032737 040000 002736 250$:  BIT      #IS.ERR,FP.ACT          ;TEST FOR ERR BIT RESET

```

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 TEST 7: CHECK INTERFACE STATUS ERR BIT

4359	023632	001405		BEQ	300\$		;BRANCH IF ERR RESET
4360							
4361	023634			ERRHRD	8,M.ERR2,ER.REG		;'ERR NOT RESET ON INTERFACE CLEAR CMD''
	023634	104456		TRAP	C\$ERHRD		
	023636	000010		.WORD	8		
	023640	010116		.WORD	M.ERR2		
	023642	015016		.WORD	ER.REG		
4362	023644	000410		BR	400\$		;CONTINUE
4363							
4364	023646	032737	100000 002736 300\$:	BIT	#IS.ATA,FP.ACT		;TEST FOR ATA BIT RESET
4365	023654	001404		BEQ	400\$		;BRANCH IF RESET
4366							
4367	023656			ERRHRD	9,M.ATA3,ER.REG		;'ATA NOT RESET ON INTERFACE CLEAR CMD''
	023656	104456		TRAP	C\$ERHRD		
	023660	000011		.WORD	9		
	023662	006740		.WORD	M.ATA3		
	023664	015016		.WORD	ER.REG		
4368							
4369	023666		400\$:	ENDSUB			;INTERFACE CLEAR ERROR
	023666		L10050:				
	023666	104403		TRAP	C\$ESUB		
4370							
4371	023670	004737	015550	JSR	PC,CLRTST		;AND CLEAR TEST DATA
4372							
4373	023674			ENDTST			
	023674		L10046:				
	023674	104401		TRAP	C\$ETST		

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 TEST 8: CHECK INTERFACE STATUS IRY BIT ON ERROR

```

4375          .SBTTL TEST 8: CHECK INTERFACE STATUS IRY BIT ON ERROR
4376 023676    STARS
               *****
4377          :
4378          : TEST DESCRIPTION:
4379          :
4380          : CHECK PROPER FUNCTION OF IRY BIT
4381          :
4382          : TEST STEPS:
4383          :
4384          : CLEAR MASSBUS CONTROLLER AND CHECK FOR ERROR
4385          : EXECUTE SUBTEST 1-2
4386          :
4387          : ERROR CONDITIONS:
4388          :
4389          : IRY NOT RESET BY VALID DATA TRANSFER CMD
4390          : IRY NOT SET BY ERR STATUS
4391 023676    STARS
               *****
4392 023676    BGNTST
4393 023676    T8::
4394 023676 004737 015342 50$: JSR PC,CLRMBC ;AND CLEAR MASSBUS CONTROLLER
4395 023702 005737 003030 TST MBCFLG ;TEST FOR ERROR
4396 023706 001405 BEQ 100$ ;BRANCH IF ZERO
4397
4398 023710 ERRDF 1,M.MBC1,ER.DMP ;'MASSBUS CONTROLLER CLEAR ERROR'
      023710 104455 TRAP C$ERDF
      023712 000001 .WORD 1
      023714 011650 .WORD M.MBC1
      023716 015074 .WORD ER.DMP
4399 023720 DOCLN ;CLEAN UP AND EXIT
      023720 104444 TRAP C$DCLN
4400
4401 023722 013737 002420 002730 100$: MOV NA.IS,FP.NAM ;LOAD IS REGISTER NAME POINTER
4402 023730 013737 002450 002746 MOV BA.IS,FP.TBL ;LOAD REGISTER EXPAND TABLE ADDRESS
4403 ;EXECUTE SUBTEST
4404

```

ZDRMAO DR70 REPAIR DIAGNOSTIC MACRO M1200 23-MAY-83 15:51 PAGE 129
 TEST 8: CHECK INTERFACE STATUS IRY BIT ON ERROR

```

4406 023736      STARS
4407      :*****
4408      :
4409      :   SUBTEST 1:
4410      :
4411      :   ISSUE WRITE COMMAND TO INTERFACE (NO DMA)
4412 023736      :   READ IS REGISTER AND CHECK IRY RESET
4413 023736      :   STARS
4414 023736      :   :*****
4415 023736      :   BGNSUB                                ; IRY RESET
4416 023736 104402 T8.1: TRAP      C$BSUB
4417      :
4418 023740 012777 000061 156330 MOV      #WR.CMD,@A.CS1      ;ISSUE WRITE CMD TO INTERFACE
4419 023746 004737 016042      JSR      PC,DLY              ;DELAY A COUPLE OF MEMORY CYCLES
4420      :
4421 023752 004737 015606      JSR      PC,RDREG              ;READ REGISTERS
4422 023756 032737 000200 002340 BIT      #IS.IRY,R.IS      ;TEST FOR IRY BIT RESET
4423 023764 001404      BEQ      200$                        ;RESET: CONTINUE
4424 023766      ERRHRD 2,M.IRY3,ER.DMP                    ;'IRY NOT RESET BY DATA TRANSFER CMD'
4425 023766 104456      TRAP      C$ERHRD
4426 023770 000002      .WORD      2
4427 023772 011162      .WORD      M.IRY3
4428 023774 015074      .WORD      ER.DMP
4429      :
4430 023776      200$: ENDSUB                                ; IRY FESET
4431 023776      L10052: TRAP      C$ESUB
4432 023776 104403

```

ZDRMAC DR70 REPAIR DIAGNOSTIC MACRO M1200 23-MAY-83 15:51 PAGE 130
 TEST 8: CHECK INTERFACE STATUS IRY BIT ON ERROR

```

4426 024000          STARS
                     :*****
4427          :
4428          :       SUBTEST 2:
4429          :
4430          :       SET ERO THROUGH LOOP-BACK CABLE
4431          :       READ IS REGISTER AND CHECK IRY SET
4432 024000          STARS
                     :*****
4433 024000          BGNSUB                                ; IRY SET
024000          T8.2:
024000 104402          TRAP      C$BSUB
4434
4435 024002 012777 020000 156274 100$: MOV      #FS.F5,2A.FS      ;SET FUNCTION BIT 5 IN FS REGISTER
4436 024010 004737 015606          JSR      PC,RDREG      ;READ REGISTERS
4437 024014 012777 000000 156262          MOV      #0,2A.FS      ;CLEAR FUNCTION / STATUS BITS
4438
4439 024022 032737 000200 002340          BIT      #IS.IRY,R.IS      ;AND TEST FOR IRY SET
4440 024030 001004          BNE      200$      ;CONTINUE IF SET
4441
4442 024032          ERRHRD 3,M.IRY1,ER.DMP      ;"IRY NOT SET ON ERROR"
024032 104456          TRAP      C$ERHRD
024034 000003          .WORD      3
024036 011034          .WORD      M.IRY1
024040 015074          .WORD      ER.DMP
4443
4444 024042          200$: ENDSUB
024042          L10053:
024042 104403          TRAP      C$ESUB
4445
4446 024044 004737 015550          JSR      PC,CLRTST      ;AND CLEAR TEST DATA
4447
4448 024050          ENDTST
024050          L10051:
024050 104401          TRAP      C$ETST

```

ZDRMA0 DR70 REPAIR DIAGNOSTIC MACRO M1200 23-MAY-83 15:51 PAGE 131
TEST 9: ADVANCED ATA BIT FUNCTIONAL CHECKS

```
4450 .SBTTL TEST 9: ADVANCED ATA BIT FUNCTIONAL CHECKS
4451 024052 STARS
4452 :*****
4453 :
4454 : TEST DESCRIPTION:
4455 :
4456 :     VERIFY ATA BIT WILL CAUSE INTERRUPT WHEN INTERRUPTS ENABLED,
4457 :     THAT ATA BIT IS SET/ RESET WITH ATTENTION SUMMARY REGISTER,
4458 :     AND THAT ATA BIT CLEARS WITH VALID DATA TRANSFER COMMAND.
4459 :
4460 : TEST STEPS:
4461 :
4462 :     EXECUTE SUBTEST 1-4
4463 :
4464 : ERROR CONDITIONS:
4465 :
4466 :     MASSBUS CONTROLLER ERROR STATUS
4467 :     NO INTERRUPT ON ATA SET
4468 :     AS REGISTER ATTN SUMMARY BIT NOT SET
4469 024052 STARS
4470 024052 :*****
4471 024052 : BGNTST
4472 024052 T9::
100$: ;EXECUTE SUBTEST
```

ZDRMAO DR70 REPAIR DIAGNOSTIC MACRO M1200 23-MAY-83 15:51 PAGE 132
 TEST 9: ADVANCED ATA BIT FUNCTIONAL CHECKS

```

4474 024052      STARS
                  *****
4475              SUBTEST 1:
4476                  SETUP INTERRUPT SERVICE VECTOR
4477                  SET FS REGISTER BIT F5 TO SET ERO, ERR & ATA
4478                  DELAY AND READ REGISTERS
4479                  TEST FOR INTERRUPT AND CLEAR SERVICE VECTOR
4480
4481              STARS
4482 024052          *****
4483 024052          BGNSUB                                ;CHECK INTERRUPT
4484 024052 104402      T9.1: TRAP      C$BSUB
4485 024054 004737 015342 50$: JSR      PC,CLRMBC          ;CLEAR MASSBUS CONTROLLER
4486 024060 005737 003030 TST      MBCFLG          ;TEST FOR ERROR
4487 024064 001405      BEQ      100$          ;CONTROLLER CLEAR: CONTINUE
4488
4489 024066          ERRDF 1,M.MBC1,ER.DMP          ;'MASSBUS CONTROLLER CLEAR ERROR'
4490 024066 104455      TRAP      C$ERDF
4491 024070 000001      .WORD     1
4492 024072 011650      .WORD     M.MBC1
4493 024074 015074      .WORD     ER.DMP
4494
4495 024076          DOCLN                                ;CLEAN UP AND EXIT
4496 024076 104444      TRAP      C$DCLN
4497
4498 024100 005037 003022 100$: CLR      INTFLG          ;CLEAR INTERRUPT FLAG
4499 024104 004737 015274 JSR      PC,SETISR          ;SET INTERRUPT SERVICE VECTOR
4500
4501 024110 012777 000100 156160 MOV      #CS1.IE,@A.CS1      ;WRITE INTERRUPT ENABLE TO CS1
4502 024116 012777 020000 156160 MOV      #FS.F5,@A.FS      ;SET FUNCTION BIT F5 IN FS REGISTER
4503 024124 004737 016042 JSR      PC,DLY          ;DELAY A FEW CYCLES
4504 024130 004737 015606 JSR      PC,RDREG          ;AND READ REGISTERS
4505
4506 024134 012777 000000 156142 MOV      #0,@A.FS          ;CLEAR FUNCTION / STATUS BITS
4507
4508 024142 005737 003022 TST      INTFLG          ;TEST INTERRUPT FLAG
4509 024146 001004      BNE      200$          ;CONTINUE IF SET
4510
4511 024150          ERRHRD 2,M.ATA4,ER.DMP          ;'NO INTERRUPT ON ATA'
4512 024150 104456      TRAP      C$ERHRD
4513 024152 000002      .WORD     2
4514 024154 007005      .WORD     M.ATA4
4515 024156 015074      .WORD     ER.DMP
4516
4517 024160 004737 015324 200$: JSR      PC,CLRISR          ;CLEAR INTERRUPT SERVICE VECTOR
4518
4519 024164          ENDSUB                                ;CHECK INTERRUPTS
4520 024164 L10055:      TRAP      C$ESUB
4521 024164 104403

```

ZDRMAO DR70 REPAIR DIAGNOSTIC MACRO M1200 23-MAY-83 15:51 PAGE 133
 TEST 9: ADVANCED ATA BIT FUNCTIONAL CHECKS

```

4511 024166      STARS
                  :*****
4512              :
4513              :   SUBTEST 2:
4514              :
4515              :   READ AS REGISTER CONTENTS
4516              :   CHECK CORRESPONDING AS REGISTER BIT SET
4517 024166      STARS
                  :*****
4518 024166      BGNSUB                                ;ATTENTION SUMMARY BITS
024166          T9.2:
024166          TRAP    C$BSUB
4519
4520 024170 013737 002776 002734 100$: MOV    UNITPOS,FP.EXP      ;LOAD EXPECTED AS REGISTER BIT
4521 024176 017737 156112 002736      MOV    @A.AS,FP.ACT      ;READ AS REGISTER CONTENTS
4522 024204 023737 002736 002734      CMP    FP.ACT,FP.EXP      ;AND COMPARE VALUES
4523 024212 001412      BEQ    200$                               ;IDENTICAL: CONTINUE
4524
4525 024214 013737 002424 002730      MOV    NA.AS,FP.NAM      ;LOAD REGISTER NAME ADDRESS
4526 024222 013737 002454 002746      MOV    BA.AS,FP.TBL      ;LOAD REGISTER EXPAND TABLE ADDRESS
4527 024230      ERRHRD 3,M.ASB1,ER.REG ;'AS BIT NOT SET'
024230      TRAP    C$ERHRD
024232      .WORD   3
024234      .WORD   M.ASB1
024236      .WORD   ER.REG
4528
4529 024240      200$: ENDSUB                                ;AS BIT SET
024240      L10056:
024240      TRAP    C$ESUB
104402
104403
  
```

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TEST 9: ADVANCED ATA BIT FUNCTIONAL CHECKS

```

4531 024242          STARS
                     :*****
4532          :
4533          :       SUBTEST 3:
4534          :
4535          :       WRITE TO ATTENTION SUMMARY BIT IN AS REGISTER
4536          :       READ IS REGISTER CONTENTS, CHECK FOR ATA BIT RESET
4537          :       AND CHECK FOR ERR BIT SET
4538 024242          STARS
                     :*****
4539 024242          BGNSUB                                ;ATA BIT RESET
024242          T9.3:
024242 104402          TRAP      C$BSUB
4540
4541 024244 013777 002776 156042 100$: MOV      UNITPOS, @A.AS      ;WRITE TO ATTN SUMMARY BIT
4542 024252 017737 156032 002736      MOV      @A.IS, FP.ACT      ;READ IS REGISTER CONTENTS
4543 024260 012737 042200 002734      MOV      #42200, FP.EXP      ;EXPECTED VALUE: (ERR, ERO & IRY)
4544 024266 005737 002226      TST      REVFLG      ;TEST FOR REV 'A'
4545 024272 001403      BEQ      150$      ;CONTINUE IF NOT
4546 024274 012737 040200 002734      MOV      #40200, FP.EXP      ;RESET ERO IN EXPECTED VALUE
4547
4548 024302 032737 100000 002736 150$: BIT      #IS.ATA, FP.ACT      ;TEST FOR ATA RESET
4549 024310 001405      BEQ      200$      ;CONTINUE IF ZERO
4550
4551 024312          ERRHRD  4, M.ATA5      ;'ATA NOT RESET BY WRITING AS BIT'
024312 104456          TRAP      C$ERHRD
024314 000004          .WORD      4
024316 007060          .WORD      M.ATA5
024320 000000          .WORD      0
4552 024322 000404          BR      250$      ;DISPLAY INTERFACE STATUS
4553
4554 024324 023737 002736 002734 200$: CMP      FP.ACT, FP.EXP      ;COMPARE VALUES
4555 024332 001412      BEQ      400$      ;BRANCH IF IDENTICAL
4556
4557 024334 013737 002420 002730 250$: MOV      NA.IS, FP.NAM      ;LOAD REGISTER NAME ADDRESS
4558 024342 013737 002450 002746      MOV      BA.IS, FP.TBL      ;LOAD REGISTER EXPAND TABLE ADDRESS
4559 024350          ERRHRD  5, M.ISR1, ER.REG      ;'INTERFACE STATUS ERROR'
024350 104456          TRAP      C$ERHRD
024352 000005          .WORD      5
024354 011543          .WORD      M.ISR1
024356 015016          .WORD      ER.REG
4560
4561 024360          400$: ENDSUB                                ;ATA BIT RESET
024360          L10057:
024360 104403          TRAP      C$ESUB

```

ZDRMA0 DR70 REPAIR DIAGNOSTIC MACRO M1200 23-MAY-83 15:51 PAGE 135
 TEST 9: ADVANCED ATA BIT FUNCTIONAL CHECKS

```

4563 024362          STARS
                     :*****
4564
4565                     SUBTEST 4:
4566                     CLEAR MASSBUS CONTROLLER AND CHECK FOR ERROR STATUS
4567                     WRITE ATO BIT TO SET ATA AND ISSUE WRITE COMMAND TO CS1
4568                     READ IS REGISTER CONTENTS AND CHECK FOR ATA RESET
4569
4570 024362          STARS
                     :*****
4571 024362          BGNSUB                                ;ATA RESET/VALID XFER COMMAND
024362
024362 104402          T9.4: TRAP      C$BSUB
4572
4573 024364 004737 015342 50$: JSR      PC,CLRMBC          ;CLEAR MASSBUS CONTROLLER
4574 024370 005737 003030 TST      MBCFLG          ;TEST FOR ERROR
4575 024374 001405      BEQ      100$          ;CONTROLLER CLEAR: CONTINUE
4576
4577 024376          ERRDF 6,M.MBC1,ER.DMP          ;'MASSBUS CONTROLLER CLEAR ERROR'
024376 104455      TRAP      C$ERDF
024400 000006      .WORD    6
024402 011650      .WORD    M.MBC1
024404 015074      .WORD    ER.DMP
4578 024406          DOCLN
024406 104444      TRAP      C$DCLN          ;CLEAN UP AND EXIT
4579
4580 024410 012777 000001 155672 100$: MOV      #IS.ATO,QA IS          ;SET ATA BIT IN IS REGISTER
4581
4582 024416 012777 000061 155652      MOV      #WR.CMD,QA.CS1          ;ISSUE WRITE COMMAND TO CS1
4583 024424 012777 000000 155644      MOV      #0,QA.CS1          ;CANCEL WRITE COMMAND
4584 024432 017737 155652 002736      MOV      QA.IS,FP.ACT          ;READ IS REGISTER CONTENTS
4585 024440 012737 000200 002734      MOV      #200,FP.EXP          ;LOAD EXPECTED VALUE: IRY
4586
4587 024446 032737 100000 002736      BIT      #IS.ATA,FP.ACT          ;TEST FOR ATA RESET
4588 024454 001405      BEQ      200$          ;CONTINUE IF ZERO
4589
4590
4591 024456          ERRHRD 7,M.ATA6,ER.DMP          ;'ATA NOT RESET BY LOADING -
024456 104456      TRAP      C$ERHRD          ; VALID DATA TRANSFER COMMAND'
024460 000007      .WORD    7
024462 007135      .WORD    M.ATA6
024464 015074      .WORD    ER.DMP
4592 024466 000410      BR      400$          ;EXIT SUBTEST
4593
4594 024470 023737 002736 002734 200$: CMP      FP.ACT,FP.EXP          ;COMPARE STATUS REGISTER VALUES
4595 024476 001404      BEQ      400$          ;BRANCH IF IDENTICAL
4596
4597 024500          ERRHRD 8,M.ISR1,ER.DMP          ;'INTERFACE STATUS ERROR'
024500 104456      TRAP      C$ERHRD
024502 000010      .WORD    8
024504 011543      .WORD    M.ISR1
024506 015074      .WORD    ER.DMP
4598
4599 024510          400$: ENDSUB
024510          L10060:
024510 104403      TRAP      C$ESUB
4600

```

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TEST 9: ADVANCED ATA BIT FUNCTIONAL CHECKS

4601 024512 004737 015550

JSR PC,CLRTST

;AND CLEAR TEST DATA

4602

4603 024516

ENDTST

L10054:

024516

TRAP C\$ETST

024516 104401

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 TEST 10: CHECK WORD TRANSFER LOGIC

```

4605 .SBTTL TEST 10: CHECK WORD TRANSFER LOGIC
4606 024520 STARS
4607 *****
4608 TEST DESCRIPTION:
4609 CHECK IRY AND CYC BITS FOR PROPER FUNCTION
4610 AROUND DATA TRANSFER COMMANDS
4611 TEST STEPS:
4612 IF NOT BYTE MODE THEN:
4613     SETUP INTERRUPT SERVICE ROUTINE VECTOR
4614     CLEAR MASSBUS CONTROLLER AND CHECK FOR ERROR STATUS
4615     EXECUTE SUBTEST 1-3 AND CLEAR VECTOR
4616 ERROR CONDITIONS:
4617     MASSBUS CONTROLLER ERROR STATUS
4618     INTERFACE STATUS IRY BIT NOT SET/RESET
4619     MASSBUS CONTROLLER RDY BIT NOT SET/RESET
4620 STARS
4621 *****
4622 BGNTST
4623 T10::
4624 SELTEST =      B.BYTE
4625
4626 50$:  MOV      SELECT,R0          ;LOAD TEST SELECT WORD
4627       BIT      #SELTEST,R0       ;TEST BYTE MODE
4628       BEQ      75$              ;CONTINUE IF DEFAULT
4629
4630       EXIT     TST                ;NO: EXIT TEST
4631       TRAP     C$EXIT
4632       .WORD    L10061-.
4633
4634 75$:  JSR      PC,CLRMBG          ;CLEAR MASSBUS CONTROLLER
4635       TST      MBGFLG            ;TEST FLAG FOR ERROR
4636       BEQ      100$             ;CONTINUE IF NO ERROR
4637
4638       ERRDF    1,M.MBC1,ER.DMP   ;DEVICE FATAL
4639       TRAP     C$ERRDF
4640       .WORD    1
4641       .WORD    M.MBC1
4642       .WORD    ER.DMP
4643       DOCLN    C$DCLN
4644       TRAP
4645
4646 100$: JSR      PC,SETISR          ;SETUP SERVICE ROUTINE VECTOR
4647       ;EXECUTE SUBTEST

```

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 TEST 10: CHECK WORD TRANSFER LOGIC

```

4646 024566          STARS
                     *****
4647          .....
4648          .....
4649          .....
4650          .....
4651          .....
4652 024566          STARS
                     *****
4653 024566          BGNSUB                                ;CHECK INTERFACE CLEAR CMD
    024566          T10.1:
    024566 104402      TRAP      C$BSUB
4654
4655 024570 012777 000020 155512 100$: MOV      #IS.CYC,@A.IS      ;ISSUE CYCLE REQUEST
4656
4657 024576 004737 016042      JSR      PC,DLY      ;DELAY A FEW CYCLES
4658
4659 024602 004737 015606      JSR      PC,RDREG      ;READ REGISTERS
4660 024606 032737 000200 002340 BIT      #IS.IRY,R.IS      ;TEST FOR IRY SET
4661 024614 001005      BNE      200$      ;IRY SET: CONTINUE
4662
4663 024616          ERRHRD 2,M.IRY2,ER.DMP      ;'IRY BIT RESET WHEN CYC BIT SET'
    024616 104456      TRAP      C$ERHRD
    024620 000002      .WORD      2
    024622 011102      .WORD      M.IRY2
    024624 015074      .WORD      ER.DMP
4664 024626 000410      BR      400$      ;EXIT FROM SUB TEST
4665
4666 024630 032737 000200 002326 200$: BIT      #CS1.RDY,R.CS1      ;TEST FOR RDY BIT SET
4667 024636 001004      BNE      400$      ;RDY SET: CONTINUE
4668
4669 024640          ERRHRD 3,M.RDY2,ER.DMP      ;'MBC RDY BIT NOT SET BY IRY'
    024640 104456      TRAP      C$ERHRD
    024642 000003      .WORD      3
    024644 012024      .WORD      M.RDY2
    024646 015074      .WORD      ER.DMP
4670
4671 024650          400$: ENDSUB
    024650          L10062:
    024650 104403      TRAP      C$ESUB
  
```

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 TEST 10: CHECK WORD TRANSFER LOGIC

```

4673 024652      STARS
                  *****
4674              SUBTEST 2:
4675              INITIALIZE REGISTERS AND ISSUE INTERFACE WRITE
4676              READ REGISTERS, CHECK IRY RESET AND RDY RESET
4677              STARS
4678              *****
4679 024652      BGNSUB
4680 024652      T10.2:
4681 024652      TRAP      CSBSUB
4682 024654      012700    177777    100$:  MOV      #-1,R0          ;INITIALIZE BLOCK SIZE
4683 024660      004737    015762      JSR      PC,WRTINI        ;AND SETUP ADDRESS REGISTERS
4684 024664      012777    000061    155404  MOV      #WR.CMD,@A.CS1    ;ISSUE READ TO INTERFACE
4685 024672      004737    015606      JSR      PC,RDREG          ;READ REGISTERS INTO R.TBL
4686 024676      032737    000200    002340  BIT      #IS.IRY,R.IS      ;AND TEST FOR IRY RESET
4687 024704      001405      BEQ      200$          ;IRY RESET:  CONTINUE
4688 024706      ERRHRD    4,M.IRY3,ER.DMP        ;'IRY NOT RESET BY DATA TRANSFER CMD'
4689 024706      TRAP      C$ERHRD
4690 024710      .WORD     4
4691 024712      .WORD     M.IRY3
4692 024714      .WORD     ER.DMP
4693 024716      BR        400$                    ;EXIT FROM SUB TEST
4694 024720      032737    000200    002326  200$:  BIT      #CS1.RDY,R.CS1    ;TEST FOR RDY RESET
4695 024726      001404      BEQ      400$          ;RDY RESET:  CONTINUE
4696 024730      ERRHRD    5,M.RDY1,ER.DMP        ;'MBC RDY NOT RESET BY IRY'
4697 024730      TRAP      C$ERHRD
4698 024732      .WORD     5
4699 024734      .WORD     M.RDY1
4700 024736      .WORD     ER.DMP
4701 024740      400$:  ENDSUB
4702 024740      L10063:  TRAP      C$ESUB
4703 024740      104403

```

ZDRMA0 DR70 REPAIR DIAGNOSTIC MACRO M1200 23-MAY-83 15:51 PAGE 139
 TEST 10: CHECK WORD TRANSFER LOGIC

```

4700 024742          STARS
                     *****
4701                :
4702                :
4703                :
4704                :
4705                :
4706 024742          STARS
                     *****
4707 024742          SGNSUB
    024742          T10.3:
    024742 104402      TRAP      C$BSUB
4708
4709 024744 012777 000020 155336 100$: MOV      #IS.CYC, @A.IS      ;ISSUE CYCLE REQUEST AND WAIT
4710 024752 004737 015444      JSR      PC, TSTINT      ;TEST FOR INTERRUPT OR TIME OUT
4711
4712 024756 004737 015606      JSR      PC, RDREG      ;READ REGISTERS
4713 024762 032737 000200 002340 BIT      #IS.IRY, R.IS      ;TEST FOR IRY SET
4714 024770 001005      BNE      200$      ;IRY SET: CONTINUE
4715
4716 024772      ERHRD      6, M.IRY4, ER.DMP      ;'IRY NOT SET BY WORD XFER EBL'
    024772 104456      TRAP      C$ERHRD
    024774 000006      .WORD      6
    024776 011246      .WORD      M.IRY4
    025000 015074      .WORD      ER.DMP
4717 025002 000410      BR      400$      ;EXIT SUB TEST
4718
4719 025004 032737 000200 002326 200$: BIT      #IS.IRY, R.CS1      ;TEST FOR RDY SET
4720 025012 001004      BNE      400$      ;RDY SET: CONTINUE
4721
4722 025014      ERPHRD      7, M.RDY2, ER.DMP      ;'MBC RDY BIT NOT SET BY IRY'
    025014 104456      TRAP      C$ERHRD
    025016 000007      .WORD      7
    025020 012024      .WORD      M.RDY2
    025022 015074      .WORD      ER.DMP
4723
4724 025024          400$: ENDSUB
    025024          L10064:
    025024 104403      TRAP      C$ESUB
4725
4726 025026 004737 015324      JSR      PC, CLRISR      ;CLEAR VECTOR
4727
4728 025032 004737 015550      JSR      PC, CLRTST      ;AND CLEAR TEST DATA
4729
4730 025036          ENDTST
    025036          L10061:
    025036 104401      TRAP      C$ETST
  
```

ZDRMAO DR70 REPAIR DIAGNOSTIC MACRO M1200 23-MAY-83 15:51 PAGE 140
 TEST 11: CHECK INTERRUPT ON WORD TRANSFER

```

4732 .SBTTL TEST 11: CHECK INTERRUPT ON WORD TRANSFER
4733 STARS
4734 *****
4735
4736 TEST DESCRIPTION:
4737 CHECK THAT INTERRUPT WAS RECEIVED ON DATA TRANSFER COMPLETION
4738
4739 TEST STEPS:
4740
4741 IF NOT BYTE MODE THEN:
4742 CLEAR MASSBUS CONTROLLER AND CHECK FOR ERROR
4743 SETUP INTERRUPT SERVICE ROUTINE VECTOR AND INIT BLOCK SIZE
4744 EXECUTE SUBTEST 1-2 AND CLEAR VECTOR
4745
4746 ERROR CONDITIONS:
4747
4748 MASSBUS CONTROLLER CLEAR ERROR
4749 NO INTERRUPT ON DATA TRANSFER COMPLETE
4750 STARS
4751 *****
4752
4753 BGNTST
4754 T11::
4755
4756 SELTEST = B.BYTE
4757
4758 50$: MOV SELECT,R0 ;LOAD TEST SELECT WORD
4759 BIT #SELTEST,R0 ;TEST BYTE MODE
4760 BEQ 75$ ;CONTINUE IF NOT BYTE MODE
4761
4762 EXIT TST ;NO: EXIT TEST
4763 TRAP C$EXIT
4764 .WORD L10065-.
4765
4766 75$: JSR PC,CLRMBC ;CLEAR MASSBUS CONTROLLER
4767 TST MBCFLG ;TEST FLAG FOR ERROR
4768 BEQ 100$ ;CONTINUE IF NO ERROR
4769
4770 ERRDF 1,M.MBC1,ER.DMP ;DEVICE FATAL
4771 TRAP C$ERDF
4772 .WORD 1
4773 .WORD M.MBC1
4774 .WORD ER.DMP
4775
4776 DOCLN ;CLEAN UP AND EXIT
4777 TRAP C$DCLN
4778
4779 100$: JSR PC,SETISR ;SETUP INTERRUPT SERVICE VECTOR
4780

```

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 TEST 11: CHECK INTERRUPT ON WORD TRANSFER

```

4772 025106      STARS
4773              :*****
4774              :
4775              :   SUBTEST 1:
4776              :
4777              :   WRITE BLOCK TO INTERFACE
4778 025106      :   CHECK FOR INTERRUPT RECEIVED
4779              :
4780              :   STARS
4781              :   :*****
4782              :   BGNSUB
4783              :
4784              :   T11.1:
4785              :
4786              :   TRAP      C$BSUB
4787              :
4788              :   MOV      #-40,R0          ;LOAD BLOCK SIZE = 64 WORDS
4789              :   JSR      PC,WRIBLK       ;WRITE BLOCK TO INTERFACE
4790              :   JSR      PC,TSTMBC       ;READ REGISTERS AND TEST FOR ERROR
4791              :   TST      MBCFLG         ;TEST FOR ERROR
4792              :   BEQ      150$           ;BRANCH IF NO ERROR
4793              :
4794              :   ERRHRD   2,M.WRD2,ER.DMP   ;'XFER ERROR ON INTERFACE WRITE'
4795              :   TRAP     C$ERHRD
4796              :   .WORD    2
4797              :   .WORD    M.WRD2
4798              :   .WORD    ER.DMP
4799              :   BR       400$
4800              :
4801              :   ;EXIT SUBTEST
4802              :
4803              :   BIT      #IS.IRY,R.IS       ;TEST FOR IRY BIT SET
4804              :   BNE      200$           ;IRY SET: CONTINUE
4805              :
4806              :   ERRHRD   3,M.WRD1,ER.DMP   ;'DATA TRANSFER NOT COMPLETE'
4807              :   TRAP     C$ERHRD
4808              :   .WORD    3
4809              :   .WORD    M.WRD1
4810              :   .WORD    ER.DMP
4811              :   BR       400$
4812              :
4813              :   ;EXIT SUB TEST
4814              :
4815              :   TST      INTFLG         ;TEST FOR INTERRUPT RECEIVED
4816              :   BNE      400$           ;BRANCH IF NOT ZERO
4817              :
4818              :   ERRHRD   4,M.INT1,ER.DMP   ;'NO INTERRUPT ON WORD XFER EBL'
4819              :   TRAP     C$ERHRD
4820              :   .WORD    4
4821              :   .WORD    M.INT1
4822              :   .WORD    ER.DMP
4823              :
4824              :   ;WRITE BLOCK
4825              :
4826              :   400$: ENDSUB
4827              :
4828              :   L10066:
4829              :   TRAP      C$ESUB

```

ZDRMAO DR70 REPAIR DIAGNOSTIC MACRO M1200 23-MAY-83 15:51 PAGE 142
 TEST 11: CHECK INTERRUPT ON WORD TRANSFER

```

4803 025206          STARS
                     :*****
4804
4805
4806
4807
4808
4809 025206          STARS
                     :*****
4810 025206          BGNSUB
4811 025206          T11.2:
4812 025206 104402    TRAP      C$BSUB
4813 025210 012700 177740    MOV      #-40,R0          ;LOAD BLOCK SIZE = 64 WORDS
4814 025214 004737 015642    JSR      PC,RDBLK        ;READ BLOCK FROM INTERFACE
4815 025220 004737 015410    JSR      PC,TSTMBC       ;READ REGISTERS AND TEST FOR ERROR
4816 025224 005737 003030    TST      MBCFLG         ;TEST FOR ERROR
4817 025230 001405          BEQ      150$             ;BRANCH IF NO ERROR
4818 025232          ERRHRD  5,M.WRD3,ER.DMP          ;'XFER ERROR ON INTERFACE READ'
4819 025232 104456    TRAP      C$ERHRD
4820 025234 000005    .WORD     5
4821 025236 007373    .WORD     M.WRD3
4822 025240 015074    .WORD     ER.DMP
4823 025242 000420    BR        400$
4824          ;EXIT SUBTEST
4825 025244 032737 000200 002340 150$: BIT      #IS.IRY,R.IS          ;TEST FOR IRY BIT SET
4826 025252 001005          BNE      200$             ;IRY SET: CONTINUE
4827          ;'DATA TRANSFER NOT COMPLETE'
4828 025254          ERRHRD  6,M.WRD1,ER.DMP
4829 025254 104456    TRAP      C$ERHRD
4830 025256 000006    .WORD     6
4831 025260 007271    .WORD     M.WRD1
4832 025262 015074    .WORD     ER.DMP
4833 025264 000407    BR        400$
4834          ;EXIT SUB TEST
4835 025266 005737 003022    200$: TST      INTFLG
4836 025272 001004          BNE      400$
4837          ;TEST FOR INTERRUPT RECEIVED
4838          ;BRANCH IF NOT ZERO
4839 025274          ERRHRD  7,M.INT1,ER.DMP
4840 025274 104456    TRAP      C$ERHRD
4841 025276 000007    .WORD     7
4842 025300 010706    .WORD     M.INT1
4843 025302 015074    .WORD     ER.DMP
4844          ;'NO INTERRUPT ON WORD XFER EBL'
4845 025304          400$: ENDSUB
4846 025304          L10067:
4847 025304 104403    TRAP      C$ESUB
4848          ;READ BLOCK
4849 025306 004737 015324    JSR      PC,CLRISR
4850 025312 004737 015550    JSR      PC,CLRTST
4851 025316          ;AND RESTORE VECTOR ADDRESS
4852 025316          ;AND CLEAR TEST DATA
4853 025316          ENDTST
4854 025316 104401    L10065: TRAP      C$ETST

```

ZDRMA0 DR70 REPAIR DIAGNOSTIC MACRO M1200 23-MAY-83 15:51 PAGE 143
 TEST 12: CHECK WORD BLOCK DATA TRANSFER

```

4840 .SBTTL TEST 12: CHECK WORD BLOCK DATA TRANSFER
4841 STARS
*****
4842
4843 TEST DESCRIPTION:
4844
4845     PERFORM 64-WORD DMA DATA TRANSFERS,
4846     COMPARE DATA READ AGAINST DATA WRITTEN
4847
4848 TEST STEPS:
4849
4850     IF NOT BYTE MODE THEN:
4851         SETUP INTERRUPT SERVICE ROUTINE VECTOR
4852         INITIALIZE TRANSFER PARAMETERS AND
4853         EXECUTE SUBTEST 1-4 AND CLEAR INTERRUPT VECTOR
4854
4855 ERROR CONDITIONS:
4856
4857     MASSBUS CONTROLLER ERROR STATUS
4858     DATA TRANSFER NOT COMPLETE
4859     NO INTERRUPT ON DATA TRANSFER COMPLETE
4860     DATA RECEIVED DOES NOT MATCH EXPECTED DATA
4861
4862 PROMPTS:
4863     CHECK THAT SW1-7 IS IN THE 'ON' POSITION.
4864 STARS
*****
4865
4866 BGNTST
4867 T12::
4868
4869 SELTEST =      B.BYTE
4870
4871     MOV      SELECT,R0      ;READ SELECT WORD
4872     BIT      #SELTEST,R0    ;AND TEST BYTE MODE BIT SET
4873     BEQ      50$            ;BRANCH IF NOT SET
4874
4875     EXIT      TST            ;BYTE MODE: EXIT TEST
4876     TRAP     C$EXIT
4877     .WORD    L10070-.
4878
4879     50$:     JSR      PC,SETISR      ;SETUP INTERRUPT SERVICE VECTOR
4880             MOV      #-100,D.BLOCK  ;INITIALIZE BLOCK SIZE
4881             MOV      #200,D.MAX     ;INITIALIZE MAX DATA BUFFER INDEX
4882             MOV      #1,D.LPCNT     ;INITIALIZE LOOP COUNTER
4883
4884 LP.WXFR:      ;TRANSFER LOOP LABEL
  
```

ZDRMA0 DR70 REPAIR DIAGNOSTIC MACRO M1200 23-MAY-83 15:51 PAGE 144
TEST 12: CHECK WORD BLOCK DATA TRANSFER

4883 025364

STARS

4884

4885

4886

4887

4888

4889

4890

4891

4892

4893

4894

4895

4896

4897

4898

4899

4900

4901 025364

STARS

4902

4903 025364

025364

025364 104402

4904

4905 025366 004737 015342

4906 025372 005737 003030

4907 025376 001405

4908

4909 025400

025400 104455

025402 000001

025404 011650

025406 015074

4910 025410

025410 104444

4911

4912 025412 005002

4913

4914 025414 012762 177777 004054

4915 025422 012762 000000 003054

4916 025430 062702 000002

4917 025434 023702 002512

4918 025440 003365

4919

4920 025442 012700 177700

4921 025446 004737 015674

4922 025452 004737 015410

4923 025456 005737 003022

4924 025462 001005

4925

4926 025464

025464 104456

025466 000002

025470 010706

025472 015074

T12.1: BGNSUB

TRAP CSBSUB

JSR PC,CLRMBC

TST MBCFLG

BEQ 100\$

ERRDF 1,M.MBC1,ER.DMP

TRAP C\$ERDF

.WORD 1

.WORD M.MBC1

.WORD ER.DMP

DOCLN

TRAP C\$DCLN

100\$: CLR R2

150\$: MOV #-1,0BUF(R2)

MOV #0,1BUF(R2)

ADD #2,R2

CMP D.MAX,R2

BGT 150\$

200\$: MOV #-100,R0

JSR PC,WRIBLK

JSR PC,TSTMBC

TST INTFLG

BNE 250\$

ERRHRD 2,M.INT1,ER.DMP

TRAP C\$ERHRD

.WORD 2

.WORD M.INT1

.WORD ER.DMP

;CLEAR MASSBUS CONTROLLER
;TEST FLAG FOR ERROR
;CONTINUE IF NO ERROR

;DEVICE FATAL

;CLEAN UP AND EXIT

;CLEAR BUFFER INDEX REGISTER

;LOAD ONES INTO BUFFER

;CLEAR INPUT BUFFER

;AND BUMP INDEX

;COMPARE WITH MAX BUFFER INDEX

;CONTINUE UNTIL BUFFER INITIALIZED

;LOAD BLOCK SIZE = 64 WORDS

;WRITE BLOCK TO INTERFACE

;READ REGISTERS AND TEST ERRORS

;TEST FOR INTERRUPT

;BRANCH IF INTERRUPT RECEIVED

;'NOT INTERRUPT ON WORD XFER EBL'

ZDRMA0 DR70 REPAIR DIAGNOSTIC MACRO M1200 23-MAY-83 15:51 PAGE 144-1
 TEST 12: CHECK WORD BLOCK DATA TRANSFER

4927	025474	000407		ER	300\$		:EXIT SEGMENT
4928							
4929	025476	005737	003030	250\$:	TST	MBCFLG	:TEST FOR ERROR
4930	025502	001404			BEQ	300\$	:CONTINUE IF RESET
4931							
4932	025504			ERRHRD	3,M.WRD2,ER.DMP		: 'WORD XFER ERROR ON INTERFACE WRITE'
	025504	104456		TRAP	C\$ERHRD		
	025506	000003		.WORD	3		
	025510	007324		.WORD	M.WRD2		
	025512	015074		.WORD	ER.DMP		
4933							
4934	025514	012700	177700	300\$:	MOV	#-100,R0	:LOAD BLOCK SIZE = 64 WORDS
4935	025520	004737	015642		JSR	PC,RDBLK	:READ BLOCK FROM INTERFACE
4936	025524	004737	015410		JSR	PC,TSTMBC	:READ REGISTERS AND TEST ERRORS
4937	025530	005737	003022		TST	INTFLG	:TEST FOR INTERRUPT
4938	025534	001005			BNE	350\$	:BRANCH IF INTERRUPT RECEIVED
4939							
4940	025536			ERRHRD	4,M.INT1,ER.DMP		: 'NOT INTERRUPT ON WORD XFER EBL'
	025536	104456		TRAP	C\$ERHRD		
	025540	000004		.WORD	4		
	025542	010706		.WORD	M.INT1		
	025544	015074		.WORD	ER.DMP		
4941	025546	000407		BR	400\$		:EXIT SEGMENT
4942							
4943	025550	005737	003030	350\$:	TST	MBCFLG	:TEST FOR ERROR
4944	025554	001404			BEQ	400\$	:CONTINUE IF RESET
4945							
4946	025556			ERRHRD	5,M.WRD3,ER.DMP		: 'WORD XFER ERROR ON INTERFACE READ'
	025556	104456		TRAP	C\$ERHRD		
	025560	000005		.WORD	5		
	025562	007373		.WORD	M.WRD3		
	025564	015074		.WORD	ER.DMP		

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TEST 12: CHECK WORD BLOCK DATA TRANSFER

```

4948
4949 025566 005002          400$: CLR      R2          ;CLEAR BUFFER INDEX REGISTER
4950 025570 005037 003026    CLR      ERRFLG        ;CLEAR ERROR COUNT
4951
4952 025574 026262 003054 004054 425$: CMP      IBUF(R2),OBUF(R2) ;COMPARE DATA
4953 025602 001431          BEQ      475$           ;IDENTICAL: CONTINUE
4954
4955 025604 005737 003026    TST      ERRFLG        ;TEST ERROR COUNT
4956 025610 001006          BNE      450$           ;BRANCH IF NOT FIRST ERROR
4957
4958 025612          ERRHRD  6,M.WRD4,ER.DATA        ;'DATA COMPARISON ERROR'
      025612 104456      TRAP  C$ERHRD
      025614 000006      .WORD  6
      025616 007441      .WORD  M.WRD4
      025620 015172      .WORD  ER.DATA
4959 025622 010237 003702    MOV      R2,ERRNDX      ;SAVE DATA ERROR INDEX
4960
4961 025626 005237 003026    450$: INC      ERRFLG        ;BUMP ERROR COUNT
4962 025632 022737 000010 003026    CMP      #8,ERRFLG    ;COMPARE WITH MAX ERROR COUNT
4963 025640 002412          BLT      475$           ;BRANCH IF MAX LESS THAN COUNT
4964
4965 025642 010237 002742    MOV      R2,FP.NDX      ;SAVE DATA INDEX
4966 025646 016237 003054 002736    MOV      IBUF(R2),FP.ACT    ;SAVE RECEIVED DATA
4967 025654 016237 004054 002734    MOV      OBUF(R2),FP.EXP    ;SAVE DATA SENT
4968 025662 004737 016374    JSR      PC,DSPDATA    ;AND DISPLAY DATA
4969
4970 025666 062702 000002    475$: ADD      #2,R2          ;BUMP INDEX
4971 025672 023702 002512    CMP      D.MAX,R2      ;COMPARE WITH MAX BUFFER INDEX
4972 025676 003336          BGT      425$           ;CONTINUE UNTIL INDEX EQUALS MAX
4973
4974 025700 005737 003026    500$: TST      ERRFLG        ;TEST NUMBER ERRORS
4975 025704 001434          BEQ      600$           ;BRANCH IF NO ERRORS
4976
4977 025706          PRINTX  #F.ERCNT,ERRFLG        ;PRINT SUBTEST ERROR COUNT
      025706 013746 003026    MOV      ERRFLG,-(SP)
      025712 012746 013304    MOV      #F.ERCNT,-(SP)
      025716 012746 000002    MOV      #2,-(SP)
      025722 010600          MOV      SP,R0
      025724 104415          TRAP  C$PNTX
      025726 062706 000006    ADD      #6,SP
4978 025732 005237 003004    INC      ERRCNT        ;ADD TO TEST ERROR COUNT
4979
4980 025736 022737 000040 003026    CMP      #40,ERRFLG    ;TEST FOR 32 COMPARISON ERRORS
4981 025744 001014          BNE      600$           ;NO: EXIT SUBTEST
4982 025746 022737 000100 003002    CMP      #100,ERRNDX    ;TEST FOR 33RD WORD IN ERROR
4983 025754 001010          BNE      600$           ;NO: EXIT SUBTEST
4984
4985 025756          PRINTB  #F.MODE
      025756 012746 013340    MOV      #F.MODE,-(SP)
      025762 012746 000001    MOV      #1,-(SP)
      025766 010600          MOV      SP,R0
      025770 104414          TRAP  C$PNTB
      025772 062706 000004    ADD      #4,SP
4986
4987 025776          600$: ENDSUB
      025776          L10071: TRAP  C$ESUB
      025776 104403

```

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 TEST 12: CHECK WORD BLOCK DATA TRANSFER

4989 026000

STARS

4990

4991

4992

4993

4994

4995

4996

4997

4998

4999

5000

5001

5002

5003

5004

5005

5006

5007 026000

STARS

5008 026000

026000

026000 104402

T12.2: BGNSUB

TRAP C\$BSUB

5009

5010 026002 004737 015342

5011 026006 005737 003030

5012 026012 001405

5013

5014 026014

026014 104455

026016 000007

026020 011650

026022 015074

5015 026024

026024 104444

JSR PC,CLRMBC ;CLEAR MASSBUS CONTROLLER
 TST MBCFLG ;TEST FLAG FOR ERROR
 BEQ 100\$;CONTINUE IF NO ERROR

ERRDF 7,M.MBC1,ER.DMP ;DEVICE FATAL

TRAP C\$ERDF

.WORD 7

.WORD M.MBC1

.WORD ER.DMP

DOCLN ;CLEAN UP AND EXIT

TRAP C\$DCLN

5016

5017 026026 005002

100\$: CLR R2

;CLEAR BUFFER INDEX REGISTER

5018

5019 026030 012762 000000 004054

5020 026036 012762 000000 003054

5021 026044 062702 000002

5022 026050 023702 002512

5023 026054 003365

5024

5025 026056 012700 177700

5026 026062 004737 015674

5027 026066 004737 015410

5028 026072 005737 003022

5029 026076 001005

5030

5031 026100

026100 104456

026102 000010

026104 010706

026106 015074

5032 026110 000407

200\$: MOV #-100,R0

JSR PC,WRTBLK

JSR PC,TSTMBC

TST INTFLG

BNE 250\$

;LOAD BLOCK SIZE = 64 WORDS

;WRITE BLOCK TO INTERFACE

;READ REGISTERS AND TEST ERRORS

;TEST FOR INTERRUPT

;BRANCH IF INTERRUPT RECEIVED

ERRHRD 8,M.INT1,ER.DMP

TRAP C\$ERHRD

.WORD 8

.WORD M.INT1

.WORD ER.DMP

BR 300\$

;'NO' INTERRUPT ON WORD XFER EBL''

;EXIT SEGMENT

ZDRMA0 DR70 REPAIR DIAGNOSTIC MACRO M1200 23-MAY-83 15:51 PAGE 146-1
 TEST 12: CHECK WORD BLOCK DATA TRANSFER

5033							
5034	026112	005737	003030	250\$:	TST	MBCFLG	;TEST FOR ERROR
5035	026116	001404			BEQ	300\$	;CONTINUE IF RESET
5036							
5037	026120				ERRHRD	9,M.WRD2,ER.DMP	;'WORD XFER ERROR ON INTERFACE WRITE''
	026120	104456			TRAP	C\$ERHRD	
	026122	000011			.WORD	9	
	026124	007324			.WORD	M.WRD2	
	026126	015074			.WORD	ER.DMP	
5038							
5039	026130	012700	177700	300\$:	MOV	#-100,R0	;LOAD BLOCK SIZE = 64 WORDS
5040	026134	004737	015642		JSR	PC,RDBLK	;READ BLOCK FROM INTERFACE
5041	026140	004737	015410		JSR	PC,TSTMBC	;READ REGISTERS AND TEST ERRORS
5042	026144	005737	003022		TST	INTFLG	;TEST FOR INTERRUPT
5043	026150	001005			BNE	350\$	;BRANCH IF INTERRUPT RECEIVED
5044							
5045	026152				ERRHRD	10,M.INT1,ER.DMP	;'NO INTERRUPT ON WORD XFER EBL''
	026152	104456			TRAP	C\$ERHRD	
	026154	000012			.WORD	10	
	026156	010706			.WORD	M.INT1	
	026160	015074			.WORD	ER.DMP	
5046	026162	000407			BR	400\$	;EXIT SEGMENT
5047							
5048	026164	005737	003030	350\$:	TST	MBCFLG	;TEST FOR ERROR
5049	026170	001404			BEQ	400\$	;CONTINUE IF RESET
5050							
5051	026172				ERRHRD	11,M.WRD3,ER.DMP	;'WORD XFER ERROR ON INTERFACE READ''
	026172	104456			TRAP	C\$ERHRD	
	026174	000013			.WORD	11	
	026176	007373			.WORD	M.WRD3	
	026200	015074			.WORD	ER.DMP	

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 TEST 12: CHECK WORD BLOCK DATA TRANSFER

```

5053
5054 026202 005002          400$: CLR      R2          ;CLEAR BUFFER INDEX REGISTER
5055 026204 005037 003026    CLR      ERRFLG        ;CLEAR ERROR COUNT
5056
5057 026210 026262 003054 004054 425$: CMP      IBUF(R2),OBUF(R2) ;COMPARE DATA
5058 026216 001431          BEQ      475$           ;IDENTICAL: CONTINUE
5059
5060 026220 005737 003026    TST      ERRFLG        ;TEST ERROR COUNT
5061 026224 001006          BNE      450$           ;BRANCH IF NOT FIRST ERROR
5062
5063 026226          ERRHRD  12,M.WRD4,ER.DATA      ;'DATA COMPARISON ERROR'
      026226 104456      TRAP    C$ERHRD
      026230 000014      .WORD   12
      026232 007441      .WORD   M.WRD4
      026234 015172      .WORD   ER.DATA
5064 026236 010237 003002    MOV      R2,ERRNDX      ;SAVE DATA ERROR INDEX
5065
5066 026242 005237 003026    450$: INC      ERRFLG        ;BUMP ERROR COUNT
5067 026246 022737 000010 003026    CMP      #8,ERRFLG      ;COMPARE WITH MAX ERROR COUNT
5068 026254 002412          BLT      475$           ;BRANCH IF MAX LESS THAN COUNT
5069
5070 026256 010237 002742    MOV      R2,FP.NDX      ;SAVE DATA INDEX
5071 026262 016237 003054 002736    MOV      IBUF(R2),FP.ACT    ;SAVE RECEIVED DATA
5072 026270 016237 004054 002734    MOV      OBUF(R2),FP.EXP    ;SAVE DATA SENT
5073 026276 004737 016374    JSR      PC,DSPDATA      ;AND DISPLAY DATA
5074
5075 026302 062702 000002    475$: ADD      #2,R2          ;BUMP INDEX
5076 026306 023702 002512    CMP      D.MAX,R2      ;COMPARE WITH MAX BUFFER INDEX
5077 026312 003336          BGT      425$           ;CONTINUE UNTIL INDEX EQUALS MAX
5078
5079
5080 026314 005737 003026    500$: TST      ERRFLG        ;TEST NUMBER ERRORS
5081 026320 001434          BEQ      600$           ;BRANCH IF NO ERRORS
5082
5083 026322          PRINTX  #F.ERCNT,ERRFLG          ;PRINT SUBTEST ERROR COUNT
      026322 013746 003026    MOV      ERRFLG,-(SP)
      026326 012746 013304    MOV      #F.ERCNT,-(SP)
      026332 012746 000002    MOV      #2,-(SP)
      026336 010600          MOV      SP,R0
      026340 104415      TRAP    C$PNTX
      026342 062706 000006    ADD      #6,SP
      026346 005237 003004    INC      ERRCNT
5084                                ;ADD TO TEST ERROR COUNT
5085
5086 026352 022737 000040 003026    CMP      #40,ERRFLG      ;TEST FOR 32 COMPARISON ERRORS
5087 026360 001014          BNE      600$           ;NO: EXIT SUBTEST
5088 026362 022737 000100 003002    CMP      #100,ERRNDX    ;TEST FOR 33RD WORD IN ERROR
5089 026370 001010          BNE      600$           ;NO: EXIT SUBTEST
5090
5091 026372          PRINTB  #F.MODE
      026372 012746 013340    MOV      #F.MODE,-(SP)
      026376 012746 000001    MOV      #1,-(SP)
      026402 010600          MOV      SP,R0
      026404 104414      TRAP    C$PNTB
      026406 062706 000004    ADD      #4,SP
5092
5093 026412          600$:  ENDSUB
      026412          L10072:

```

ZDRMAO DR70 REPAIR DIAGNOSTIC MACRO M1200 23-MAY-83 15:51 PAGE 147-1
TEST 12: CHECK WORD BLOCK DATA TRANSFER

026412 104403

TRAP C\$ESUB

ZDRMA0 DR70 REPAIR DIAGNOSTIC MACRO M1200 23-MAY-83 15:51 PAGE 148
 TEST 12: CHECK WORD BLOCK DATA TRANSFER

5095 026414

STARS

5096

5097

5098

5099

5100

5101

5102

5103

5104

5105

5106

5107

5108

5109

5110

5111

5112

5113 026414

STARS

5114 026414

026414

026414 104402

5115

5116 026416

004737

015342

5117 026422

005737

003030

5118 026426

001405

5119

5120 026430

026430 104455

026432 000015

026434 011650

026436 015074

5121

026440

026440 104444

5122

5123 026442

005002

5124 026444

012705

000004

5125

5126 026450

012704

000001

5127

5128 026454

010462

004054

5129 026460

012762

000000

5130 026466

062702

000002

5131 026472

023702

002512

5132 026476

001404

5133

5134 026500

006304

5135 026502

001364

5136 026504

005305

5137 026506

001360

5138

5139 026510

012700

177700

5140 026514

004737

015674

5141 026520

004737

015410

5142 026524

005737

003022

T12.3:

BGNSUB

;MOVING ONE PATTERN

TRAP CSBSUB

JSR PC,CLRMBC

;CLEAR MASSBUS CONTROLLER

TST MBCFLG

;TEST FLAG FOR ERROR

BEQ 100\$

;CONTINUE IF NO ERROR

ERRDF 13,M.MBC1,ER.DMP

;DEVICE FATAL

TRAP CSERDF

.WORD 13

.WORD M.MBC1

.WORD ER.DMP

DOCLN

;CLEAN UP AND EXIT

TRAP CSDCLN

100\$:

CLR R2

;CLEAR BUFFER INDEX REGISTER

MOV #4,R5

;INITIALIZE COUNTER

125\$:

MOV #1,R4

;INITIALIZE PATTERN REGISTER

150\$:

MOV R4,0BUF(R2)

;LOAD ONES INTO BUFFER

MOV #0,1BUF(R2)

;CLEAR INPUT BUFFER

ADD #2,R2

;AND BUMP INDEX

CMP D.MAX,R2

;COMPARE WITH MAX BUFFER INDEX

BEQ 200\$

;BRANCH IF END OF BUFFER

ASL R4

;SHIFT PATTERN

BNE 150\$

;NO: CONTINUE

DEC R5

;DECREMENT BLOCK COUNTER

BNE 125\$

;AND CONTINUE IF ANOTHER BLOCK

200\$:

MOV #-100,R0

;LOAD BLOCK SIZE = 64 WORDS

JSR PC,WRIBLK

;WRITE BLOCK TO INTERFACE

JSR PC,TSTMBC

;READ REGISTERS AND TEST ERRORS

TST INTFLG

;TEST FOR INTERRUPT

ZDRMA0 DR70 REPAIR DIAGNOSTIC MACRO M1200 23-MAY-83 15:51 PAGE 148-1
TEST 12: CHECK WORD BLOCK DATA TRANSFER

5143	026530	001005		BNE	250\$		:BRANCH IF INTERRUPT RECEIVED
5144							
5145	026532			ERRHRD	14,M.INT1,ER.DMP		: 'NO INTERRUPT ON WORD XFER EBL'
	026532	104456		TRAP	C\$ERHRD		
	026534	000016		.WORD	14		
	026536	010706		.WORD	M.INT1		
	026540	015074		.WORD	ER.DMP		
5146	026542	000407		BR	300\$		:EXIT SEGMENT
5147							
5148	026544	005737	003030	250\$:	TST	MBCFLG	:TEST FOR ERROR
5149	026550	001404		BEQ	300\$		:CONTINUE IF RESET
5150							
5151	026552			ERRHRD	15,M.WRD2,ER.DMP		: 'WORD XFER ERROR ON INTERFACE WRITE'
	026552	104456		TRAP	C\$ERHRD		
	026554	000017		.WORD	15		
	026556	007324		.WORD	M.WRD2		
	026560	015074		.WORD	ER.DMP		
5152							
5153	026562	012700	177700	300\$:	MOV	#-100,R0	:LOAD BLOCK SIZE = 64 WORDS
5154	026566	004737	015642		JSR	PC,RDBLK	:READ BLOCK FROM INTERFACE
5155	026572	004737	015410		JSR	PC,TSTMBC	:READ REGISTERS AND TEST ERRORS
5156	026576	005737	003022		TST	INTFLG	:TEST FOR INTERRUPT
5157	026602	001005		BNE	350\$		:BRANCH IF INTERRUPT RECEIVED
5158							
5159	026604			ERRHRD	16,M.INT1,ER.DMP		: 'NO INTERRUPT ON WORD XFER EBL'
	026604	104456		TRAP	C\$ERHRD		
	026606	000020		.WORD	16		
	026610	010706		.WORD	M.INT1		
	026612	015074		.WORD	ER.DMP		
5160	026614	000407		BR	400\$		:EXIT SEGMENT
5161							
5162	026616	005737	003030	350\$:	TST	MBCFLG	:TEST FOR ERROR
5163	026622	001404		BEQ	400\$		:CONTINUE IF RESET
5164							
5165	026624			ERRHRD	17,M.WRD3,ER.DMP		: 'WORD XFER ERROR ON INTERFACE READ'
	026624	104456		TRAP	C\$ERHRD		
	026626	000021		.WORD	17		
	026630	007373		.WORD	M.WRD3		
	026632	015074		.WORD	ER.DMP		

ZDRMA0 DR70 REPAIR DIAGNOSTIC MACRO M1200 23-MAY-83 15:51 PAGE 149
TEST 12: CHECK WORD BLOCK DATA TRANSFER

```

5167
5168 026634 005002          400$: CLR      R2          ;CLEAR BUFFER INDEX REGISTER
5169 026636 005037 003026    CLR      ERRFLG        ;CLEAR ERROR COUNT
5170
5171 026642 026262 003054 004054 425$: CMP      IBUF(R2),OBUF(R2) ;COMPARE DATA
5172 026650 001431          BEQ      475$           ;IDENTICAL: CONTINUE
5173
5174 026652 005737 003026    TST      ERRFLG        ;TEST ERROR COUNT
5175 026656 001006          BNE      450$           ;BRANCH IF NOT FIRST ERROR
5176
5177 026660          ERRHRD 18,M.WRD4,ER.DATA        ;'DATA COMPARISON ERROR'
      026660 104456      TRAP  C$ERHRD
      026662 000022      .WORD 18
      026664 007441      .WORD M.WRD4
      026666 015172      .WORD ER.DATA
5178 026670 010237 003002    MOV      R2,ERRNDX      ;SAVE DATA ERROR INDEX
5179
5180 026674 005237 003026    450$: INC      ERRFLG        ;BUMP ERROR COUNT
5181 026700 022737 000010 003026    CMP      #8,ERRFLG    ;COMPARE WITH MAX ERROR COUNT
5182 026706 002412          BLT      475$           ;BRANCH IF MAX LESS THAN COUNT
5183
5184 026710 010237 002742          MOV      R2,FP.NDX    ;SAVE DATA INDEX
5185 026714 016237 003054 002736    MOV      IBUF(R2),FP.ACT ;SAVE RECEIVED DATA
5186 026722 016237 004054 002734    MOV      OBUF(R2),FP.EXP ;SAVE DATA SENT
5187 026730 004737 016374          JSR      PC,DSPDATA ;AND DISPLAY DATA
5188
5189 026734 062702 000002    475$: ADD      #2,R2        ;BUMP INDEX
5190 026740 023702 002512    CMP      D,MAX,R2      ;COMPARE WITH MAX BUFFER INDEX
5191 026744 003336          BGT      425$           ;CONTINUE UNTIL INDEX EQUALS MAX
5192
5193
5194 026746 005737 003026    500$: TST      ERRFLG        ;TEST NUMBER ERRORS
5195 026752 001434          BEQ      600$           ;BRANCH IF NO ERRORS
5196
5197 026754          PRINTX #F.ERCNT,ERRFLG          ;PRINT SUBTEST ERROR COUNT
      026754 013746 003026    MOV      ERRFLG,-(SP)
      026760 012746 013304    MOV      #F.ERCNT,-(SP)
      026764 012746 000002    MOV      #2,-(SP)
      026770 010600          MOV      SP,R0
      026772 104415      TRAP  C$PNTX
      026774 062706 000006    ADD      #6,SP
5198 027000 005237 003004          INC      ERRCNT      ;ADD TO TEST ERROR COUNT
5199
5200 027004 022737 000040 003026    CMP      #40,ERRFLG    ;TEST FOR 32 COMPARISON ERRORS
5201 027012 001014          BNE      600$           ;NO: EXIT SUBTEST
5202 027014 022737 000100 003002    CMP      #100,ERRNDX  ;TEST FOR 33RD WORD IN ERROR
5203 027022 001010          BNE      600$           ;NO: EXIT SUBTEST
5204
5205 027024          PRINTB #F.MODE
      027024 012744 013340    MOV      #F.MODE,-(SP)
      027030 012746 000001    MOV      #1,-(SP)
      027034 010600          MOV      SP,R0
      027036 104414      TRAP  C$PNTB
      027040 062706 000004    ADD      #4,SP
5206
5207 027044          600$: ENDSUB
      027044          L10073:

```

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TEST 12: CHECK WORD BLOCK DATA TRANSFER

027044 104403

TRAP C\$ESUB

ZDRMAO DR70 REPAIR DIAGNOSTIC MACRO M1200 23-MAY-83 15:51 PAGE 150
TEST 12: CHECK WORD BLOCK DATA TRANSFER

5209 027046

STARS

5210

5211

5212

5213

5214

5215

5216

5217

5218

5219

5220

5221

5222

5223

5224

5225

5226

5227 027046

STARS

5228 027046

027046

027046 104402

BGNSUB

;MOVING ZERO PATTERN

T12.4:

TRAP C\$BSUB

5229

5230 027050

027054

004737 015342

5231

5232 027060

027062

027062 104455

027064 000023

027066 011650

027070 015074

5233

5234

5235

5236

5237 027074

027076

005002 000004

5238

5239

5240 027102

027106

012704 177776

5241

5242 027106

027112

010462 004054

5243

5244 027120

027124

012762 000000

5245

5246 027124

027130

062702 000002

5247

5248 027132

027134

006304 000001

5249

5250 027140

027144

022704 177777

5251

5252 027146

027150

005305 000001

5253

5254

5255 027152

027156

004737 015674

T12.4:

TRAP C\$BSUB

JSR PC,CLRMBC

TST MBCFLG

BEQ 100\$

ERRDF 19,M.MBC1,ER.DMP

TRAP C\$ERDF

.WORD 19

.WORD M.MBC1

.WORD ER.DMP

DOCLN

TRAP C\$DCLN

100\$:

CLR R2

MOV #4,R5

125\$:

MOV #2,R4

150\$:

MOV R4,0BUF(R2)

MOV #0,1BUF(R2)

ADD #2,R2

CMP D.MAX,R2

BEQ 200\$

ASL R4

BIS #BIT00,R4

CMP #1,R4

BNE 150\$

DEC R5

BNE 125\$

200\$:

MOV #100,R0

JSR PC,WRTBLK

;CLEAR MASSBUS CONTROLLER

;TEST FLAG FOR ERROR

;CONTINUE IF NO ERROR

;DEVICE FATAL

;CLEAN UP AND EXIT

;CLEAR BUFFER INDEX REGISTER

;INITIALIZE COUNTER

;INITIALIZE PATTERN REGISTER

;LOAD ONES INTO BUFFER

;CLEAR INPUT BUFFER

;AND BUMP INDEX

;COMPARE WITH MAX BUFFER INDEX

;BRANCH IF END OF BUFFER

;SHIFT PATTERN

;SET INCOMING BIT

;TEST FOR ALL BITS ONE

;NO: CONTINUE

;DECREMENT BLOCK COUNTER

;AND CONTINUE IF ANOTHER BLOCK

;LOAD BLOCK SIZE = 64 WORDS

;WRITE BLOCK TO INTERFACE

ZDRMAO DR70 REPAIR DIAGNOSTIC MACRO M1200 23-MAY-83 15:51 PAGE 150-1
 TEST 12: CHECK WORD BLOCK DATA TRANSFER

5257	027162	004737	015410		JSR	PC,TSTMBC		;READ REGISTERS AND TEST ERRORS
5258	027166	005737	003022		TST	INTFLG		;TEST FOR INTERRUPT
5259	027172	001005			BNE	250\$		;BRANCH IF INTERRUPT RECEIVED
5260								
5261	027174				ERRHRD	20,M.INT1,ER.DMP		; 'NO INTERRUPT ON WORD XFER EBL'
	027174	104456			TRAP	C\$ERHRD		
	027176	000024			.WORD	20		
	027200	010706			.WORD	M.INT1		
	027202	015074			.WORD	ER.DMP		
5262	027204	000407			BR	300\$		;EXIT SEGMENT
5263								
5264	027206	005737	003030	250\$:	TST	MBCFLG		;TEST FOR ERROR
5265	027212	001404			BEQ	300\$		;CONTINUE IF RESET
5266								
5267	027214				ERRHRD	21,M.WRD2,ER.DMP		; 'WORD XFER ERROR ON INTERFACE WRITE'
	027214	104456			TRAP	C\$ERHRD		
	027216	000025			.WORD	21		
	027220	007324			.WORD	M.WRD2		
	027222	015074			.WORD	ER.DMP		
5268								
5269	027224	012700	177700	300\$:	MOV	#-100,R0		;LOAD BLOCK SIZE = 64 WORDS
5270	027230	004737	015642		JSR	PC,RDBLK		;READ BLOCK FROM INTERFACE
5271	027234	004737	015410		JSR	PC,TSTMBC		;READ REGISTERS AND TEST ERRORS
5272	027240	005737	003022		TST	INTFLG		;TEST FOR INTERRUPT
5273	027244	001005			BNE	350\$		;BRANCH IF INTERRUPT RECEIVED
5274								
5275	027246				ERRHRD	22,M.INT1,ER.DMP		; 'NO INTERRUPT ON WORD XFER EBL'
	027246	104456			TRAP	C\$ERHRD		
	027250	000026			.WORD	22		
	027252	010706			.WORD	M.INT1		
	027254	015074			.WORD	ER.DMP		
5276	027256	000407			BR	400\$		;EXIT SEGMENT
5277								
5278	027260	005737	003030	350\$:	TST	MBCFLG		;TEST FOR ERROR
5279	027264	001404			BEQ	400\$		;CONTINUE IF RESET
5280								
5281	027266				ERRHRD	23,M.WRD3,ER.DMP		; 'WORD XFER ERROR ON INTERFACE READ'
	027266	104456			TRAP	C\$ERHRD		
	027270	000027			.WORD	23		
	027272	007373			.WORD	M.WRD3		
	027274	015074			.WORD	ER.DMP		

5283									;CLEAR BUFFER INDEX REGISTER
5284	027276	005002		400\$:	CLR	R2			;CLEAR ERROR COUNT
5285	027300	005037	003026		CLR	ERRFLG			
5286									
5287	027304	026262	003054	004054	425\$:	CMP	IBUF(R2),OBUF(R2)		;COMPARE DATA
5288	027312	001431			BEG	475\$			;IDENTICAL: CONTINUE
5289									
5290	027314	005737	003026		TST	ERRFLG			;TEST ERROR COUNT
5291	027320	001006			BNE	450\$			;BRANCH IF NOT FIRST ERROR
5292									
5293	027322				ERRHRD	24,M.WRD4,ER.DATA			; 'DATA COMPARISON ERROR'
	027322	104456			TRAP	C\$ERHRD			
	027324	000030			.WORD	24			
	027326	007441			.WORD	M.WRD4			
	027330	015172			.WORD	ER.DATA			
5294	027332	010237	003002		MOV	R2,ERRNDX			;SAVE DATA ERROR INDEX
5295									
5296	027336	005237	003026		450\$:	INC	ERRFLG		;BUMP ERROR COUNT
5297	027342	022737	000010	003026	CMP	#8,ERRFLG			;COMPARE WITH MAX ERROR COUNT
5298	027350	002412			BLT	475\$			;BRANCH IF MAX LESS THAN COUNT
5299									
5300	027352	010237	002742		MOV	R2,FP.NDX			;SAVE DATA INDEX
5301	027356	016237	003054	002736	MOV	IBUF(R2),FP.ACT			;SAVE RECEIVED DATA
5302	027364	016237	004054	002734	MOV	OBUF(R2),FP.EXP			;SAVE DATA SENT
5303	027372	004737	016374		JSR	PC,DSPDATA			;AND DISPLAY DATA
5304									
5305	027376	062702	000002		475\$:	ADD	#2,R2		;BUMP INDEX
5306	027402	023702	002512		CMP	D.MAX,R2			;COMPARE WITH MAX BUFFER INDEX
5307	027406	003336			BGT	425\$			;CONTINUE UNTIL INDEX EQUALS MAX
5308									
5309	027410	005737	003026		500\$:	TST	ERRFLG		;TEST NUMBER ERRORS
5310	027414	001434			BEG	600\$			;BRANCH IF NO ERRORS
5311									
5312	027416				PRINTX	#F.ERCNT,ERRFLG			;PRINT SUBTEST ERROR COUNT
	027416	013746	003026		MOV	ERRFLG,-(SP)			
	027422	012746	013304		MOV	#F.ERCNT,-(SP)			
	027426	012746	000002		MOV	#2,-(SP)			
	027432	010600			MOV	SP,R0			
	027434	104415			TRAP	C\$PNTX			
	027436	062706	000006		ADD	#6,SP			
5313	027442	005237	003004		INC	ERRCNT			;ADD TO TEST ERROR COUNT
5314									
5315	027446	022737	000040	003026	CMP	#40,ERRFLG			;TEST FOR 32 COMPARISON ERRORS
5316	027454	001014			BNE	600\$			;NO: EXIT SUBTEST
5317	027456	022737	000100	003002	CMP	#100,ERRNDX			;TEST FOR 33RD WORD IN ERROR
5318	027464	001010			BNE	600\$			;NO: EXIT SUBTEST
5319									
5320	027466				PRINTB	#F.MODE			;PROMPT OPERATOR TO CHECK SW1-7
	027466	012746	013340		MOV	#F.MODE,-(SP)			
	027472	012746	000001		MOV	#1,-(SP)			
	027476	010600			MOV	SP,R0			
	027500	104414			TRAP	C\$PNTB			
	027502	062706	000004		ADD	#4,SP			
5321									
5322	027506				600\$:	ENDSUB			
	027506			L10074:					

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TEST 12: CHECK WORD BLOCK DATA TRANSFER

5323

ZDRMAO DR70 REPAIR DIAGNOSTIC MACRO M1200 23-MAY-83 15:51 PAGE 152
TEST 12: CHECK WORD BLOCK DATA TRANSFER

5325						
5326	027510	005337	002510	DEC	D.LPCNT	;DECREMENT LOOP COUNTER
5327	027514	001402		BEQ	800\$	;AND EXIT IF ZERO
5328	027516	000137	025364	JMP	LP.WXFR	;CONTINUE TRANSFER
5329						
5330	027522	004737	015324	800\$: JSR	PC,CLRISR	;CLEAR INTERRUPT SERVICE VECTOR
5331						
5332	027526	004737	015550	JSR	PC,CLRTST	;AND CLEAR TEST DATA
5333						
5334	027532			ENDTST		
	027532		L10070:			
	027532	104401		TRAP	C\$ETST	

ZDRMA0 DR70 REPAIR DIAGNOSTIC MACRO M1200 23-MAY-83 15:51 PAGE 153
 TEST 13: CHECK WORD TRANSFER ABORT LOGIC (XABT)

```

5336 .SBTTL TEST 13: CHECK WORD TRANSFER ABORT LOGIC (XABT)
5337 027534 STARS
          *****
5338 TEST DESCRIPTION:
5339 CHECK WORD MODE DATA TRANSFER ABORT LOGIC THROUGH XABT BIT
5340
5341 TEST STEPS:
5342 IF NOT REV 'A' AND NOT BYTE MODE THEN:
5343     SETUP INTERRUPT SERVICE ROUTINE VECTOR
5344     EXECUTE SUBTEST 1-2 AND CLEAR INTERRUPT SERVICE VECTOR
5345
5346 ERROR CONDITIONS:
5347 MASSBUS CONTROLLER CLEAR ERROR
5348 NO WRITE/READ TRANSFER ABORT
5349 TRE NOT SET: ADJUST BANDWIDTH
5350 INTERFACE IRY BIT NOT SET BY TRANSFER ABORT
5351 STARS
5352 *****
5353
5354 BGNTST
5355 027534 T13::
5356 027534
5357 027534
5358 SELMASK = B.REVA + B.BYTE
5359 000210
5360
5361 027534 013700 003010 MOV SELECT,R0 ;READ SELECT WORD
5362 027540 032700 000210 BIT #SELMASK,R0 ;TEST FOR REVA OR BYTE BIT SET
5363 027544 001402 BEQ 50$ ;BRANCH IF RESET
5364
5365 027546 EXIT TST ;REVA OR BYTE MODE: EXIT TEST
5366 027546 104432 TRAP C$EXIT
5367 027550 000462 .WORD L10075-.
5368
5369 027552 004737 015274 50$: JSR PC,SETISR ;SETUP VECTOR
5370 027556 013737 002406 002730 MOV NA.CS1,FP.NAM ;LOAD REGISTER NAME ADDRESS
5371 027564 013737 002436 002746 MOV BA.CS1,FP.TBL ;LOAD REGISTER BIT TABLE ADDRESS
5372 ;EXECUTE SUBTEST

```

ZDRMA0 DR70 REPAIR DIAGNOSTIC MACRO M1200 23-MAY-83 15:51 PAGE 154
TEST 13: CHECK WORD TRANSFER ABORT LOGIC (XABT)

```

5372 027572      STARS
:*****
5373      :
5374      :
5375      :
5376      :
5377      :
5378      :
5379      :
5380      :
5381 027572      STARS
:*****
5382      :
5383 027572      BGNSUB
:
5384 027572 104402 T13.1:
5385 027574 004737 015342 50$: JSR PC,CLRMBC ;CLEAR MASSBUS CONTROLLER
5386 027600 005737 003030 TST MBCFLG ;TEST FLAG FOR ERROR
5387 027604 001405 BEQ 100$ ;CONTINUE IF NO ERROR
5388      :
5389 027606 ERRDF 1,M.MBC1,ER.DMP ;DEVICE FATAL
5390 027606 104455 TRAP C$ERDF
5391 027610 000001 .WORD 1
5392 027612 011650 .WORD M.MBC1
5393 027614 015074 .WORD ER.DMP
5394 027616 DOCLN ;CLEAN UP AND EXIT
5395 027616 104444 TRAP C$DCLN
5396      :
5397 027620 012700 177600 100$: MOV #-200,R0 ;LOAD BLOCK SIZE = 128 WORDS
5398 027624 004737 015762 JSR PC,WRTINI ;AND INITIALIZE ADDRESS REGISTERS
5399 027630 012777 000161 152440 MOV #WIE.CMD,@A.CS1 ;ISSUE WRITE COMMAND TO CS1
5400 027636 004737 016030 JSR PC,SILODLY ;WAIT FOR SILO TO FILL
5401 027642 012777 000020 152440 MOV #IS.CYC,@A.IS ;SET IS REGISTER CYC BIT
5402 027650 004737 016016 JSR PC,DMADLY ;DELAY A FEW CYCLES
5403      :
5404 027654 012777 004000 152426 MOV #IS.XABT,@A.IS ;SET IS REGISTER TRANSFER ABORT
5405 027662 004737 015444 JSR PC,TSTINT ;WAIT FOR INTERRUPT OR TIME-OUT
5406 027666 004737 015606 JSR PC,RDREG ;READ REGISTERS
5407      :
5408 027672 032737 000200 002340 BIT #IS.IRY,R.IS ;TEST FOR IRY BIT SET
5409 027700 001005 BNE 200$ ;YES: CONTINUE
5410      :
5411 027702 ERRHRD 2,M.IRY5,ER.DMP ;"IRY NOT SET BY WORD TRANSFER ABORT"
5412 027702 104456 TRAP C$ERHRD
5413 027704 000002 .WORD 2
5414 027706 011320 .WORD M.IRY5
5415 027710 015074 .WORD ER.DMP
5416 027712 000425 BR 400$ ;EXIT SUBTEST
5417      :
5418 027714 005737 002330 200$: TST R.WC ;TEST WORD COUNT
5419 027720 100404 BMI 300$ ;IF LESS THAN ZERO THEN OK
5420      :
5421 027722 ERRHRD 3,M.ABT1,ER.DMP ;"NO XFER ABORT ON INTERFACE WRITE"
5422 027722 104456 TRAP C$ERHRD
5423 027724 000003 .WORD 3
5424 027726 006375 .WORD M.ABT1

```

ZDRMAO DR70 REPAIR DIAGNOSTIC MACRO M1200 23-MAY-83 15:51 PAGE 154-1
TEST 13: CHECK WORD TRANSFER ABORT LOGIC (XABT)

```

5413 027730 015074 .WORD ER.DMP
5414 027732 012737 144260 002734 300$: MOV #144260,FP.EXP ;EXPECTED VALUE: SC,TRE,DVA,RDY,WRITE
5415 027740 023737 002734 002326 CMP FP.EXP,R.CS1 ;COMPARE WITH EXPECTED MBA STATUS
5416 027746 001407 BEQ 400$ ;IF EQ THEN CONTINUE
5417
5418 027750 013737 002326 002736 MOV R.CS1,FP.ACT ;LOAD ACTUAL VALUE
5419 027756 ERRHRD 4,M.CSR2,ER.REG ;'CS1 REGISTER STATUS ERROR'
027756 104456 TRAP C$ERHRD
027760 000004 .WORD 4
027762 007237 .WORD M.CSR2
027764 015016 .WORD ER.REG
5420
5421 027766 400$: ENDSUB
027766 L10076:
027766 104403 TRAP C$ESUB
```

ZDRMAO DR70 REPAIR DIAGNOSTIC MACRO M1200 23-MAY-83 15:51 PAGE 155
 TEST 13: CHECK WORD TRANSFER ABORT LOGIC (XABT)

5423 027770

STARS

5424

5425

5426

5427

5428

5429

5430

5431

5432

5433 027770

STARS

5434

5435 027770

027770

027770 104402

T13.2: BGNSUB

TRAP C\$BSUB

5436

5437 027772 004737 015342

5438 027776 005737 003030

5439 030002 001405

5440

5441 030004

030004 104455

030006 000004

030010 011650

030012 015074

5442 030014

030014 104444

ERRDF 4,M.MBC1,ER.DMP

TRAP C\$ERDF

.WORD 4

.WORD M.MBC1

.WORD ER.DMP

DOCLN

TRAP C\$DCLN

;DEVICE FATAL

;CLEAN UP AND EXIT

5443

5444 030016 012700 177700

5445 030022 004737 015674

5446 030026 004737 015410

5447 030032 005737 003030

5448 030036 001405

5449

5450 030040

030040 104456

030042 000005

030044 007324

030046 015074

5451 030050 000463

100\$:

MOV #-100,R0

JSR PC,WRTBLK

JSR PC,TSTMBC

TST MBCFLG

BEQ 150\$

;LOAD BLOCK SIZE = 64 WORDS

;WRITE BLOCK TO INTERFACE

;READ REGISTERS AND TEST ERRORS

;TEST FOR ERROR

;BRANCH IF NO ERROR

ERRHRD 5,M.WRD2,ER.DMP

TRAP C\$ERHRD

.WORD 5

.WORD M.WRD2

.WORD ER.DMP

BR 400\$

;'XFER ERROR ON INTERFACE WRITE'

;EXIT SUBTEST

ZDRMAO DR70 REPAIR DIAGNOSTIC MACRO M1200 23-MAY-83 15:51 PAGE 156
TEST 13: CHECK WORD TRANSFER ABORT LOGIC (XABT)

5453										
5454	030052	012700	177600		150\$:	MOV	#-200,R0		;LOAD BLOCK SIZE = 128 WORDS	
5455	030056	004737	015726			JSR	PC,RDINI		;AND INITIALIZE ADDRESS REGISTERS	
5456	030062	012777	000171	152206		MOV	#RIE.CMD,@A.CS1		;ISSUE READ COMMAND TO CS1	
5457	030070	004737	016030			JSR	PC,SILODLY		;WAIT FOR SILO TO FILL	
5458	030074	012777	000020	152206		MOV	#IS.CYC,@A.IS		;SET IS REGISTER CYC BIT	
5459	030102	004737	016016			JSR	PC,DMADLY		;DELAY A FEW CYCLES	
5460										
5461	030106	012777	004000	152174		MOV	#IS.XABT,@A.IS		;SET IS REGISTER TRANSFER ABORT	
5462	030114	004737	015444			JSR	PC,TSTINT		;WAIT FOR INTERRUPT OR TIME-OUT	
5463	030120	004737	015606			JSR	PC,RDREG		;READ REGISTERS	
5464										
5465	030124	032737	000200	002340		BIT	#IS.IRY,R.IS		;TEST FOR IRY BIT SET	
5466	030132	001005				BNE	200\$		;YES: CONTINUE	
5467										
5468	030134					ERRHRD	6,M.IRY5,ER.DMP		;'IRY NOT SET BY WORD TRANSFER ABORT''	
	030134	104456				TRAP	C\$ERHRD			
	030136	000006				.WORD	6			
	030140	011320				.WORD	M.IRY5			
	030142	015074				.WORD	ER.DMP			
5469	030144	000425				BR	400\$		;EXIT SUBTEST	
5470										
5471	030146	005737	002330		200\$:	TST	R.WC		;TEST WORD COUNT	
5472	030152	100404				BMI	300\$		;IF LESS THAN ZERO THEN OK	
5473										
5474	030154					ERRHRD	7,M.ABT2,ER.DMP		;'NO XFER ABORT ON INTERFACE READ''	
	030154	104456				TRAP	C\$ERHRD			
	030156	000007				.WORD	7			
	030160	006447				.WORD	M.ABT2			
	030162	015074				.WORD	ER.DMP			
5475										
5476	030164	012737	144270	002734	300\$:	MOV	#144270,FP.EXP		;EXPECTED VALUE: SC,TRE,DVA,RDY,READ	
5477	030172	023737	002734	002326		CMP	FP.EXP,R.CS1		;COMPARE CS1 WITH EXPECTED STATUS	
5478	030200	001407				BEQ	400\$		;IF EQ THEN CONTINUE	
5479										
5480	030202	013737	002326	002736		MOV	R.CS1,FP.ACT		;LOAD ACTUAL VALUE	
5481	030210					ERRHRD	8,M.CSR2,ER.REG		;'CS1 REGISTER STATUS ERROR''	
	030210	104456				TRAP	C\$ERHRD			
	030212	000010				.WORD	8			
	030214	007237				.WORD	M.CSR2			
	030216	015016				.WORD	ER.REG			
5482										
5483										
5484	030220				400\$:	ENDSUB				
	030220				L10077:	TRAP	C\$ESUB			
	030220	104403								
5485										
5486	030222	004737	015324			JSR	PC,CLRISR		;CLEAR ISR VECTOR	
5487										
5488	030226	004737	015550			JSR	PC,CLRTST		;AND CLEAR TEST DATA	
5489										
5490	030232					ENDTST				
	030232				L10075:					
	030232	104401				TRAP	C\$ETST			

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 TEST 14: CHECK WORD TRANSFER ABORT LOGIC (AT03)

```

5492 .SBTTL TEST 14: CHECK WORD TRANSFER ABORT LOGIC (AT03)
5493 STARS
5494 *****
5495
5496 TEST DESCRIPTION:
5497
5498 CHECK WORD MODE DATA TRANSFER ABORT LOGIC THROUGH LOOP-BACK
5499
5500 TEST STEPS:
5501
5502 IF NOT REVA & NOT BYTE MODE & AT3 ABORT NOT DISABLED THEN:
5503     SETUP INTERRUPT SERVICE ROUTINE VECTOR
5504     EXECUTE SUBTEST 1-2 AND CLEAR VECTOR
5505
5506 ERROR CONDITIONS:
5507
5508 MASSBUS CONTROLLER CLEAR ERROR
5509 NO WRITE/READ TRANSFER ABORT
5510 TRE NOT SET: ADJUST BANDWIDTH
5511 INTERFACE IRY BIT NOT SET BY TRANSFER ABORT
5512 STARS
5513 *****
5514
5515 BGNTST
5516 T14::
5517
5518 SELMASK = B.REVA + B.BYTE + B.ABORT
5519
5520 MOV SELECT,R0 ;READ SELECT WORD
5521 BIT #SELMASK,R0 ;TEST REVA,BYTE OR ABORT BIT SET
5522 BEQ 50$ ;BRANCH IF ALL BITS RESET
5523
5524 EXIT TST ;EXIT TEST
5525 TRAP C$EXIT
5526 .WORD L10100-.
5527
5528 50$: JSR PC,SETISR ;SETUP ISR VECTOR
5529 MOV NA.CS1,FP.NAM ;LOAD REGISTER NAME ADDRESS
5530 MOV BA.CS1,FP.TBL ;LOAD REGISTER BIT TABLE ADDRESS
5531 ;EXECUTE SUBTEST

```

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TEST 14: CHECK WORD TRANSFER ABORT LOGIC (AT03)

```

5528 030272          STARS
                    ;*****
5529
5530                  SUBTEST 1:
5531
5532                  CLEAR MASSBUS CONTROLLER AND CHECK FOR ERROR
5533                  ISSUE INTERFACE WRITE CMD AND SET CYCLE REQUEST BIT
5534                  DELAY A FEW CYCLES AND SET FS REGISTER FUNCTION BIT F3
5535                  READ REGISTERS, CHECK IRY BIT SET
5536                  CHECK WORD COUNT LESS THAN ZERO, AND TRE BIT SET
5537 030272          STARS
                    ;*****
5538
5539 030272          BGNSUB
5540 030272          T14.1:
5541 030272          104402          TRAP      C$BSUB
5542 030274 004737 015342          50$:      JSR      PC,CLRMBC      ;CLEAR MASSBUS CONTROLLER
5543 030300 005737 003030          TST      MBCFLG      ;TEST FLAG FOR ERROR
5544 030304 001405          BEQ      100$      ;CONTINUE IF NO ERROR
5545 030306          ERRDF      1,M.MBC1,ER.DMP      ;DEVICE FATAL
5546 030306 104455          TRAP      C$ERDF
5547 030310 000001          .WORD      1
5548 030312 011650          .WORD      M.MBC1
5549 030314 015074          .WORD      ER.DMP
5550 030316          DOCLN      ;CLEAN UP AND EXIT
5551 030316 104444          TRAP      C$DCLN
5552
5553 030320 012700 177600          100$:      MOV      #-200,R0      ;LOAD BLOCK SIZE = 128 WORDS
5554 030324 004737 015762          JSR      PC,WRTINI      ;AND INITIALIZE ADDRESS REGISTERS
5555 030330 012777 000161 151740          MOV      #WIE.CMD,@A.CS1      ;ISSUE WRITE COMMAND TO CS1
5556 030336 004737 016030          JSR      PC,SILODLY      ;WAIT FOR SILO TO FILL
5557 030342 012777 000020 151740          MOV      #IS.CYC,@A.IS      ;SET IS REGISTER CYC BIT
5558 030350 004737 016016          JSR      PC,DMADLY      ;DELAY A FEW CYCLES
5559
5560 030354 012777 004000 151722          MOV      #FS.F3,@A.FS      ;SET FS REGISTER FUNCTION BIT F3
5561 030362 004737 015444          JSR      PC,ISTINT      ;WAIT FOR INTERRUPT OR TIME-OUT
5562 030366 004737 015606          JSR      PC,RDREG      ;READ REGISTERS
5563 030372 012777 000000 151704          MOV      #0,@A.FS      ;CLEAR FUNCTION / STATUS BITS
5564
5565 030400 032737 000200 002340          BIT      #IS.IRY,R.IS      ;TEST FOR IRY BIT SET
5566 030406 001005          BNE      200$      ;YES: CONTINUE
5567
5568 030410          ERRHRD      2,M.IRY5,ER.DMP      ;'IRY NOT SET BY WORD TRANSFER ABORT'
5569 030410 104456          TRAP      C$ERHRD
5570 030412 000002          .WORD      2
5571 030414 011320          .WORD      M.IRY5
5572 030416 015074          .WORD      ER.DMP
5573 030420 000425          BR      400$      ;EXIT SUBTEST
5574
5575 030422 005737 002330          200$:      TST      R.WC      ;TEST WORD COUNT
5576 030426 100404          BMI      300$      ;IF LESS THAN ZERO THEN OK
5577
5578 030430          ERRHRD      3,M.ABT1,ER.DMP      ;'NO XFER ABORT ON INTERFACE WRITE'
5579 030430 104456          TRAP      C$ERHRD
5580 030432 000003          .WORD      3

```

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 TEST 14: CHECK WORD TRANSFER ABORT LOGIC (AT03)

	030434	006375				.WORD	M.ABT1		
	030436	015074				.WORD	ER.DMP		
5570									
5571	030440	012737	144260	002734	300\$:	MOV	#144260,FP.EXP		;EXPECTED VALUE: SC,TRE,DVA,RDY,WRITE
5572	030446	023737	002734	002326		CMP	FP.EXP,R.CS1		;COMPARE CS1 WITH EXPECTED STATUS
5573	030454	001407				BEQ	400\$		;IF EQ THEN CONTINUE
5574									
5575	030456	013737	002326	002736		MOV	R.CS1,FP.ACT		;LOAD ACTUAL VALUE
5576	030464					ERRHRD	4,M.CSR2,ER.REG		; 'CS1 REGISTER STATUS ERROR'
	030464	104456				TRAP	C\$ERHRD		
	030466	000004				.WORD	4		
	030470	007237				.WORD	M.CSR2		
	030472	015016				.WORD	ER.REG		
5577									
5578	030474				400\$:	ENDSUB			
	030474				L10101:				
	030474	104403				TRAP	C\$ESUB		

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 TEST 14: CHECK WORD TRANSFER ABORT LOGIC (AT03)

5580 030476

STARS

:*****

5581

5582

5583

5584

5585

5586

5587

5588

5589

5590 030476

STARS

:*****

5591

5592 030476

030476

030476 104402

T14.2: BGNSUB

TRAP C\$BSUB

5593

5594 030500 004737 015342

5595 030504 005737 003030

5596 030510 001405

5597

5598 030512

030512 104455

030514 000004

030516 011650

030520 015074

5599 030522

030522 104444

50\$:

JSR PC,CLRMBC
TST MBCFLG
BEQ 100\$;CLEAR MASSBUS CONTROLLER
;TEST FLAG FOR ERROR
;CONTINUE IF NO ERRORERRDF 4,M.MBC1,ER.DMP
TRAP C\$ERDF
.WORD 4
.WORD M.MBC1
.WORD ER.DMP

;DEVICE FATAL

DOCLN
TRAP C\$DCLN

;CLEAN UP AND EXIT

5600

5601 030524 012700 177700

5602 030530 004737 015674

5603 030534 004737 015410

5604 030540 005737 003030

5605 030544 001405

5606

5607 030546

030546 104456

030550 000005

030552 007324

030554 015074

5608 030556 000466

100\$:

MOV #-100,R0
JSR PC,WRTBLK
JSR PC,TSTMBC
TST MSCFLG
BEQ 150\$;LOAD BLOCK SIZE = 64 WORDS
;WRITE BLOCK TO INTERFACE
;READ REGISTERS AND TEST ERRORS
;TEST FOR ERROR
;BRANCH IF NO ERRORERRHRD 5,M.WRD2,ER.DMP
TRAP C\$ERHRD
.WORD 5
.WORD M.WRD2
.WORD ER.DMP
BR 400\$

;'XFER ERROR ON INTERFACE WRITE''

;EXIT SUBTEST

Address	Op Code	Op 1	Op 2	Op 3	Op 4	Op 5	Op 6	Op 7	Op 8	Op 9	Op 10	Op 11	Op 12	Op 13	Op 14	Op 15	Op 16	Op 17	Op 18	Op 19	Op 20	Op 21	Op 22	Op 23	Op 24	Op 25	Op 26	Op 27	Op 28	Op 29	Op 30	Op 31	Op 32	Op 33	Op 34	Op 35	Op 36	Op 37	Op 38	Op 39	Op 40	Op 41	Op 42	Op 43	Op 44	Op 45	Op 46	Op 47	Op 48	Op 49	Op 50	Op 51	Op 52	Op 53	Op 54	Op 55	Op 56	Op 57	Op 58	Op 59	Op 60	Op 61	Op 62	Op 63	Op 64	Op 65	Op 66	Op 67	Op 68	Op 69	Op 70	Op 71	Op 72	Op 73	Op 74	Op 75	Op 76	Op 77	Op 78	Op 79	Op 80	Op 81	Op 82	Op 83	Op 84	Op 85	Op 86	Op 87	Op 88	Op 89	Op 90	Op 91	Op 92	Op 93	Op 94	Op 95	Op 96	Op 97	Op 98	Op 99	Op 100	Op 101	Op 102	Op 103	Op 104	Op 105	Op 106	Op 107	Op 108	Op 109	Op 110	Op 111	Op 112	Op 113	Op 114	Op 115	Op 116	Op 117	Op 118	Op 119	Op 120	Op 121	Op 122	Op 123	Op 124	Op 125	Op 126	Op 127	Op 128	Op 129	Op 130	Op 131	Op 132	Op 133	Op 134	Op 135	Op 136	Op 137	Op 138	Op 139	Op 140	Op 141	Op 142	Op 143	Op 144	Op 145	Op 146	Op 147	Op 148	Op 149	Op 150	Op 151	Op 152	Op 153	Op 154	Op 155	Op 156	Op 157	Op 158	Op 159	Op 160	Op 161	Op 162	Op 163	Op 164	Op 165	Op 166	Op 167	Op 168	Op 169	Op 170	Op 171	Op 172	Op 173	Op 174	Op 175	Op 176	Op 177	Op 178	Op 179	Op 180	Op 181	Op 182	Op 183	Op 184	Op 185	Op 186	Op 187	Op 188	Op 189	Op 190	Op 191	Op 192	Op 193	Op 194	Op 195	Op 196	Op 197	Op 198	Op 199	Op 200	Op 201	Op 202	Op 203	Op 204	Op 205	Op 206	Op 207	Op 208	Op 209	Op 210	Op 211	Op 212	Op 213	Op 214	Op 215	Op 216	Op 217	Op 218	Op 219	Op 220	Op 221	Op 222	Op 223	Op 224	Op 225	Op 226	Op 227	Op 228	Op 229	Op 230	Op 231	Op 232	Op 233	Op 234	Op 235	Op 236	Op 237	Op 238	Op 239	Op 240	Op 241	Op 242	Op 243	Op 244	Op 245	Op 246	Op 247	Op 248	Op 249	Op 250	Op 251	Op 252	Op 253	Op 254	Op 255	Op 256	Op 257	Op 258	Op 259	Op 260	Op 261	Op 262	Op 263	Op 264	Op 265	Op 266	Op 267	Op 268	Op 269	Op 270	Op 271	Op 272	Op 273	Op 274	Op 275	Op 276	Op 277	Op 278	Op 279	Op 280	Op 281	Op 282	Op 283	Op 284	Op 285	Op 286	Op 287	Op 288	Op 289	Op 290	Op 291	Op 292	Op 293	Op 294	Op 295	Op 296	Op 297	Op 298	Op 299	Op 300	Op 301	Op 302	Op 303	Op 304	Op 305	Op 306	Op 307	Op 308	Op 309	Op 310	Op 311	Op 312	Op 313	Op 314	Op 315	Op 316	Op 317	Op 318	Op 319	Op 320	Op 321	Op 322	Op 323	Op 324	Op 325	Op 326	Op 327	Op 328	Op 329	Op 330	Op 331	Op 332	Op 333	Op 334	Op 335	Op 336	Op 337	Op 338	Op 339	Op 340	Op 341	Op 342	Op 343	Op 344	Op 345	Op 346	Op 347	Op 348	Op 349	Op 350	Op 351	Op 352	Op 353	Op 354	Op 355	Op 356	Op 357	Op 358	Op 359	Op 360	Op 361	Op 362	Op 363	Op 364	Op 365	Op 366	Op 367	Op 368	Op 369	Op 370	Op 371	Op 372	Op 373	Op 374	Op 375	Op 376	Op 377	Op 378	Op 379	Op 380</
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 TEST 15: CHECK BYTE TRANSFER LOGIC

5649
 5650 030750

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5665

5666

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5668

5669 030750

5670 030750
 030750

5671

5672 000010

5673

5674 030750 013700 003010

5675 030754 032700 000010

5676 030760 001002

5677

5678 030762

030762 104432

030764 000302

5679

5680 030766 004737 015342

5681 030772 005737 003030

5682 030776 001405

5683

5684 031000

031000 104455

031002 000001

031004 011650

031006 015074

5685 031010

031010 104444

5686

5687 031012 004737 015274

5688

.SBTTL TEST 15: CHECK BYTE TRANSFER LOGIC

STARS

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TEST DESCRIPTION:

CHECK IRY AND CYC BITS FOR PROPER FUNCTION
 AROUND DATA TRANSFER COMMANDS

TEST STEPS:

IF BYTE MODE THEN:

SETUP INTERRUPT SERVICE VECTOR
 CLEAR MASSBUS CONTROLLER AND CHECK FOR ERROR STATUS
 EXECUTE SUBTEST 1-3 AND CLEAR VECTOR

ERROR CONDITIONS:

MASSBUS CONTROLLER ERROR STATUS
 INTERFACE STATUS IRY BIT NOT SET/RESET
 MASSBUS CONTROLLER RDY BIT NOT SET/RESET

STARS

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BGNTST

T15::

SELTEST = B.BYTE

50\$: MOV SELECT,R0 ;LOAD TEST SELECT WORD
 BIT #SELTEST,R0 ;TEST BYTE MODE
 BNE 75\$;CONTINUE IF BYTE MODE

EXIT TST ;NO: EXIT TEST
 TRAP C\$EXIT
 .WORD L10103-

75\$: JSR PC,CLRMBC ;CLEAR MASSBUS CONTROLLER
 TST MBCFLG ;TEST FLAG FOR ERROR
 BEQ 100\$;CONTINUE IF NO ERROR

ERRDF 1,M.MBC1,ER.DMP ;DEVICE FATAL
 TRAP C\$ERDF
 .WORD 1
 .WORD M.MBC1
 .WORD ER.DMP
 DOCLN ;CLEAN UP AND EXIT
 TRAP C\$DCLN

100\$: JSR PC,SETISR ;SETUP SERVICE ROUTINE VECTOR
 ;EXECUTE SUBTEST

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 TEST 15: CHECK BYTE TRANSFER LOGIC

```

5690 031016          STARS
                    :*****
5691                  :
5692                  :
5693                  :
5694                  :
5695                  :
5696 031016          STARS
                    :*****
5697 031016          BGNSUB                                ;CHECK INTERFACE CLEAR CMD
                    :
                    T15.1:
5698                  TRAP      C$BSUB
5699 031020 012777 000020 151262 100$: MOV      #IS.CYC,@A.IS      ;ISSUE CYCLE REQUEST
5700 031026 004737 016042      JSR      PC,DLY      ;DELAY A FEW CYCLES
5701 031032 004737 015606      JSR      PC,RDREG      ;READ REGISTERS
5702
5703 031036 032737 000200 002340      BIT      #IS.IRY,R.IS      ;TEST FOR IRY SET
5704 031044 001005      BNE      200$      ;IRY SET: CONTINUE
5705
5706 031046          ERRHRD 2,M.IRY2,ER.DMP      ;'IRY BIT RESET WHEN CYC BIT SET'
                    TRAP      C$ERHRD
                    .WORD     2
                    .WORD     M.IRY2
                    .WORD     ER.DMP
5707 031056 000410      BR      400$      ;EXIT FROM SUB TEST
5708
5709 031060 032737 000200 002326 200$: BIT      #CS1.RDY,R.CS1      ;TEST FOR RDY BIT SET
5710 031066 001004      BNE      400$      ;RDY SET: CONTINUE
5711
5712 031070          ERRHRD 3,M.RDY2,ER.DMP      ;'MBC RDY BIT NOT SET BY IRY'
                    TRAP      C$ERHRD
                    .WORD     3
                    .WORD     M.RDY2
                    .WORD     ER.DMP
5713
5714 031100          400$: ENDSUB
                    L10104:
                    TRAP      C$ESUB
                    031100 104403

```

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 TEST 15: CHECK BYTE TRANSFER LOGIC

```

5716 031102      STARS
5717              :*****
5718              :
5719              :   SUBTEST 2:
5720              :
5721              :   INITIALIZE REGISTERS AND ISSUE INTERFACE WRITE
5722 031102      :   READ REGISTERS, CHECK IRY RESET AND RDY RESET
5723              :
5723 031102      :   STARS
5723 031102      :   :*****
5723 031102      :   BGNSUB
5723 031102      :   T15.2:
5723 031102 104402      :   TRAP      C$BSUB
5724              :
5725 031104 012700 177770      100$:  MOV      #10,R0          ;LOAD BLOCK SIZE = 8 BYTES
5726 031110 004737 015762      :   JSR      PC,WRTINI        ;AND SETUP ADDRESS REGISTERS
5727 031114 012777 000061 151154 :   MOV      #WR.CMD,BA.CS1    ;ISSUE READ TO INTERFACE
5728              :
5729 031122 004737 015606      :   JSR      PC,RDREG          ;READ REGISTERS INTO R.TBL
5730 031126 032737 000200 002340 :   BIT      #IS.IRY,R.IS    ;AND TEST FOR IRY RESET
5731 031134 001405      :   BEQ      200$                  ;IRY RESET:  CONTINUE
5732              :
5733 031136      :   ERRHRD    4,M.IRY3,ER.DMP              ;'IRY NOT RESET BY DATA TRANSFER CMD'
5733 031136 104456      :   TRAP      C$ERHRD
5733 031140 000004      :   .WORD     4
5733 031142 011162      :   .WORD     M.IRY3
5733 031144 015074      :   .WORD     ER.DMP
5734 031146 000410      :   BR        400$                  ;EXIT FROM SUB TEST
5735              :
5736 031150 032737 000200 002326 200$:  BIT      #CS1.RDY,R.CS1    ;TEST FOR RDY RESET
5737 031156 001404      :   BEQ      400$                  ;RDY RESET:  CONTINUE
5738              :
5739 031160      :   ERRHRD    5,M.RDY1,ER.DMP              ;'M2C RDY NOT RESET BY IRY'
5739 031160 104456      :   TRAP      C$ERHRD
5739 031162 000005      :   .WORD     5
5739 031164 011750      :   .WORD     M.RDY1
5739 031166 015074      :   .WORD     ER.DMP
5740              :
5741 031170      :   400$:  ENDSUB
5741 031170      :   L10105:
5741 031170 104403      :   TRAP      C$ESUB

```

ZDRMAO DR70 REPAIR DIAGNOSTIC MACRO M1200 23-MAY-83 15:51 PAGE 164
 TEST 15: CHECK BYTE TRANSFER LOGIC

```

5743 031172      STARS
:*****
5744      :
5745      :
5746      :
5747      :
5748      :
5749 031172      STARS
:*****
5750 031172      BGNSUB
031172          T15.3:
031172 104402      TRAP      C$BSUB
5751
5752 031174 012777 000020 151106 100$: MOV      #IS.CYC,@A.IS      ;ISSUE CYCLE REQUEST AND WAIT
5753 031202 004737 015444      JSR      PC,TSTINT      ;TEST FOR INTERRUPT OR TIME OUT
5754
5755 031206 004737 015606      JSR      PC,RDREG      ;READ REGISTERS
5756 031212 032737 000200 002340  BIT      #IS.IRY,R.IS      ;TEST FOR IRY SET
5757 031220 001005      BNE      200$      ;IRY SET:  CONTINUE
5758
5759 031222      ERRHRD  6,M.IRY7,ER.DMP      ;'IRY NOT SET BY BYTE XFER EBL'
031222 104456      TRAP      C$ERHRD
031224 000006      .WORD      6
031226 011426      .WORD      M.IRY7
031230 015074      .WORD      ER.DMP
5760 031232 000410      BR      400$      ;EXIT SUB TEST
5761
5762 031234 032737 000200 002326 200$: BIT      #IS.IRY,R.CS1      ;TEST FOR RDY SET
5763 031242 001004      BNE      400$      ;RDY SET:  CONTINUE
5764
5765 031244      ERRHRD  7,M.RDY2,ER.DMP      ;'MBC RDY BIT NOT SET BY IRY'
031244 104456      TRAP      C$ERHRD
031246 000007      .WORD      7
031250 012024      .WORD      M.RDY2
031252 015074      .WORD      ER.DMP
5766
5767 031254      400$:  ENDSUB
031254      L10106:
031254 104403      TRAP      C$ESUB
5768
5769 031256 004737 015324      JSR      PC,CLRISR      ;CLEAR VECTOR
5770
5771 031262 004737 015550      JSR      PC,CLRTST      ;AND CLEAR TEST DATA
5772
5773 031266      L10103:  ENDTST
031266      TRAP      C$ETST
031266 104401

```

ZDRMAO DR70 REPAIR DIAGNOSTIC MACRO M1200 23-MAY-83 15:51 PAGE 165
 TEST 16: CHECK INTERRUPT ON BYTE TRANSFER

```

5775 .SBTTL TEST 16: CHECK INTERRUPT ON BYTE TRANSFER
5776 031270 STARS
          *****
5777
5778 TEST DESCRIPTION:
5779
5780 CHECK THAT INTERRUPT WAS RECEIVED ON DATA TRANSFER COMPLETION
5781
5782 TEST STEPS:
5783
5784 IF BYTE MODE THEN:
5785     CLEAR MASSBUS CONTROLLER AND CHECK FOR ERROR
5786     SETUP INTERRUPT SERVICE ROUTINE VECTOR AND INIT BLOCK SIZE
5787     EXECUTE SUBTEST 1-2 AND CLEAR VECTOR
5788
5789 ERROR CONDITIONS:
5790
5791     MASSBUS CONTROLLER CLEAR ERROR
5792     NO INTERRUPT ON DATA TRANSFER COMPLETE
5793 031270 STARS
          *****
5794
5795 031270 BGNTST
          031270
5796
5797 000010 T16::
5798
5799 031270 013700 003010 SELTEST = B.BYTE
5800 03 274 032700 000010 50$: MOV SELECT,R0 ;LOAD TEST SELECT WORD
5801 031300 001002 BIT #SELTEST,R0 ;TEST BYTE MODE
5802
5803 031302 EXIT TST ;NO: EXIT TEST
5804 031302 104432 TRAP C$EXIT
5805 031304 000242 .WORD L10107-.
5806
5807 031306 004737 015342 75$: JSR PC,CLRMBC ;CLEAR MASSBUS CONTROLLER
5808 031312 005737 003030 TST MBCFLG ;TEST FLAG FOR ERROR
5809 031316 001405 BEQ 100$ ;CONTINUE IF NO ERROR
5810
5811 031320 ERRDF 1,M.MBC1,ER.DMP ;DEVICE FATAL
5812 031320 104455 TRAP C$ERDF
5813 031322 000001 .WORD 1
5814 031324 011650 .WORD M.MBC1
5815 031326 015074 .WORD ER.DMP
5816
5817 031330 DOCLN ;CLEAN UP AND EXIT
5818 031330 104444 TRAP C$DCLN
5819
5820 031332 004737 015274 100$: JSR PC,SETISR ;SETUP INTERRUPT SERVICE VECTOR
5821

```

ZDRMAO DR70 REPAIR DIAGNOSTIC MACRO M1200 23-MAY-83 15:51 PAGE 166
 TEST 16: CHECK INTERRUPT ON BYTE TRANSFER

```

5815 031336          STARS
                    ;*****
5816
5817          SUBTEST 1:
5818
5819          WRITE BLOCK TO INTERFACE
5820          CHECK FOR INTERRUPT RECEIVED
5821 031336          STARS
                    ;*****
5822 031336          BGNSUB
5823 031336          T16.1:
5824 031336 104402      TRAP      C$BSUB
5825 031340 012700 177770      MOV      #-10,R0          ;LOAD BLOCK SIZE = 8 BYTES
5826 031344 004737 015674      JSR      PC,WRTBLK        ;WRITE BLOCK TO INTERFACE
5827 031350 004737 015410      JSR      PC,TSTMBC        ;READ REGISTERS AND TEST FOR ERROR
5828 031354 005737 003030      TST      MBCFLG          ;TEST FOR ERROR
5829 031360 001405          BEQ      150$                ;BRANCH IF NO ERROR
5830 031362          ERRHRD 2,M.BYT2,ER.DMP          ;'BYTE XFER ERROR ON INTERFACE WRITE'
5831 031362 104456      TRAP      C$ERHRD
5832 031364 000002      .WORD      2
5833 031366 007533      .WORD      M.BYT2
5834 031370 015074      .WORD      ER.DMP
5835 031372 000420      BR        400$                ;EXIT SUBTEST
5836 031374 032737 000200 002340 150$: BIT      #IS.IRY,R.IS          ;TEST FOR IRY BIT SET
5837 031402 001005      BNE      200$                ;IRY SET: CONTINUE
5838 031404          ERRHRD 3,M.BYT1,ER.DMP          ;'DATA TRANSFER NOT COMPLETE'
5839 031404 104456      TRAP      C$ERHRD
5840 031406 000003      .WORD      3
5841 031410 007500      .WORD      M.BYT1
5842 031412 015074      .WORD      ER.DMP
5843 031414 000407      BR        400$                ;EXIT SUB TEST
5844 031416 005737 003022      200$: TST      INTFLG          ;TEST FOR INTERRUPT RECEIVED
5845 031422 001004      BNE      400$                ;BRANCH IF NOT ZERO
5846 031424          ERRHRD 4,M.INT2,ER.DMP          ;'NO INTERRUPT ON BYTE XFER EBL'
5847 031424 104456      TRAP      C$ERHRD
5848 031426 000004      .WORD      4
5849 031430 010761      .WORD      M.INT2
5850 031432 015074      .WORD      ER.DMP
5851 031434          400$: ENDSUB
5852 031434 104403      L10110: TRAP      C$ESUB          ;WRITE BLOCK

```

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 TEST 16: CHECK INTERRUPT ON BYTE TRANSFER

```

5846 031436          STARS
                    :*****
5847
5848
5849
5850
5851
5852 031436          STARS
                    :*****
5853 031436          BGNSUB
                    T16.2:
                    TRAP    C$BSUB
5854
5855 031440 012700 177770    MOV    #-10,R0          ;LOAD BLOCK SIZE = 8 BYTES
5856 031444 004737 015642    JSR    PC,RDBLK        ;READ BLOCK FROM INTERFACE
5857 031450 004737 015410    JSR    PC,TSTMBC       ;READ REGISTERS AND TEST FOR ERROR
5858 031454 005737 003030    TST    M$CFLG         ;TEST FOR ERROR
5859 031460 001405          BEQ    150$             ;BRANCH IF NO ERROR
5860
5861 031462          ERRHRD 5,M.BYT3,ER.DMP          ;'BYTE XFER ERROR CN INTERFACE READ'
                    TRAP    C$ERHRD
                    .WORD   5
                    .WORD   M.BYT3
                    .WORD   ER.DMP
5862 031472 000420          BR     400$
5863
5864 031474 032737 000200 002340 150$: BIT    #15,IRY,R.IS          ;TEST FOR IRY BIT SET
5865 031502 001005          BNE    200$             ;IRY SET: CONTINUE
5866
5867 031504          ERRHRD 6,M.BYT1,ER.DMP          ;'BYTE TRANSFER NOT COMPLETE'
                    TRAP    C$ERHRD
                    .WORD   6
                    .WORD   M.BYT1
                    .WORD   ER.DMP
5868 031514 000407          BR     400$
5869
5870 031516 005737 003022    200$: TST    INTFLG        ;TEST FOR INTERRUPT RECEIVED
5871 031522 001004          BNE    400$             ;BRANCH IF NOT ZERO
5872
5873 031524          ERRHRD 7,M.INT2,ER.DMP          ;'NO INTERRUPT ON BYTE XFER EBL'
                    TRAP    C$ERHRD
                    .WORD   7
                    .WORD   M.INT2
                    .WORD   ER.DMP
5874
5875 031534          400$: ENDSUB                      ;READ BLOCK
                    L10111:
                    TRAP    C$ESUB
5876
5877 031536 004737 015324    JSR    PC,CLRISR        ;AND RESTORE VECTOR ADDRESS
5878
5879 031542 004737 015550    JSR    PC,CLRTST       ;AND CLEAR TEST DATA
5880
5881 031546          L10107: ENDTST
                    TRAP    C$ETST
                    031546 104401

```

ZDRMA0 DR70 REPAIR DIAGNOSTIC MACRO M1200 23-MAY-83 15:51 PAGE 168
 TEST 17: CHECK BYTE BLOCK DATA TRANSFER

5883
 5884 031550

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 5901
 5902
 5903
 5904 031550

5905
 5906 031550
 031550

5907
 5908 000010
 5909
 5910 031550 013700 003010
 5911 031554 032700 000010
 5912 031560 001002
 5913
 5914 031562
 031562 104432
 031564 001756

5915
 5916 031566 004737 015274
 5917 031572 012737 000100 002512
 5918 031600 012737 000001 002510
 5919
 5920 031606
 5921

.SBTTL TEST 17: CHECK BYTE BLOCK DATA TRANSFER
 STARS

TEST DESCRIPTION:

PERFORM 64-BYTE DMA DATA TRANSFERS,
 COMPARE DATA READ AGAINST DATA WRITTEN

TEST STEPS:

IF BYTE MODE THEN:
 SETUP INTERRUPT SERVICE ROUTINE VECTOR
 INITIALIZE TRANSFER PARAMETERS AND
 EXECUTE SUBTEST 1-4 AND CLEAR INTERRUPT VECTOR

ERROR CONDITIONS:

MASSBUS CONTROLLER ERROR STATUS
 DATA TRANSFER NOT COMPLETE
 NO INTERRUPT ON DATA TRANSFER COMPLETE
 DATA RECEIVED DOES NOT MATCH EXPECTED DATA

STARS

BGNTST

T17::

SELTEST = B.BYTE

MOV SELECT,R0 ;READ SELECT WORD
 BIT #SELTEST,R0 ;TEST IF BYTE SELECT
 BNE 50\$;BRANCH IF SET

EXIT TST ;NOT BYTE MODE: EXIT TEST
 TRAP C\$EXIT
 .WORD L10112-

50\$: JSR PC,SETISR ;SETUP INTERRUPT SERVICE VECTOR
 MOV #100,D.MAX ;INITIALIZE MAX DATA BUFFER INDEX
 MOV #1,D.LPCNT ;INITIALIZE TRANSFER LOOP COUNTER

LP.BXFR: ;TRANSFER LOOP LABEL

ZDRMA0 DR70 REPAIR DIAGNOSTIC MACRO M1200 23-MAY-83 15:51 PAGE 169
TEST 17: CHECK BYTE BLOCK DATA TRANSFER

5923 031606

STARS

:*****

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5935

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5941 031606

STARS

:*****

5942

5943 031606

031606

031606 104402

5944

5945 031610 004737 015342

5946 031614 005737 003030

5947 031620 001405

5948

5949

031622 104455

031624 000001

031626 011650

031630 015074

5950

031632 104444

5951

5952 031634 005002 -

5953

5954 031636 012762 177777 004054

5955 031644 012762 000000 003054

5956 031652 062702 000002

5957 031656 023702 002512

5958 031662 003365

5959

5960 031664 012700 177740

5961 031670 004737 015674

5962 031674 004737 015410

5963 031700 005737 003022

5964 031704 001005

5965

5966

031706 104456

031710 000002

031712 010761

031714 015074

T17.1: BGNSUB

TRAP C\$BSUB

JSR PC,CLRMBC

TST MBCFLG

BEQ 100\$

ERRDF 1,M.MBC1,ER.DMP

TRAP C\$ERDF

.WORD 1

.WORD M.MBC1

.WORD ER.DMP

DOCLN

TRAP C\$DCLN

100\$:

CLR R2

150\$:

MOV #177777,OBUF(R2)

MOV #0,IBUF(R2)

ADD #2,R2

CMP D,MAX,R2

BGT 150\$

200\$:

MOV #-40,R0

JSR PC,WRTBLK

JSR PC,TSTMBC

TST INTFLG

BNE 250\$

ERRHRD 2,M.INT2,ER.DMP

TRAP C\$ERHRD

.WORD 2

.WORD M.INT2

.WORD ER.DMP

SUBTEST 1:

CLEAR THE MASSBUS CONTROLLER AND CHECK FOR ERROR
SETUP DATA BUFFER FOR ALL ONE'S

INITIALIZE REGISTERS FOR WRITE W/INT ENABLE
SET CYCLE REQUEST, DELAY AND READ REGISTERS
CHECK FOR ERROR STATUS AND CHECK FOR INTERRUPT
IF ERROR OR NO INTERRUPT THEN: EXIT SUBTEST

INITIALIZE REGISTERS FOR READ W/INT ENABLE
SET CYCLE REQUEST, DELAY AND READ REGISTERS
CHECK FOR ERROR STATUS AND CHECK FOR INTERRUPT
IF ERROR OR NO INTERRUPT THEN: EXIT SUBTEST

COMPARE DATA READ AGAINST DATA WRITTEN

;CLEAR MASSBUS CONTROLLER
;TEST FLAG FOR ERROR
;CONTINUE IF NO ERROR

;DEVICE FATAL

;CLEAN UP AND EXIT

;CLEAR BUFFER INDEX REGISTER

;LOAD ONE'S INTO BUFFER
;CLEAR INPUT BUFFER
;AND BUMP INDEX
;COMPARE WITH MAX BUFFER INDEX
;CONTINUE UNTIL BUFFER INITIALIZED

;LOAD BLOCK SIZE = 64 BYTES
;WRITE BLOCK TO INTERFACE
;READ REGISTERS AND TEST ERRORS
;TEST FOR INTERRUPT
;BRANCH IF INTERRUPT RECEIVED

;'NO INTERRUPT ON BYTE XFER EBL'

ZDRMA0 DR70 REPAIR DIAGNOSTIC MACRO M1200 23-MAY-83 15:51 PAGE 169-1
 TEST 17: CHECK BYTE BLOCK DATA TRANSFER

5967	031716	000407		BR	300\$		;EXIT SEGMENT
5968							
5969	031720	005737	003030	250\$:	TST	MBCFLG	;TEST FOR ERROR
5970	031724	001404			BEQ	300\$	;CONTINUE IF RESET
5971							
5972	031726				ERRHRD	3,M.BYT2,ER.DMP	; 'BYTE XFER ERROR ON INTERFACE WRITE'
	031726	104456			TRAP	C\$ERHRD	
	031730	000003			.WORD	3	
	031732	007533			.WORD	M.BYT2	
	031734	015074			.WORD	ER.DMP	
5973							
5974	031736	012700	177740	300\$:	MOV	#-40,R0	;LOAD BLOCK SIZE = 64 BYTES
5975	031742	004737	015642		JSR	PC,RDBLK	;READ BLOCK FROM INTERFACE
5976	031746	004737	015410		JSR	PC,TSTMBC	;READ REGISTERS AND TEST ERRORS
5977	031752	005737	003022		TST	INTFLG	;TEST FOR INTERRUPT
5978	031756	001C05			BNE	350\$	;BRANCH IF INTERRUPT RECEIVED
5979							
5980	031760				ERRHRD	4,M.INT2,ER.DMP	; 'NO INTERRUPT ON BYTE XFER EBL'
	031760	104456			TRAP	C\$ERHRD	
	031762	000004			.WORD	4	
	031764	010761			.WORD	M.INT2	
	031766	015074			.WORD	ER.DMP	
5981	031770	000407			BR	400\$	;EXIT SEGMENT
5982							
5983	031772	005737	003030	350\$:	TST	MBCFLG	;TEST FOR ERROR
5984	031776	001404			BEQ	400\$	;CONTINUE IF RESET
5985							
5986	032000				ERRHRD	5,M.BYT3,ER.DMP	; 'BYTE XFER ERROR ON INTERFACE READ'
	032000	104456			TRAP	C\$ERHRD	
	032002	000005			.WORD	5	
	032004	007602			.WORD	M.BYT3	
	032006	015074			.WORD	ER.DMP	

ZDRMA0 DR70 REPAIR DIAGNOSTIC MACRO M1200 23-MAY-83 15:51 PAGE 170
 TEST 17: CHECK BYTE BLOCK DATA TRANSFER

```

5988
5989 032010 005002          400$: CLR      R2          ;CLEAR BUFFER INDEX REGISTER
5990 032012 005037 003026    CLR      ERRFLG        ;CLEAR ERROR COUNT
5991
5992 032016 026262 003054 004054 425$: CMP      IBUF(R2),OBUF(R2) ;COMPARE DATA
5993 032024 001427          BEQ      475$           ;IDENTICAL: CONTINUE
5994
5995 032026 005737 003026    TST      ERRFLG        ;TEST ERROR COUNT
5996 032032 001004          BNE      450$           ;BRANCH IF NOT FIRST ERROR
5997
5998 032034          ERRHRD  6,M.BYT4,ER.DATA        ;'DATA COMPARISON ERROR'
      032034 104456      TRAP    C$ERKPD
      032036 000006      .WORD   6
      032040 007650      .WORD   M.BYT4
      032042 015172      .WORD   ER.DATA
5999
6000 032044 005237 003026    450$: INC      ERRFLG        ;BUMP ERROR COUNT
6001 032050 022737 000010 003026    CMP      #8,ERRFLG    ;COMPARE WITH MAX ERROR COUNT
6002 032056 002412          BLT      475$           ;BRANCH IF MAX LESS THAN COUNT
6003
6004 032060 010237 002742          MOV      R2,FP.NDX    ;SAVE DATA INDEX
6005 032064 016237 003054 002736    MOV      IBUF(R2),FP.ACT ;SAVE RECEIVED DATA
6006 032072 016237 004054 002734    MOV      OBUF(R2),FP.EXP ;SAVE DATA SENT
6007 032100 004737 016374          JSR      PC,DSPDATA  ;AND DISPLAY DATA
6008
6009 032104 062702 000002    475$: ADD      #2,R2        ;BUMP INDEX
6010 032110 023702 002512    CMP      D.MAX,R2      ;COMPARE WITH MAX BUFFER INDEX
6011 032114 003340          BGT      425$           ;CONTINUE UNTIL INDEX EQUALS MAX
6012
6013 032116 005737 003026    500$: TST      ERRFLG        ;TEST NUMBER ERRORS
6014 032122 001414          BEQ      600$           ;BRANCH IF NO ERRORS
6015
6016 032124          PRINTX  #F.ERCNT,ERRFLG          ;PRINT SUBTEST ERROR COUNT
      032124 013746 003026    MOV      ERRFLG,-(SP)
      032130 012746 013304    MOV      #F.ERCNT,-(SP)
      032134 012746 009002    MOV      #2,-(SP)
      032140 010600          MOV      SP,R0
      032142 104415          TRAP    C$PNTX
      032144 062706 000006    ADD      #6,SP
6017 032150 005237 003004    INC      ERRCNT        ;ADD TO TEST ERROR COUNT
6018
6019 032154          600$:  ENDSUB
      032154          L10113:
      032154 104403          TRAP    C$ESUB

```

ZDRMA0 DR70 REPAIR DIAGNOSTIC MACRO M1200 23-MAY-83 15:51 PAGE 171
 TEST 17: CHECK BYTE BLOCK DATA TRANSFER

6021 032156

STARS

:*****

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6031

6032

6033

6034

6035

6036

6037

6038

6039 032156

STARS

:*****

6040

6041 032156

032156

032156 104402

6042

6043 032160

004737

015342

6044 032164

005737

003030

6045 032170

001405

6046

6047 032172

032172

104455

032174

000007

032176

011650

032200

015074

6048 032202

032202

104444

6049

6050 032204

005002

6051

6052 032206

012762

000000

004054

6053 032214

012762

000000

003054

6054 032222

062702

000002

6055 032226

023702

002512

6056 032232

003365

6057

6058 032234

012700

177740

6059 032240

004737

015674

6060 032244

004737

015410

6061 032250

005737

003022

6062 032254

001005

6063

6064 032256

032256

104456

032260

000010

032262

010761

032264

015074

T17.2:

BGNSUB

;ALL ZERO'S

TRAP C\$BSUB

JSR PC,CLRMBC

;CLEAR MASSBUS CONTROLLER

TST MBCFLG

;TEST FLAG FOR ERROR

BEQ 100\$

;CONTINUE IF NO ERROR

ERRDF 7,M.MBC1,ER.DMP

;DEVICE FATAL

TRAP C\$ERDF

.WORD 7

.WORD M.MBC1

.WORD ER.DMP

DOCLN

;CLEAN UP AND EXIT

TRAP C\$DCLN

100\$:

CLR R2

;CLEAR BUFFER INDEX REGISTER

150\$:

MOV #0,OBUFF(R2)

;LOAD ZERO'S INTO BUFFER

MOV #0,IBUFF(R2)

;CLEAR INPUT BUFFER

ADD #2,R2

;AND BUMP INDEX

CMP D,MAX,R2

;COMPARE WITH MAX BUFFER INDEX

BGT 150\$

;CONTINUE UNTIL BUFFER INITIALIZED

200\$:

MOV #-40,R0

;LOAD BLOCK SIZE = 64 BYTES

JSR PC,WRTBLK

;WRITE BLOCK TO INTERFACE

JSR PC,TSTMBC

;READ REGISTERS AND TEST ERRORS

TST INTFLG

;TEST FOR INTERRUPT

BNE 250\$

;BRANCH IF INTERRUPT RECEIVED

ERRHRD 8,M.INT2,ER.DMP

;'NO INTERRUPT ON BYTE XFER EBL'

TRAP C\$ERHRD

.WORD 0

.WORD M.INT2

.WORD ER.DMP

ZDRMA0 DR70 REPAIR DIAGNOSTIC MACRO M1200 23-MAY-83 15:51 PAGE 171-1
 TEST 17: CHECK BYTE BLOCK DATA TRANSFER

6065	032266	000407		BR	300\$		;EXIT SEGMENT
6066							
6067	032270	005737	003030	250\$:	TST	MBCFLG	;TEST FOR ERROR
6068	032274	001404			BEQ	300\$	;CONTINUE IF RESET
6069							
6070	032276				ERRHRD	9,M.BYT2,ER.DMP	; 'BYTE XFER ERROR ON INTERFACE WRITE'
	032276	104456			TRAP	C\$ERHRD	
	032300	000011			.WORD	9	
	032302	007533			.WORD	M.BYT2	
	032304	015074			.WORD	ER.DMP	
6071							
6072	032306	012700	177740	300\$:	MOV	#-40,R0	;LOAD BLOCK SIZE = 64 BYTES
6073	032312	004737	015642		JSR	PC,RDBLK	;READ BLOCK FROM INTERFACE
6074	032316	004737	015410		JSR	PC,TSTMBC	;READ REGISTERS AND TEST ERRORS
6075	032322	005737	003022		TST	INTFLG	;TEST FOR INTERRUPT
6076	032326	001005			BNE	350\$	;BRANCH IF INTERRUPT RECEIVED
6077							
6078	032330				ERRHRD	10,M.INT2,ER.DMP	; 'NO INTERRUPT ON BYTE XFER EBL'
	032330	104456			TRAP	C\$ERHRD	
	032332	000012			.WORD	10	
	032334	010761			.WORD	M.INT2	
	032336	015074			.WORD	ER.DMP	
6079	032340	000407			BR	400\$	;EXIT SEGMENT
6080							
6081	032342	005737	003030	350\$:	TST	MBCFLG	;TEST FOR ERROR
6082	032346	001404			BEQ	400\$	;CONTINUE IF RESET
6083							
6084	032350				ERRHRD	11,M.BYT3,ER.DMP	; 'BYTE XFER ERROR ON INTERFACE READ'
	032350	104456			TRAP	C\$ERHRD	
	032352	000013			.WORD	11	
	032354	007602			.WORD	M.BYT3	
	032356	015074			.WORD	ER.DMP	

	6087	032360	005002		400\$:	CLR	R2	;CLEAR BUFFER INDEX REGISTER
	6088	032362	005037	003026		CLR	ERRFLG	;CLEAR ERROR COUNT
	6090	032366	026262	003054	004054	425\$: CMP	IBUF(R2),OBUF(R2)	;COMPARE DATA
	6091	032374	001427			BEG	475\$	;IDENTICAL: CONTINUE
	6093	032376	005737	003026		TST	ERRFLG	;TEST ERROR COUNT
	6094	032402	001004			BNE	450\$	;BRANCH IF NOT FIRST ERROR
	6096	032404				ERRHRD	12,M.BYT4,ER.DATA	'DATA COMPARISON ERROR'
		032404	104456			TRAP	C\$ERHD	
		032406	000014			.WORD	12	
		032410	007650			.WORD	M.BYT4	
		032412	015172			.WORD	ER.DATA	
	6098	032414	005237	003026	450\$:	INC	ERRFLG	:BUMP ERROR COUNT
	6099	032420	022737	000010	003026	CMP	#8, ERRFLG	:COMPARE WITH MAX ERROR COUNT
	6100	032426	002412			BLT	475\$	:BRANCH IF MAX LESS THAN COUNT
	6102	032430	010237	002742		MOV	R2,FP.NDX	:SAVE DATA INDEX
	6103	032434	016237	003054	002736	MOV	IBUF(R2),FP.ACT	:SAVE RECEIVED DATA
	6104	032442	016237	004054	002734	MOV	OBUF(R2),FP.EXP	:SAVE DATA SENT
	6105	032450	004737	016374		JSR	PC,DSPDATA	:AND DISPLAY DATA
	6107	032454	062702	000002	475\$:	ADD	#2,R2	:BUMP INDEX
	6108	032460	023702	002512		CMP	D.MAX,R2	:COMPARE WITH MAX BUFFER INDEX
	6109	032464	003340			BGT	425\$	:CONTINUE UNTIL INDEX EQUALS MAX
	6111	032466	005737	003026	500\$:	TST	ERRFLG	:TEST NUMBER ERRORS
	6112	032472	001414			BEG	600\$	:BRANCH IF NO ERRORS
	6114	032474				PRINTX	#F.ERCNT,ERRFLG	:PRINT SUBTEST ERROR COUNT
		032474	013746	003026		MOV	ERRFLG,-(SP)	
		032500	012746	013304		MOV	#F.ERCNT,-(SP)	
		032504	012746	000002		MOV	#2,-(SP)	
		032510	010600			MOV	SP,R0	
		032512	104415			TRAP	C\$PNTX	
		032514	062706	000006		ADD	#6,SP	
	6115	032520	005237	003004		INC	ERCNT	:ADD TO TEST ERROR COUNT
	6117	032524			600\$:	ENDSUB		
		032524			L10114:	TRAP	C\$ESUB	
		032524	104403					

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 TEST 17: CHECK BYTE BLOCK DATA TRANSFER

6119 032526

STARS

6120

6121

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6123

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6125

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6130

6131

6132

6133

6134

6135

6136

6137 032526

STARS

6138

6139 032526

032526

032526 104402

6140

6141 032530

004737 015342

6142 032534

005737 003030

6143 032540

001405

6144

6145 032542

032542 104455

032544 000015

032546 011650

032550 015074

6146 032552

032552 104444

6147

6148 032554

005002 000010

6149 032556

012705 000401

6150

6151 032562

012704 000401

6152

6153 032566

010462 004054

6154 032572

012762 000000

6155 032600

062702 000002

6156 032604

023702 002512

6157 032610

001405

6158

6159 032612

006304

6160 032614

105704

6161 032616

001363

6162 032620

005305

6163 032622

001357

6164

6165 032624

012700 177740

6166 032630

004737 015674

T17.3:

BGNSUB

;MOVING ONE PATTERN

TRAP C\$BSUB

JSR PC,CLRMBC

;CLEAR MASSBUS CONTROLLER

TST MBCFLG

;TEST FLAG FOR ERROR

BEQ 100\$

;CONTINUE IF NO ERROR

ERRDF 13,M.MBC1,ER.DMP

;DEVICE FATAL

TRAP C\$ERDF

.WORD 13

.WORD M.MBC1

.WORD ER.DMP

DOCLN

;CLEAN UP AND EXIT

TRAP C\$DCLN

100\$:

CLR R2

;CLEAR BUFFER INDEX REGISTER

MOV #8.,R5

;INITIALIZE COUNTER

125\$:

MOV #401,R4

;INITIALIZE PATTERN REGISTER

150\$:

MOV R4,0BUF(R2)

;LOAD ONES INTO BUFFER

MOV #0,1BUF(R2)

;CLEAR INPUT BUFFER

ADD #2,R2

;AND BUMP INDEX

CMP D.MAX,R2

;COMPARE WITH MAX BUFFER INDEX

BEQ 200\$

;BRANCH IF END OF BUFFER

ASL R4

;SHIFT PATTERN

TSTB R4

;COMPARE WITH LAST PATTERN

BNE 150\$

;MOVE AGAIN IF NOT SAME

DEC R5

;DECREMENT BLOCK COUNTER

BNE 125\$

;AND CONTINUE IF ANOTHER BLOCK

200\$:

MOV #-40,R0

;LOAD BLOCK SIZE = 64 BYTES

JSR PC,WRTBLK

;WRITE BLOCK TO INTERFACE

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 TEST 17: CHECK BYTE BLOCK DATA TRANSFER

6167	032634	004737	015410		JSR	PC,TSTMBC	;READ REGISTERS AND TEST ERRORS
6168	032640	005737	003022		TST	INTFLG	;TEST FOR INTERRUPT
6169	032644	001005			BNE	250\$	;BRANCH IF INTERRUPT RECEIVED
6170							
6171	032646				ERRHRD	14,M.INT2,ER.DMP	; 'NO INTERRUPT ON BYTE XFER EBL'
	032646	104456			TRAP	C\$ERHRD	
	032650	000016			.WORD	14	
	032652	010761			.WORD	M.INT2	
	032654	015074			.WORD	ER.DMP	
6172	032656	000407			BR	300\$	;EXIT SEGMENT
6173							
6174	032660	005737	003030	250\$:	TST	MBCFLG	;TEST FOR ERROR
6175	032664	001404			BEQ	300\$	;CONTINUE IF RESET
6176							
6177	032666				ERRHRD	15,M.BYT2,ER.DMP	; 'BYTE XFER ERROR ON INTERFACE WRITE'
	032666	104456			TRAP	C\$ERHRD	
	032670	000017			.WORD	15	
	032672	007533			.WORD	M.BYT2	
	032674	015074			.WORD	ER.DMP	
6178							
6179	032676	012700	177740	300\$:	MOV	#-40,R0	;LOAD BLOCK SIZE = 64 BYTES
6180	032702	004737	015642		JSR	PC,RDBLK	;READ BLOCK FROM INTERFACE
6181	032706	004737	015410		JSR	PC,TSTMBC	;READ REGISTERS AND TEST ERRORS
6182	032712	005737	003022		TST	INTFLG	;TEST FOR INTERRUPT
6183	032716	001005			BNE	350\$	;BRANCH IF INTERRUPT RECEIVED
6184							
6185	032720				ERRHRD	16,M.INT2,ER.DMP	; 'NO INTERRUPT ON BYTE XFER EBL'
	032720	104456			TRAP	C\$ERHRD	
	032722	000020			.WORD	16	
	032724	010761			.WORD	M.INT2	
	032726	015074			.WORD	ER.DMP	
6186	032730	000407			BR	400\$	;EXIT SEGMENT
6187							
6188	032732	005737	003030	350\$:	TST	MBCFLG	;TEST FOR ERROR
6189	032736	001404			BEQ	400\$	;CONTINUE IF RESET
6190							
6191	032740				ERRHRD	17,M.BYT3,ER.DMP	; 'BYTE XFER ERROR ON INTERFACE READ'
	032740	104456			TRAP	C\$ERHRD	
	032742	000021			.WORD	17	
	032744	007602			.WORD	M.BYT3	
	032746	015074			.WORD	ER.DMP	

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 TEST 17: CHECK BYTE BLOCK DATA TRANSFER

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6193
6194 032750 005002          400$: CLR      R2          ;CLEAR BUFFER INDEX REGISTER
6195 032752 005037 003026    CLR      ERRFLG        ;CLEAR ERROR COUNT
6196
6197 032756 026262 003054 004054 425$: CMP      IBUF(R2),OBUF(R2) ;COMPARE DATA
6198 032764 001427          BEQ      475$           ;IDENTICAL: CONTINUE
6199
6200 032766 005737 003026    TST      ERRFLG        ;TEST ERROR COUNT
6201 032772 001004          BNE      450$           ;BRANCH IF NOT FIRST ERROR
6202
6203 032774          ERRHRD  18,M.BYT4,ER.DATA      ;'DATA COMPARISON ERROR'
        032774 104456    TRAP    C$ERHRD
        032776 000022    .WORD   18
        033000 007650    .WORD   M.BYT4
        033002 015172    .WORD   ER.DATA
6204
6205 033004 005237 003026    450$: INC      ERRFLG        ;BUMP ERROR COUNT
6206 033010 022737 000010 003026    CMP      #8,ERRFLG    ;COMPARE WITH MAX ERROR COUNT
6207 033016 002412          BLT      475$           ;BRANCH IF MAX LESS THAN COUNT
6208
6209 033020 010237 002742    MOV      R2,FP.NDX      ;SAVE DATA INDEX
6210 033024 016237 003054 002736    MOV      IBUF(R2),FP.ACT  ;SAVE RECEIVED DATA
6211 033032 016237 004054 002734    MOV      OBUF(R2),FP.EXP  ;SAVE DATA SENT
6212 033040 004737 016374    JSR      PC,DSPDATA    ;AND DISPLAY DATA
6213
6214 033044 062702 000002    475$: ADD      #2,R2          ;BUMP INDEX
6215 033050 023702 002512    CMP      D.MAX,R2      ;COMPARE WITH MAX BUFFER INDEX
6216 033054 003340          BGT      425$           ;CONTINUE UNTIL INDEX EQUALS MAX
6217
6218 033056 005737 003026    500$: TST      ERRFLG        ;TEST NUMBER ERRORS
6219 033062 001414          BEQ      600$           ;BRANCH IF NO ERRORS
6220
6221 033064          PRINTX  #F.ERCNT,ERRFLG        ;PRINT SUBTEST ERROR COUNT
        033064 013746 003026    MOV      ERRFLG,-(SP)
        033070 012746 013304    MOV      #F.ERCNT,-(SP)
        033074 012746 000002    MOV      #2,-(SP)
        033100 010600    MOV      SP,R0
        033102 104415    TRAP    C$PNTX
        033104 062706 000006    ADD      #6,SP
6222 033110 005237 003004    INC      ERRCNT        ;ADD TO TEST ERROR COUNT
6223
6224 033114          600$: ENDSUB
        033114          L10115:
        033114 104403    TRAP    C$ESUB
  
```

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 TEST 17: CHECK BYTE BLOCK DATA TRANSFER

6226 033116

STARS

:*****

6227

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6229

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6231

6232

6233

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6236

6237

6238

6239

6240

6241

6242

6243

6244 033116

STARS

:*****

6245

6246 033116

033116

033116 104402

6247

6248 033120 004737 015342

6249 033124 005737 003030

6250 033130 001405

6251

6252 033132

033132 104455

033134 000023

033136 011650

033140 015074

6253 033142

033142 104444

6254

6255 033144 005002

6256 033146 012705 000010

6257

6258 033152 012704 177376

6259

6260 033156 010462 004054

6261 033162 012762 000000

6262 033170 062702 000002

6263 033174 023702 002512

6264 033200 001412

6265

6266 033202 006304

6267 033204 052704 000001

6268 033210 052704 000400

6269 033214 022704 177777

6270 033220 001356

6271

6272 033222 005305

6273 033224 001352

T17.4:

BGNSUB

;MOVING ZERO PATTERN

TRAP CSBSUB

JSR PC,CLRMBC

;CLEAR MASSBUS CONTROLLER

TST MBCFLG

;TEST FLAG FOR ERROR

BEQ 100\$

;CONTINUE IF NO ERROR

ERRDF 19,M.MBC1,ER.DMP

;DEVICE FATAL

TRAP CSERDF

.WORD 19

.WORD M.MBC1

.WORD ER.DMP

DOCLN

;CLEAN UP AND EXIT

TRAP CSDCLN

100\$:

CLR R2

;CLEAR BUFFER INDEX REGISTER

MOV #8.,R5

;INITIALIZE COUNTER

125\$:

MOV #177376,R4

;INITIALIZE PATTERN REGISTER

150\$:

MOV R4,0BUF(R2)

;LOAD ONES INTO BUFFER

MOV #0,IBUF(R2)

;CLEAR INPUT BUFFER

ADD #2,R2

;AND BUMP INDEX

CMP D.MAX,R2

;COMPARE WITH MAX BUFFER INDEX

BEQ 200\$

;BRANCH IF END OF BUFFER

ASL R4

;SHIFT PATTERN

BIS #BIT00,R4

;SET INCOMING BIT

BIS #BIT08,R4

;FOR BOTH BYTES

CMP #-1,R4

;TEST FOR ALL BITS ONE

BNE 150\$

;NO: CONTINUE

DEC R5

;DECREMENT BLOCK COUNTER

BNE 125\$

;AND CONTINUE IF ANOTHER BLOCK

ZDRMAO DR70 REPAIR DIAGNOSTIC MACRO M1200 23-MAY-83 15:51 PAGE 175-1
 TEST 17: CHECK BYTE BLOCK DATA TRANSFER

6274							
6275	033226	012700	177740	200\$:	MOV	#-40,R0	;LOAD BLOCK SIZE = 64 BYTES
6276	033232	004737	015674		JSR	PC,WRTBLK	;WRITE BLOCK TO INTERFACE
6277	033236	004737	015410		JSR	PC,TSTMBC	;READ REGISTERS AND TEST ERRORS
6278	033242	005737	003022		TST	INTFLG	;TEST FOR INTERRUPT
6279	033246	001005			BNE	250\$	;BRANCH IF INTERRUPT RECEIVED
6280							
6281	033250				ERRHRD	20,M.INT2,ER.DMP	; 'NO INTERRUPT ON BYTE XFER EBL'
	033250	104456			TRAP	C\$ERHRD	
	033252	000024			.WORD	20	
	033254	010761			.WORD	M.INT2	
	033256	015074			.WORD	ER.DMP	
6282	033260	000407			BR	300\$	;EXIT SEGMENT
6283							
6284	033262	005737	003030	250\$:	TST	MBCFLG	;TEST FOR ERROR
6285	033266	001404			BEQ	300\$	;CONTINUE IF RESET
6286							
6287	033270				ERRHRD	21,M.BYT2,ER.DMP	; 'BYTE XFER ERROR ON INTERFACE WRITE'
	033270	104456			TRAP	C\$ERHRD	
	033272	000025			.WORD	21	
	033274	007533			.WORD	M.BYT2	
	033276	015074			.WORD	ER.DMP	
6288							
6289	033300	012700	177740	300\$:	MOV	#-40,R0	;LOAD BLOCK SIZE = 64 BYTES
6290	033304	004737	015642		JSR	PC,RDBLK	;READ BLOCK FROM INTERFACE
6291	033310	004737	015410		JSR	PC,TSTMBC	;READ REGISTERS AND TEST ERRORS
6292	033314	005737	003022		TST	INTFLG	;TEST FOR INTERRUPT
6293	033320	001005			BNE	350\$	;BRANCH IF INTERRUPT RECEIVED
6294							
6295	033322				ERRHRD	22,M.INT2,ER.DMP	; 'NO INTERRUPT ON BYTE XFER EBL'
	033322	104456			TRAP	C\$ERHRD	
	033324	000026			.WORD	22	
	033326	010761			.WORD	M.INT2	
	033330	015074			.WORD	ER.DMP	
6296	033332	000407			BR	400\$	;EXIT SEGMENT
6297							
6298	033334	005737	003030	350\$:	TST	MBCFLG	;TEST FOR ERROR
6299	033340	001404			BEQ	400\$	;CONTINUE IF RESET
6300							
6301	033342				ERRHRD	23,M.BYT3,ER.DMP	; 'BYTE XFER ERROR ON INTERFACE READ'
	033342	104456			TRAP	C\$ERHRD	
	033344	000027			.WORD	23	
	033346	007602			.WORD	M.BYT3	
	033350	015074			.WORD	ER.DMP	

6303									;CLEAR BUFFER INDEX REGISTER
6304	033352	005002			400\$:	CIR	R2		;CLEAR ERROR COUNT
6305	033354	005037	003026			CLR	ERRFLG		
6306									
6307	033360	026262	003054	004054	425\$:	CMP	IBUF(R2),OBUF(R2)		;COMPARE DATA
6308	033366	001427				BEQ	475\$		;IDENTICAL: CONTINUE
6309									
6310	033370	005737	003026			TST	ERRFLG		;TEST ERROR COUNT
6311	033374	001004				BNE	450\$		;BRANCH IF NOT FIRST ERROR
6312									
6313	033376					ERRHRD	24,M.BYT4,FR.DATA		'DATA COMPARISON ERROR'
	033376	104456				TRAP	C\$ERHRD		
	033400	000030				.WORD	24		
	033402	007650				.WORD	M.BYT4		
	033404	015172				.WORD	ER.DATA		
6314									
6315	033406	005237	003026		450\$:	INC	ERRFLG		;BUMP ERROR COUNT
6316	033412	022737	000010	003026		CMP	#8,ERRFLG		;COMPARE WITH MAX ERROR COUNT
6317	033420	002412				BLT	475\$		;BRANCH IF MAX LESS THAN COUNT
6318									
6319	033422	010237	002742			MOV	R2,FP.NDX		;SAVE DATA INDEX
6320	033426	016237	003054	002736		MOV	IBUF(R2),FP.ACT		;SAVE RECEIVED DATA
6321	033434	016237	004054	002734		MOV	OBUF(R2),FP.EXP		;SAVE DATA SENT
6322	033442	004737	016374			JSR	PC,DSPDATA		;AND DISPLAY DATA
6323									
6324	033446	062702	000002		475\$:	ADD	#2,R2		;BUMP INDEX
6325	033452	023702	002512			CMP	D.MAX,R2		;COMPARE WITH MAX BUFFER INDEX
6326	033456	003340				BGT	425\$		;CONTINUE UNTIL INDEX EQUALS MAX
6327									
6328	033460	005737	003026		500\$:	TST	ERRFLG		;TEST NUMBER ERRORS
6329	033464	001414				BEQ	600\$		;BRANCH IF NO ERRORS
6330									
6331	033466					PRINTX	#F.ERCNT,ERRFLG		;PRINT SUBTEST ERROR COUNT
	033466	013746	003026			MOV	ERRFLG,-(SP)		
	033472	012746	013304			MOV	#F.ERCNT,-(SP)		
	033476	012746	000002			MOV	#2,-(SP)		
	033502	010600				MOV	SP,R0		
	033504	104415				TRAP	C\$PNTX		
	033506	062706	0000C0			ADD	#6,SP		
6332	033512	005237	003004			INC	ERRCNT		;ADD TO TEST ERROR COUNT
6333									
6334	033516				600\$:	ENDSUB			
	033516				L10116:	TRAP	C\$ESUB		
	033516	104403							
6335									
6336	033520	005337	002510			DEC	D.LPCNT		;DECREMENT COUNTER
6337	033524	001402				BEQ	800\$		;AND EXIT IF ZERO
6338	033526	000137	031606			JMP	LP.BXFR		;CONTINUE TRANSFER
6339									
6340	033532	004737	015324		800\$:	JSR	PC,CLRISR		;CLEAR INTERRUPT SERVICE VECTOR
6341									
6342	033536	004737	015550			JSR	PC,CLRTST		;AND CLEAR TEST DATA
6343									
6344	033542					ENDTST			
	033542				L10112:	TRAP	C\$ETST		
	033542	104401							

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 TEST 18: CHECK BYTE TRANSFER ABORT LOGIC (XABT)

```

6346 .SBTTL TEST 18: CHECK BYTE TRANSFER ABORT LOGIC (XABT)
6347 033544 STARS
        *****
6348     TEST DESCRIPTION:
6349     CHECK BYTE DATA TRANSFER ABORT LOGIC THROUGH XABT BIT
6350     TEST STEPS:
6351     IF BYTE MODE & NOT REVA THEN:
6352         SETUP INTERRUPT SERVICE ROUTINE VECTOR
6353         EXECUTE SUBTEST 1-2 AND CLEAR VECTOR
6354     ERROR CONDITIONS:
6355     MASSBUS CONTROLLER CLEAR ERROR
6356     NO WRITE/READ TRANSFER ABORT
6357     TRE NOT SET: ADJUST BANDWIDTH
6358     INTERFACE IRY BIT NOT SET BY TRANSFER ABORT
6359 STARS
6360     *****
6361     BGNTST
6362 T18::
6363 SELMASK = B.UPAR + B.ABORT + B.AT3 + B.AT0
6364 SELTEST = B.BYTE
6365
6366     MOV SELECT,R0           ;READ SELECT WORD
6367     BIC #SELMASK,R0         ;CLEAR DON'T CARE SELECT BITS
6368     CMP #SELTEST,R0         ;COMPARE WITH BYTE MODE
6369     BEQ 50$                 ;BRANCH IF EQUAL
6370
6371 25$: EXIT TST               ;REV 'A' OR NOT BYTE MODE: EXIT TEST
6372     TRAP C$EXIT
6373     .WORD L10117-.
6374
6375 50$: JSR PC,SETISR          ;SETUP ISR VECTOR
6376     MOV NA.CS1,FP.NAM      ;LOAD REGISTER NAME ADDRESS
6377     MOV BA.CS1,FP.TBL      ;LOAD REGISTER BIT TABLE ADDRESS
6378                               ;EXECUTE SUBTEST
6379
6380 000027
6381 000010
6382 033544 013700 003010
6383 033550 042700 000027
6384 033554 022700 000010
6385 033560 001402
6386
6387 033562 104432
6388 033564 000462
6389
6390 033566 004737 015274
6391 033572 013737 002406 002730
6392 033600 013737 002436 002746
6393

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 TEST 18: CHECK BYTE TRANSFER ABORT LOGIC (XABT)

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6384 033606          STARS
                      :*****
6385
6386
6387
6388
6389
6390
6391
6392
6393 033606          STARS
                      :*****
6394
6395 033606          BGNSUB
                      T18.1:
6396 033606          TRAP      C$BSUB
6397 033610 004737 015342 50$: JSR      PC,CLRMBC      ;CLEAR MASSBUS CONTROLLER
6398 033614 005737 003030 TST      MBCFLG      ;TEST FLAG FOR ERROR
6399 033620 001405      BEQ      100$      ;CONTINUE IF NO ERROR
6400
6401 033622          ERRDF     1,M.MBC1,ER.DMP      ;DEVICE FATAL
6402 033622 104455      TRAP      C$ERDF
6403 033624 000001      .WORD     1
6404 033626 011650      .WORD     M.MBC1
6405 033630 015074      .WORD     ER.DMP
6406 033632          DOCLN
6407 033632 104444      TRAP      C$DCLN      ;CLEAN UP AND EXIT
6408
6409 033634 012700 177600 100$: MOV     #-200,R0      ;LOAD BLOCK SIZE = 256 BYTES
6410 033640 004737 015762 JSR      PC,WRTINI      ;AND INITIALIZE ADDRESS REGISTERS
6411 033644 012777 000161 146424 MOV     #WIE.CMD,@A.CS1 ;ISSUE WRITE COMMAND TO CS1
6412 033652 004737 016030 JSR      PC,SILODLY      ;WAIT FOR SILO TO FILL
6413 033656 012777 000020 146424 MOV     #IS.CYC,@A.IS ;SET IS REGISTER CYC BIT
6414 033664 004737 016016 JSR      PC,DMADLY      ;DELAY A FEW CYCLES
6415
6416 033670 012777 004000 146412 MOV     #IS.XABT,@A.IS ;SET IS REGISTER TRANSFER ABORT
6417 033676 004737 015444 JSR      PC,TSTINT      ;WAIT FOR INTERRUPT OR TIME-OUT
6418 033702 004737 015606 JSR      PC,RDREG      ;READ REGISTERS
6419
6420 033706 032737 000200 002340 BIT     #IS.IRY,R.IS      ;TEST FOR IRY BIT SET
6421 033714 001005      BNE     200$      ;YES: CONTINUE
6422
6423 033716          ERRHRD     2,M.IRY8,ER.DMP      ;'IRY NOT SET BY BYTE TRANSFER ABORT'
6424 033716 104456      TRAP      C$ERHRD
6425 033720 000002      .WORD     2
6426 033722 011500      .WORD     M.IRY8
6427 033724 015074      .WORD     ER.DMP
6428 033726 000425      BR       400$      ;EXIT SUBTEST
6429
6430 033730 005737 002330 200$: TST      R.WC
6431 033734 100404      BMI      300$      ;TEST WORD COUNT
6432
6433
6434 033736          ERRHRD     3,M.ABT3,ER.DMP      ;'NO XFER ABORT ON INTERFACE WRITE'
6435 033736 104456      TRAP      C$ERHRD
6436 033740 000003      .WORD     3
6437 033742 006520      .WORD     M.ABT3

```

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 TEST 18: CHECK BYTE TRANSFER ABORT LOGIC (XABT)

6425	033744	015074		.WORD	ER.DMP	
6426	033746	012737	144260	002734	300\$: MOV	#144260,FP.EXP
6427	033754	023737	002734	002326	CMP	FP.EXP,R.CS1
6428	033762	001407			BEQ	400\$
6429						
6430	033764	013737	002326	002736	MOV	R.CS1,FP.ACT
6431	033772				ERRHRD	4,M.CSR2,ER.REG
	033772	104456			TRAP	C\$ERHRD
	033774	000004			.WORD	4
	033776	007237			.WORD	M.CSR2
	034000	015016			.WORD	ER.REG
6432						
6433	034002				400\$: ENDSUB	
	034002				L10120:	
	034002	104403			TRAP	C\$ESUB

;EXPECTED VALUE: SC,TRE,DVA,RDY,WRITE
 ;COMPARE CS1 WITH EXPECTED STATUS
 ;IF EQ THEN CONTINUE

;LOAD ACTUAL VALUE
 ;'CS1 REGISTER STATUS ERROR'

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 TEST 18: CHECK BYTE TRANSFER ABORT LOGIC (XABT)

6435 034004

STARS

:*****

6436

6437

6438

6439

6440

6441

6442

6443

6444

6445 034004

STARS

:*****

6446

6447 034004

034004

034004 104402

T18.2:

BGNSUB

TRAP C\$BSUB

6448

6449 034006 004737 015342

6450 034012 005737 003030

6451 034016 001405

6452

6453 034020

034020 104455

034022 000004

034024 011650

034026 015074

6454 034030

034030 104444

6455

6456 034032 012700 177740

6457 034036 004737 015674

6458 034042 004737 015410

6459 034046 005737 003030

6460 034052 001405

6461

6462 034054

034054 104456

034056 000005

034060 007533

034062 015074

6463 034064 000463

50\$:

JSR PC,CLRMBC

TST MBCFLG

BEQ 100\$

;CLEAR MASSBUS CONTROLLER

;TEST FLAG FOR ERROR

;CONTINUE IF NO ERROR

ERRDF 4,M.MBC1,ER.DMP

TRAP C\$ERDF

.WORD 4

.WORD M.MBC1

.WORD ER.DMP

;DEVICE FATAL

DOCLN

TRAP C\$DCLN

;CLEAN UP AND EXIT

100\$:

MOV #-40,R0

JSR PC,WRTBLK

JSR PC,TSTMBC

TST MBCFLG

BEQ 150\$

;LOAD BLOCK SIZE = 64 BYTES

;WRITE BLOCK TO INTERFACE

;READ REGISTERS AND TEST ERRORS

;TEST FOR ERROR

;BRANCH IF NO ERROR

ERRHRD 5,M.BYT2,ER.DMP

TRAP C\$ERHRD

.WORD 5

.WORD M.BYT2

.WORD ER.DMP

;'XFER ERROR ON INTERFACE WRITE'

BR 400\$

;EXIT SUBTEST

Address	Op Code	Op 1	Op 2	Op 3	Op 4	Op 5	Op 6	Op 7	Op 8	Op 9	Op 10	Op 11	Op 12	Op 13	Op 14	Op 15	Op 16	Op 17	Op 18	Op 19	Op 20	Op 21	Op 22	Op 23	Op 24	Op 25	Op 26	Op 27	Op 28	Op 29	Op 30	Op 31	Op 32	Op 33	Op 34	Op 35	Op 36	Op 37	Op 38	Op 39	Op 40	Op 41	Op 42	Op 43	Op 44	Op 45	Op 46	Op 47	Op 48	Op 49	Op 50	Op 51	Op 52	Op 53	Op 54	Op 55	Op 56	Op 57	Op 58	Op 59	Op 60	Op 61	Op 62	Op 63	Op 64	Op 65	Op 66	Op 67	Op 68	Op 69	Op 70	Op 71	Op 72	Op 73	Op 74	Op 75	Op 76	Op 77	Op 78	Op 79	Op 80	Op 81	Op 82	Op 83	Op 84	Op 85	Op 86	Op 87	Op 88	Op 89	Op 90	Op 91	Op 92	Op 93	Op 94	Op 95	Op 96	Op 97	Op 98	Op 99	Op 100	Op 101	Op 102	Op 103	Op 104	Op 105	Op 106	Op 107	Op 108	Op 109	Op 110	Op 111	Op 112	Op 113	Op 114	Op 115	Op 116	Op 117	Op 118	Op 119	Op 120	Op 121	Op 122	Op 123	Op 124	Op 125	Op 126	Op 127	Op 128	Op 129	Op 130	Op 131	Op 132	Op 133	Op 134	Op 135	Op 136	Op 137	Op 138	Op 139	Op 140	Op 141	Op 142	Op 143	Op 144	Op 145	Op 146	Op 147	Op 148	Op 149	Op 150	Op 151	Op 152	Op 153	Op 154	Op 155	Op 156	Op 157	Op 158	Op 159	Op 160	Op 161	Op 162	Op 163	Op 164	Op 165	Op 166	Op 167	Op 168	Op 169	Op 170	Op 171	Op 172	Op 173	Op 174	Op 175	Op 176	Op 177	Op 178	Op 179	Op 180	Op 181	Op 182	Op 183	Op 184	Op 185	Op 186	Op 187	Op 188	Op 189	Op 190	Op 191	Op 192	Op 193	Op 194	Op 195	Op 196	Op 197	Op 198	Op 199	Op 200	Op 201	Op 202	Op 203	Op 204	Op 205	Op 206	Op 207	Op 208	Op 209	Op 210	Op 211	Op 212	Op 213	Op 214	Op 215	Op 216	Op 217	Op 218	Op 219	Op 220	Op 221	Op 222	Op 223	Op 224	Op 225	Op 226	Op 227	Op 228	Op 229	Op 230	Op 231	Op 232	Op 233	Op 234	Op 235	Op 236	Op 237	Op 238	Op 239	Op 240	Op 241	Op 242	Op 243	Op 244	Op 245	Op 246	Op 247	Op 248	Op 249	Op 250	Op 251	Op 252	Op 253	Op 254	Op 255	Op 256	Op 257	Op 258	Op 259	Op 260	Op 261	Op 262	Op 263	Op 264	Op 265	Op 266	Op 267	Op 268	Op 269	Op 270	Op 271	Op 272	Op 273	Op 274	Op 275	Op 276	Op 277	Op 278	Op 279	Op 280	Op 281	Op 282	Op 283	Op 284	Op 285	Op 286	Op 287	Op 288	Op 289	Op 290	Op 291	Op 292	Op 293	Op 294	Op 295	Op 296	Op 297	Op 298	Op 299	Op 300	Op 301	Op 302	Op 303	Op 304	Op 305	Op 306	Op 307	Op 308	Op 309	Op 310	Op 311	Op 312	Op 313	Op 314	Op 315	Op 316	Op 317	Op 318	Op 319	Op 320	Op 321	Op 322	Op 323	Op 324	Op 325	Op 326	Op 327	Op 328	Op 329	Op 330	Op 331	Op 332	Op 333	Op 334	Op 335	Op 336	Op 337	Op 338	Op 339	Op 340	Op 341	Op 342	Op 343	Op 344	Op 345	Op 346	Op 347	Op 348	Op 349	Op 350	Op 351	Op 352	Op 353	Op 354	Op 355	Op 356	Op 357	Op 358	Op 359	Op 360	Op 361	Op 362	Op 363	Op 364	Op 365	Op 366	Op 367	Op 368	Op 369	Op 370	Op 371	Op 372	Op 373	Op 374	Op 375	Op 376	Op 377	Op 378	Op 379	Op 380	Op 381	Op 382	Op 383	Op 384	Op 385	Op 386	Op 387	Op 388	Op 389	Op 390	Op 391	Op 392	Op 393	Op 394	Op 395	Op 396	Op 397	Op 398	Op 399	Op 400	Op 401	Op 402	Op 403	Op 404	Op 405	Op 406	Op 407	Op 408	Op 409	Op 410	Op 411	Op 412	Op 413	Op 414	Op 415	Op 416	Op 417	Op 418
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 TEST 19: CHECK BYTE TRANSFER ABORT LOGIC (AT03)

```

6503 .SBTTL TEST 19: CHECK BYTE TRANSFER ABORT LOGIC (AT03)
6504 034250 STARS
        *****
6505
6506 TEST DESCRIPTION:
6507
6508 CHECK BYTE DATA TRANSFER ABORT LOGIC THROUGH LOOP-BACK
6509
6510 TEST STEPS:
6511
6512 IF NOT REVA AND BYTE MODE AND AT3 ABORT NOT DISABLED THEN:
6513     SETUP INTERRUPT SERVICE ROUTINE VECTOR
6514     INITIALIZE 64-BYTE BLOCK SIZE AND
6515     EXECUTE SUBTEST 1-2 AND CLEAR VECTOR
6516
6517 ERROR CONDITIONS:
6518
6519 MASSBUS CONTROLLER CLEAR ERROR
6520 NO WRITE/READ TRANSFER ABORT
6521 TRE NOT SET: ADJUST BANDWIDTH
6522 INTERFACE IRY BIT NOT SET BY TRANSFER ABORT
6523 034250 STARS
        *****
6524
6525 034250 BGNTST
6526 034250
6527 000023
6528 000010
6529
6530 034250 013700 003010 MOV SELECT,RO ;READ SELECT WORD
6531 034254 042700 000023 BIC #SELMASK,RO ;CLEAR DON'T CARE SELECT BITS
6532 034260 022700 000010 CMP #SELTEST,RO ;TEST BYTE MODE SET
6533 034264 001402 BEQ 50$ ;BRANCH IF EQUAL
6534
6535 034266 25$: EXIT TST ;EXIT TEST
        034266 104432 TRAP C$EXIT
        034270 000476 .WORD L10122-.
6536
6537 034272 004737 015274 50$: JSR PC,SETISR ;SETUP ISR VECTOR
6538 034276 013737 002406 002730 MOV NA.CS1,FP.NAM ;LOAD REGISTER NAME ADDRESS
6539 034304 013737 002436 002746 MOV BA.CS1,FP.TBL ;LOAD REGISTER BIT TABLE ADDRESS
6540 ;EXECUTE SUBTEST
  
```

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 TEST 19: CHECK BYTE TRANSFER ABORT LOGIC (AT03)

```

6542 034312      STARS
                  ;*****
6543              ;
6544              ;
6545              ;
6546              ;
6547              ;
6548              ;
6549              ;
6550              ;
6551 034312      STARS
                  ;*****
6552              ;
6553 034312      BGNSUB
                  T19.1:
6554              TRAP      C$BSUB
6555 034314 004737 015342      50$: JSR      PC,CLRMBC      ;CLEAR MASSBUS CONTROLLER
6556 034320 005737 003030      TST      MBCFLG      ;TEST FLAG FOR ERROR
6557 034324 001405              BEQ      100$          ;CONTINUE IF NO ERROR
6558              ;
6559 034326              ERRDF 1,M.MBC1,ER.DMP      ;DEVICE FATAL
6560 034326 104455      TRAP      C$ERDF
6561 034330 000001      .WORD      1
6562 034332 011650      .WORD      M.MBC1
6563 034334 015074      .WORD      ER.DMP
6564 034336              DOCLN
6565 034336 104444      TRAP      C$DCLN      ;CLEAN UP AND EXIT
6566              ;
6567 034340 012700 177600      100$: MOV      #-20J,R0      ;LOAD BLOCK SIZE = 256 BYTES
6568 034344 004737 015762      JSR      PC,WRTINI      ;AND INITIALIZE ADDRESS REGISTERS
6569 034350 012777 000161 145720      MOV      #WIE.CMD,@A.CS1 ;ISSUE WRITE COMMAND TO CS1
6570 034356 004737 016030      JSR      PC,SILODLY      ;WAIT FOR SILO TO FILL
6571 034362 012777 000020 145720      MOV      #IS.CYC,@A.IS ;SET CYCLE REQUEST
6572 034370 004737 016016      JSR      PC,DMADLY      ;DELAY A FEW CYCLES
6573              ;
6574 034374 012777 004000 145702      MOV      #FS.F3,@A.FS ;SET FS REGISTER FUNCTION BIT F3
6575 034402 004737 015444      JSR      PC,TSTINT      ;WAIT FOR INTERRUPT OR TIME-OUT
6576 034406 004737 015606      JSR      PC,RDREG      ;READ REGISTERS
6577 034412 012777 000000 145664      MOV      #0,@A.FS ;CLEAR FUNCTION / STATUS BITS
6578 034420 032737 000200 002340      BIT      #IS.IRY,R.IS ;TEST FOR IRY BIT SET
6579 034426 001005              BNE      200$          ;YES: CONTINUE
6580              ;
6581 034430              ERRHRD 2,M.IRY8,ER.DMP      ;"IRY NOT SET BY BYTE TRANSFER ABORT"
6582 034430 104456      TRAP      C$ERHRD
6583 034432 000002      .WORD      2
6584 034434 011500      .WORD      M.IRY8
6585 034436 015074      .WORD      ER.DMP
6586 034440 000425      BR      400$
6587              ;
6588 034442 005737 002330      200$: TST      R.WC      ;TEST WORD COUNT
6589 034446 100404              BMI      300$          ;IF LESS THAN ZERO THEN OK
6590              ;
6591 034450              ERRHRD 3,M.ABT3,ER.DMP      ;"NO XFER ABORT ON INTERFACE WRITE"
6592 034450 104456      TRAP      C$ERHRD
6593 034452 000003      .WORD      3

```

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 TEST 19: CHECK BYTE TRANSFER ABORT LOGIC (AT03)

	034454	006520			.WORD	M.ABT3		
	034456	015074			.WORD	ER.DMP		
6584								
6585	034460	012737	144260	002734	300\$:	MOV	#144260,FP.EXP	;EXPECTED VALUE: SC,TRE,DVA,RDY,WRITE
6586	034466	023737	002734	002326		CMP	FP.EXP,R.CS1	;COMPARE CS1 WITH EXPECTED STATUS
6587	034474	001407				BEQ	400\$	;IF EQ THEN CONTINUE
6588								
6589	034476	013737	002326	002736		MOV	R.CS1,FP.ACT	;LOAD ACTUAL VALUE
6590	034504					ERRHRD	4,M.CSR2,ER.REG	;''CS1 REGISTER STATUS ERROR''
	034504	104456				TRAP	C\$ERHRD	
	034506	000004				.WORD	4	
	034510	007237				.WORD	M.CSR2	
	034512	015016				.WORD	ER.REG	
6591								
6592	034514				400\$:	ENDSUB		
	034514				L10123:			
	034514	104403				TRAP	C\$ESUB	

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 TEST 19: CHECK BYTE TRANSFER ABORT LOGIC (AT03)

```

6594 034516      STARS
                  *****
6595              :
6596              :
6597              :
6598              :
6599              :
6600              :
6601              :
6602              :
6603              :
6604 034516      STARS
                  *****
6605              :
6606 034516      T19.2: BGNSUB
034516          :
034516 104402    :
6607              :
6608 034520 004737 015342 50$: JSR      PC,CLRMBC      ;CLEAR MASSBUS CONTROLLER
6609 034524 005737 003030    TST      MBCFLG      ;TEST FLAG FOR ERROR
6610 034530 001405          BEQ      100$          ;CONTINUE IF NO ERROR
6611              :
6612 034532          ERRDF  4,M.MBC1,ER.DMP      ;DEVICE FATAL
034532 104455    TRAP      C$ERDF
034534 000004    .WORD     4
034536 011650    .WORD     M.MBC1
034540 015074    .WORD     ER.DMP
6613 034542          DOCLN          ;CLEAN UP AND EXIT
034542 104444    TRAP      C$DCLN
6614              :
6615 034544 012700 177740 100$: MOV      #-40,R0      ;LOAD BLOCK SIZE = 64 BYTES
6616 034550 004737 015674    JSR      PC,WRTBLK     ;WRITE BLOCK TO INTERFACE
6617 034554 004737 015410    JSR      PC,TSTMBC     ;READ REGISTERS AND TEST ERRORS
6618 034560 005737 003030    TST      MBCFLG      ;TEST FOR ERROR
6619 034564 001405          BEQ      150$          ;BRANCH IF NO ERROR
6620              :
6621 034566          ERRHRD  5,M.BYT2,ER.DMP      ;'XFER ERROR ON INTERFACE WRITE'
034566 104456    TRAP      C$ERHRD
034570 000005    .WORD     5
034572 007533    .WORD     M.BYT2
034574 015074    .WORD     ER.DMP
6622 034576 000466    BR       400$          ;EXIT SUBTEST
  
```

Address	Offset	Hex	Dec	Label	Operation	Comments	
6624							
6625	034600	012700	177600	150\$:	MOV #200,R0	:LOAD BLOCK SIZE = 256 BYTES	
6626	034604	004737	015726		JSR PC,RDINI	:AND INITIALIZE ADDRESS REGISTERS	
6627	034610	012777	000171	145460	MOV #RIE.CMD,@A.CS1	:ISSUE READ COMMAND TO CS1	
6628	034616	004737	016030		JSR PC,SILODLY	:WAIT FOR SILO TO FILL	
6629	034622	012777	000020	145460	MOV #IS.CYC,@A.IS	:SET CYCLE REQUEST	
6630	034630	004737	016016		JSR PC,DMADLY	:DELAY A FEW CYCLES	
6631							
6632	034634	012777	004000	145442	MOV #FS.F3,@A.FS	:SET FS REGISTER FUNCTION BIT F3	
6633	034642	004737	015444		JSR PC,TSTINT	:WAIT FOR INTERRUPT OR TIME-OUT	
6634	034646	004737	015606		JSR PC,RDREG	:READ REGISTERS	
6635	034652	012777	000000	145424	MOV #0,@A.FS	:CLEAR FUNCTION / STATUS BITS	
6636							
6637	034660	032737	000200	002340	BIT #IS.IRY,R.IS	:TEST FOR IRY BIT SET	
6638	034666	001005			BNE 200\$	:YES: CONTINUE	
6639							
6640	034670				ERRHRD 6,M.IRY8,ER.DMP	: 'IRY NOT SET BY BYTE TRANSFER ABORT'	
	034670	104456			TRAP C\$ERHRD		
	034672	000006			.WORD 6		
	034674	011500			.WORD M.IRY8		
	034676	015074			.WORD ER.DMP		
6641	034700	000425			BR 400\$	:EXIT SUBTEST	
6642							
6643	034702	005737	002330	200\$:	TST R.WC	:TEST WORD COUNT	
6644	034706	100404			BMI 300\$	:IF LESS THAN ZERO THEN OK	
6645							
6646	034710				ERRHRD 7,M.ABT4,ER.DMP	: 'NO XFER ABORT ON INTERFACE READ'	
	034710	104456			TRAP C\$ERHRD		
	034712	000007			.WORD 7		
	034714	006572			.WORD M.ABT4		
	034716	015074			.WORD ER.DMP		
6647							
6648	034720	012737	144270	002734	300\$:	MOV #144270,FP.EXP	:EXPECTED VALUE: SC.TRE,DVA,RDY,READ
6649	034726	023737	002734	002326	CMP FP.EXP,R.CS1	:COMPARE CS1 WITH EXPECTED STATUS	
6650	034734	001407			BEQ 400\$	:IF EQ THEN CONTINUE	
6651							
6652	034736	013737	002326	002736	MOV R.CS1,FP.ACT	:LOAD ACTUAL VALUE	
6653	034744				ERRHRD 8,M.CSR2,ER.REG	: 'CS1 REGISTER STATUS ERROR'	
	034744	104456			TRAP C\$ERHRD		
	034746	000010			.WORD 8		
	034750	007237			.WORD M.CSR2		
	034752	015016			.WORD ER.REG		
6654							
6655	034754				400\$:	ENDSUB	
	034754			L10124:	TRAP C\$ESUB		
	034754	104403					
6656							
6657	034756	004737	015324		JSR PC,CLRISR	:CLEAR ISR VECTOR	
6658							
6659	034762	004737	015550		JSR PC,CLRTST	:AND CLEAR TEST DATA	
6660							
6661	034766				ENDTST		
	034766			L10122:	TRAP C\$ETST		
	034766	104401					

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 TEST 20: CHECK INTERFACE STATUS ICP BIT

```

6663          .SBTTL TEST 20: CHECK INTERFACE STATUS ICP BIT
6664 034770    STARS
               :*****
6665          :
6666          : TEST DESCRIPTION:
6667          :
6668          :     VERIFY PROPER FUNCTION OF IS REGISTER ICP BIT
6669          :
6670          : TEST STEPS:
6671          :
6672          :     IF NOT REVA THEN:
6673          :         CLEAR MASSBUS CONTROLLER AND CHECK FOR ERROR
6674          :         SETUP ISR VECTOR AND DISPLAY PARMS
6675          :         EXECUTE SUBTEST 1-2 AND CLEAR VECTOR
6676          :
6677          : ERROR CONDITIONS:
6678          :
6679          :     IS REGISTER ICP BIT NOT SET/RESET
6680 034770    STARS
               :*****
6681          :
6682 034770    BGNTST
6683          :
6684          : T20::
6685          :
6686          : SELTEST =      B.REVA      ;TEST SELECT BIT
6687          :
6688          : MOV      SELECT,R0      ;LOAD TEST SELECT WORD
6689          : BIT      #SELTEST,R0    ;TEST FOR REVA SET
6690          : BEQ      50$            ;CONTINUE IF REVA NOT SET
6691          :
6692          : EXIT      TST            ;EXIT FROM TEST
6693          : TRAP     C$EXIT
6694          : .WORD    L10125-.
6695          :
6696          : 50$: JSR      PC,SETISR    ;SETUP INTERRUPT SERVICE VECTOR
6697          : MOV      NA.IS,FP.NAM    ;LOAD IS REGISTER NAME POINTER
6698          : MOV      BA.IS,FP.TBL    ;LOAD REGISTER EXPAND TABLE ADDRESS
6699          : EXECUTE SUBTEST

```

ZDRMAO DR70 REPAIR DIAGNOSTIC MACRO M1200 23-MAY-83 15:51 PAGE 186
 TEST 20: CHECK INTERFACE STATUS ICP BIT

```

6697 035026          STARS
                      *****
6698
6699
6700
6701
6702
6703
6704
6705
6706 035026          STARS
                      *****
6707
6708 035026          T20.1: BGNSUB
                      035026
                      035026 104402
6709
6710 035030 004737 015342 50$: JSR PC,CLRMBC ;CLEAR MASSBUS CONTROLLER
6711 035034 005737 003030    TST MBCFLG ;TEST FLAG FOR ERROR
6712 035040 001405          BEQ 100$ ;CONTINUE IF NO ERROR
6713
6714 035042          ERRDF 1,M.MBC1,ER.DMP ;DEVICE FATAL
                      035042 104455
                      035044 000001
                      035046 011650
                      035050 015074
6715 035052          DOCLN
                      035052 104444 TRAP C$DCLN ;CLEAN UP AND EXIT
6716
6717 035054 052777 000020 145224 100$: BIS #CS2.PAT, @A.CS2 ;SET PARITY TEST
6718 035062 012700 177777    MOV #-1,R0 ;LOAD BLOCK SIZE = 1 WORD
6719 035066 004737 015674    JSR PC,WRTBLK ;ISSUE INTERFACE WRITE CMD
6720 035072 004737 015606    JSR PC,RDREG ;AND READ REGISTERS
6721
6722 035076 032737 001000 002340 BIT #IS.ICP,R.IS ;TEST ICP BIT SET
6723 035104 001004          BNE 200$ ;BRANCH IF SET
6724
6725 035106          ERRHRD 2,M.ICP1,ER.DMP ;"ICP BIT NOT SET BY PARITY TEST"
                      035106 104456
                      035110 000002
                      035112 010450
                      035114 015074
6726
6727 035116 042777 000020 145162 200$: BIC #CS2.PAT, @A.CS2 ;CLEAR PARITY TEST
6728 035124 004737 015464    JSR PC,CLRDR1 ;INTERFACE CLEAR CMD & READ REGISTERS
6729 035130 005737 003032    TST DRIFLG ;TEST FOR INTERFACE ERROR
6730 035134 001405          BEQ 300$ ;CONTINUE IF NO ERROR
6731
6732 035136          ERRHRD 3,M.ISR2,ER.DMP ;"INTERFACE STATUS ERROR ON CLEAR"
                      035136 104456
                      035140 000003
                      035142 011572
                      035144 015074
6733 035146 000410          BR 400$ ;EXIT TEST
6734
6735 035150 032737 001000 002340 300$: BIT #IS.ICP,R.IS ;TEST ICP BIT SET
6736 035156 001404          BEQ 400$ ;BRANCH IF RESET

```

ZDRMAO DR70 REPAIR DIAGNOSTIC MACRO M1200 23-MAY-83 15:51 PAGE 186-1
TEST 20: CHECK INTERFACE STATUS ICP BIT

6737					
6738	035160		ERRHRD	4,M.ICP2,ER.DMP	;'ICP BIT NOT RESET BY DRIVE CLEAR'
	035160	104456	TRAP	C\$ERHRD	
	035162	000004	.WORD	4	
	035164	010535	.WORD	M.ICP2	
	035166	015074	.WORD	ER.DMP	
6739					
6740	035170		400\$:	ENDSUB	;SET ICP
	035170		L10126:		
	035170	104403	TRAP	C\$ESUB	

ZDRMAO DR70 REPAIR DIAGNOSTIC MACRO M1200 23-MAY-83 15:51 PAGE 187
 TEST 20: CHECK INTERFACE STATUS ICP BIT

6742 035172

STARS

:*****

6743

6744

6745

6746

6747

6748

6749

6750

6751 035172

STARS

:*****

6752

6753 035172

035172

035172 104402

T20.2:

BGNSUB

TRAP CSBSUB

6754

6755 035174 004737 015342

6756 035200 005737 003030

6757 035204 001405

6758

6759 035206

035206 104455

035210 000005

035212 011650

035214 015074

6760 035216

035216 104444

6761

6762 035220 052777 000020 145060 100\$:

6763 035226 012700 177777

6764 035232 004737 015674

6765 035236 004737 015606

6766

6767 035242 032737 001000 002340

6768 035250 001004

6769

6770 035252

035252 104456

035254 000006

035256 010450

035260 015074

6771

6772 035262 042777 000020 145016 200\$:

6773 035270 052777 001000 145012

6774 035276 004737 015606

6775 035302 032737 001000 002340

6776 035310 001404

6777

6778 035312

035312 104456

035314 000007

035316 010623

035320 015074

6779

6780 035322

035322

400\$: ENDSUB

L10127:

;RESET ICP

SUBTEST 2:

CLEAR MASSBUS CONTROLLER AND CHECK FOR ERROR
 SET PAT BIT IN CS2 REGISTER AND ISSUE INTERFACE WRITE CMD
 READ REGISTERS AND TEST INTERFACE STATUS ICP SET
 RESET CS2 REGISTER PAT BIT AND WRITE TO INTERFACE STATUS ICP
 READ REGISTERS AND TEST INTERFACE STATUS ICP RESET

50\$: JSR PC,CLRMBIC ;CLEAR MASSBUS CONTROLLER
 TST MBCFLG ;TEST FLAG FOR ERROR
 BEQ 100\$;CONTINUE IF NO ERROR
 ERRDF 5,M.MBC1,ER.DMP ;DEVICE FATAL
 TRAP C\$ERDF
 .WORD 5
 .WORD M.MBC1
 .WORD ER.DMP
 DOCLN ;CLEAN UP AND EXIT
 TRAP C\$DCLN
 100\$: BIS #CS2.PAT,2A.CS2 ;SET PARITY TEST
 MOV #-1,R0 ;LOAD BLOCK SIZE = 1 WORD
 JSR PC,WRTBLK ;ISSUE INTERFACE WRITE CMD
 JSR PC,RDREG ;AND READ REGISTERS
 BIT #IS.ICP,R.IS ;TEST ICP BIT SET
 BNE 200\$;BRANCH IF SET
 ERRHRD 6,M.ICP1,ER.DMP ;"ICP BIT NOT SET BY PARITY TEST"
 TRAP C\$ERHRD
 .WORD 6
 .WORD M.ICP1
 .WORD ER.DMP
 200\$: BIC #CS2.PAT,2A.CS2 ;CLEAR PARITY TEST
 BIS #IS.ICP,2A.IS ;WRITE TO INTERFACE STATUS ICP
 JSR PC,RDREG ;READ REGISTERS
 BIT #IS.ICP,R.IS ;TEST FOR ICP RESET
 BEQ 400\$;CONTINUE IF NO ERROR
 ERRHRD 7,M.ICP3,ER.DMP ;"INTERFACE STATUS ICP NOT RESET"
 TRAP C\$ERHRD
 .WORD 7
 .WORD M.ICP3
 .WORD ER.DMP

ZDRMA0 DR70 REPAIR DIAGNOSTIC MACRO M1200 23-MAY-83 15:51 PAGE 187-1
TEST 20: CHECK INTERFACE STATUS ICP BIT

6781	035322	104403	TRAP	C\$ESUB	
6782	035324	004737	JSR	PC,CLRISR	;CLEAR SERVICE ROUTINE VECTOR
6783		015324			
6784	035330	004737	JSR	PC,CLRTST	;AND CLEAR TEST DATA
6785		015550			
6786	035334		ENDTST		
	035334				
	035334	104401	L10125:	TRAP	C\$ETST

ZDRMAO DR70 REPAIR DIAGNOSTIC MACRO M1200 23-MAY-83 15:51 PAGE 188
 TEST 21: CHECK INTERFACE STATUS IDP BIT

```

6788 .SBTTL TEST 21: CHECK INTERFACE STATUS IDP BIT
6789 035336 STARS
        *****
6790
6791 TEST DESCRIPTION:
6792
6793     VERIFY PROPER FUNCTION OF IS REGISTER IDP BIT
6794
6795 TEST STEPS:
6796
6797     IF NOT REVA OR NOT UPAR THEN:
6798         SETUP ISR VECTOR AND INITIALIZE
6799         EXECUTE SUBTEST 1-4 AND CLEAR VECTOR
6800
6801 ERROR CONDITIONS:
6802
6803     IS REGISTER IDP BIT NOT SET/RESET
6804 035336 STARS
        *****
6805
6806 035336 BGNTST
        035336
6807
6808 000017 T21::
6809 SELMASK = B.BYTE + B.ABORT + B.AT3 + B.ATO
6810 035336 013700 003010 MOV SELECT,R0 ;LOAD TEST SELECT WORD
6811 035342 042700 000017 BIC #SELMASK,R0 ;TEST FOR REVA OR UPAR SET
6812 035346 001402 BEQ 50$ ;CONTINUE IF REVA AND UPAR NOT SET
6813
6814 035350 EXIT TST ;EXIT FROM TEST
        035350 104432 TRAP C$EXIT
        035352 001232 .WORD L10130-.
6815
6816 035354 004737 015274 50$: JSR PC,SETISR ;SETUP INTERRUPT SERVICE VECTOR
6817 035360 013737 002420 002730 MOV NA.IS,FP.NAM ;LOAD IS REGISTER NAME POINTER
6818 035366 013737 002450 002746 MOV BA.IS,FP.TBL ;LOAD REGISTER EXPAND TABLE ADDRESS
6819 ;EXECUTE SUBTEST

```

ZDRMA0 DR70 REPAIR DIAGNOSTIC MACRO M1200 23-MAY-83 15:51 PAGE 189
TEST 21: CHECK INTERFACE STATUS IDP BIT

6821 035374

STARS

:*****

6822

6823

6824

6825

6826

6827

6828

6829

6830

6831 035374

STARS

:*****

6832

6833 035374

035374

035374 104402

T21.1: BGNSUB

TRAP C\$BSUB

6834

6835 035376 004737 015342

6836 035402 005737 003030

6837 035406 001405

6838

6839 035410

035410 104455

035412 000001

035414 011650

035416 015074

6840 035420

035420 104444

JSR PC,CLRMBC

TST MBCFLG

BEQ 100\$

:CLEAR MASSBUS CONTROLLER

:TEST FLAG FOR ERROR

:CONTINUE IF NO ERROR

ERRDF 1,M.MBC1,ER.DMP

:DEVICE FATAL

TRAP C\$ERDF

.WORD 1

.WORD M.MBC1

.WORD ER.DMP

DOCLN

:CLEAN UP AND EXIT

TRAP C\$DCLN

6841

6842 035422 005002

6843 035424 012701 000001

6844 035430 010137 002744

6845

6846 035434 010162 004054

6847 035440 012762 000000 003054

6848 035446 062702 000002

6849 035452 023702 002512

6850 035456 003366

6851

6852 035460 012700 177740

6853 035464 004737 015762

6854 035470 012777 000161 144600

6855 035476 012777 010020 144604

6856 035504 004737 015444

6857

6858 035510 004737 015606

6859 035514 032737 000400 002340

6860 035522 001014

6861

6862 035524 013737 002340 002736

6863 035532 012737 150600 002734

6864 035540

035540 104456

035542 000002

035544 010215

035546 015016

100\$:

CLR R2

MOV #1,R1

MOV R1,FP.DPAT

:CLEAR BUFFER INDEX REGISTER

:LOAD DATA PATTERN

:AND INITIALIZE DISP PARM

150\$:

MOV R1,0BUF(R2)

MOV #0,1BUF(R2)

ADD #2,R2

CMP D.MAX,R2

BCT 150\$

:LOAD EVEN HIGH BYTE ODD LOW BYTE

:CLEAR INPUT BUFFER

:AND BUMP INDEX

:COMPARE WITH MAX BUFFER INDEX

:CONTINUE UNTIL BUFFER INITIALIZED

200\$:

MOV #-40,R0

JSR PC,WRINI

MOV #WIE.CMD,@A.CS1

MOV #10020,@A.IS

JSR PC,TSTINT

:LOAD BLOCK SIZE = 32 WORDS/BYTES

:INITIALIZE FOR INTERFACE WRITE

:ISSUE INTERFACE WRITE

:CYCLE REQUEST WITH INVERT PARITY

:WAIT FOR INTERRUPT OR TIME OUT

JSR PC,RDREG

BIT #IS.IDP,R.IS

BNE 300\$

:READ REGISTERS

:TEST IDP BIT SET

:BRANCH IF SET

MOV R.IS,FP.ACT

MOV #150600,FP.EXP

ERRHRD 2,M.IDP1,ER.REG

TRAP C\$ERHRD

.WORD 2

.WORD M.IDP1

.WORD ER.REG

:LOAD ACTUAL VALUE

:EXPECTED: ATA, ERR, IP, IDP & IRY

:IDP BIT NOT SET BY PARITY ERROR"

ZDRMAO DR70 REPAIR DIAGNOSTIC MACRO M1200 23-MAY-83 15:51 PAGE 189-1
TEST 21: CHECK INTERFACE STATUS IDP BIT

6865

6866 035550 004737 016510

JSR

PC,DSPDPAT

;DISPLAY DATA PATTERN

ZDRMAO DR70 REPAIR DIAGNOSTIC MACRO M1200 23-MAY-83 15:51 PAGE 190
 TEST 21: CHECK INTERFACE STATUS IDP BIT

6868												
6869	035554	004737	015464		300\$:	JSR	PC,CLRDRI					;ISSUE INTERFACE CLEAR
6870	035560	005737	003032			TST	DRIFLG					;TEST ERROR FLAG
6871	035564	001405				BEQ	400\$					;BRANCH IF OK
6872												
6873	035566					ERRHRD	3,M.ISR2,ER.DMP					;''INTERFACE STATUS ERROR ON CLEAR''
	035566	104456				TRAP	C\$ERHRD					
	035570	000003				.WORD	3					
	035572	011572				.WORD	M.ISR2					
	035574	015074				.WORD	ER.DMP					
6874	035576	000416				BR	500\$					;EXIT TEST
6875												
6876	035600	032737	000400	002340	400\$:	BIT	#IS.IDP,R.IS					;TEST FOR IDP BIT RESET
6877	035606	001412				BEQ	500\$					;BRANCH IF RESET
6878												
6879	035610	013737	002340	002736		MOV	R.IS,FP.ACT					;LOAD ACTUAL VALUE
6880	035616	012737	000200	002734		MOV	#200,FP.EXP					;EXPECTED: IRY
6881	035624					ERRHRD	4,M.IDP2,ER.REG					;''IDP NOT RESET BY DRIVE CLEAR''
	035624	104456				TRAP	C\$ERHRD					
	035626	000004				.WORD	4					
	035630	010277				.WORD	M.IDP2					
	035632	015016				.WORD	ER.REG					
6882												
6883	035634				500\$:	ENDSUB						
	035634				L10131:							
	035634	104403				TRAP	C\$ESUB					

ZDRMA0 DR70 REPAIR DIAGNOSTIC MACRO M1200 23-MAY-83 15:51 PAGE 191
TEST 21: CHECK INTERFACE STATUS IDP BIT

6885 035636

STARS

6886

6887

6888

6889

6890

6891

6892

6893

6894

6895 035636

STARS

6896

6897 035636

035636

035636 104402

T21.2:

BGNSUB

TRAP C\$BSUB

6898

6899 035640 004737 015342

6900 035644 005737 003030

6901 035650 001405

6902

6903 035652

035652 104455

035654 000005

035656 011650

035660 015074

6904 035662

035662 104444

6905

6906 035664 012700 177740

6907 035670 004737 015674

6908 035674 004737 015410

6909 035700 005737 003030

6910 035704 001404

6911

6912 035706

035706 104456

035710 000006

035712 007324

035714 015074

6913

6914 035716 012700 177740

6915 035722 004737 015726

6916 035726 012777 000171 144342

6917 035734 012777 010020 144346

6918 035742 004737 015444

6919

6920 035746 004737 015606

6921 035752 032737 000400 002340

6922 035760 001026

6923

6924 035762 013737 002340 002736

6925 035770 012737 150600 002734

6926 035776

035776 104456

036000 000007

JSR PC,CLRMBC

TST MBCFLG

BEQ 200\$

ERRDF 5,M.MBC1,ER.DMP

TRAP C\$ERDF

.WORD 5

.WORD M.MBC1

.WORD ER.DMP

DOCLN

TRAP C\$DCLN

200\$:

MOV #-40,R0

JSR PC,WRTBLK

JSR PC,TSTMBC

TST MBCFLG

BEQ 225\$

ERRHRD 6,M.WRD2,ER.DMP

TRAP C\$ERHRD

.WORD 6

.WORD M.WRD2

.WORD ER.DMP

225\$:

MOV #-40,R0

JSR PC,RDINI

MOV #RIE.CMD,@A.CS1

MOV #10020,@A.IS

JSR PC,TSTINT

250\$:

JSR PC,RDREG

BIT #IS.IDP,R.IS

BNE 400\$

MOV R.IS,FP.ACT

MOV #150600,FP.EXP

ERRHRD 7,M.IDP1,ER.REG

TRAP C\$ERHRD

.WORD 7

;CLEAR MASSBUS CONTROLLER

;TEST FLAG FOR ERROR

;CONTINUE IF NO ERROR

;DEVICE FATAL

;CLEAN UP AND EXIT

;LOAD BLOCK SIZE = 32 WORDS/BYTES

;WRITE BLOCK TO INTERFACE

;READ REGISTERS AND TEST FOR ERROR

;TEST ERROR FLAG

;BRANCH IF NO ERROR

;'XFER ERROR ON INTERFACE WRITE''

;LOAD BLOCK SIZE = 32 WORDS/BYTES

;INITIALIZE FOR INTERFACE READ

;ISSUE INTERFACE READ

;CYCLE REQUEST WITH INVERT PARITY

;WAIT FOR INTERRUPT OR TIME OUT

;READ REGISTERS

;TEST IDP BIT SET

;BRANCH IF SET

;LOAD ACTUAL VALUE

;EXPECTED: ATA, ERR, IP, IDP & IRY

;'IDP BIT NOT SET BY PARITY ERROR''

ZDRMA0 DR70 REPAIR DIAGNOSTIC MACRO M1200 23-MAY-83 15:51 PAGE 191-1
TEST 21: CHECK INTERFACE STATUS IDP BIT

	036002	010215		.WORD	M.IDP1	
	036004	015016		.WORD	ER.REG	
6927						
6928	036006	004737	016510	JSR	PC,DSPDPAT	;DISPLAY DATA PATTERN
6929						
6930	036012			PRINTX	#F.PERR	;PROMPT FOR PARITY SWITCH
	036012	012746	013412	MOV	#F.PERR,-(SP)	
	036016	012746	000001	MOV	#1,-(SP)	
	036022	010600		MOV	SP,R0	
	036024	104415		TRAP	C\$PNTX	
	036026	062706	000004	ADD	#4,SP	
6931	036032	005237	003052	INC	PERFLG	;BUMP MESSAGE COUNT

ZDRMA0 DR70 REPAIR DIAGNOSTIC MACRO M1200 23-MAY-83 15:51 PAGE 192
 TEST 21: CHECK INTERFACE STATUS IDP BIT

6933										
6934	036036	052777	C00400	144244	400\$:	BIS	#IS.IDP, @A.IS		;WRITE TO INTERFACE STATUS IDP	
6935	036044	004737	015606			JSR	PC, RDREG		;READ REGISTERS AND	
6936	036050	032737	000400	002340		BIT	#IS.IDP, R.IS		;TEST FOR IDP BIT RESET	
6937	036056	001412				BEQ	500\$		;BRANCH IF RESET	
6938										
6939	036060	013737	002340	002736		MOV	R.IS, FP.ACT		;LOAD ACTUAL VALUE	
6940	036066	012737	000200	002734		MOV	#200, FP.EXP		;EXPECTED: IRY	
6941	036074					ERRHRD	8, M.IDP3, ER.REG		; 'IDP NOT RESET BY DRIVE CLEAR'	
	036074	104456				TRAP	C\$ERHRD			
	036076	000010				.WORD	8			
	036100	010365				.WORD	M.IDP3			
	036102	015016				.WORD	ER.REG			
6942										
6943	036104				500\$:	ENDSUB				
	036104				L10132:					
	036104	104403				TRAP	C\$ESUB			

ZDRMA0 DR70 REPAIR DIAGNOSTIC MACRO M1200 23-MAY-83 15:51 PAGE 193
TEST 21: CHECK INTERFACE STATUS IDP BIT

6945 036106

STARS

6946

6947

6948

6949

6950

6951

6952

6953

6954

6955 036106

STARS

6956

6957 036106

036106

036106 104402

6958

6959 036110 004737 015342

6960 036114 005737 003030

6961 036120 001405

6962

6963 036122

036122 104455

036124 000011

036126 011650

036130 015074

6964 036132

036132 104444

6965

6966 036134 005002

6967 036136 012701 000400

6968 036142 010137 002744

6969

6970 036146 010162 004054

6971 036152 012762 000000 003054

6972 036160 062702 000002

6973 036164 023702 002512

6974 036170 003366

6975

6976 036172 012700 177740

6977 036176 004737 015762

6978 036202 012777 000161 144066

6979 036210 012777 010020 144072

6980 036216 004737 015444

6981

6982 036222 004737 015606

6983 036226 032737 000400 002340

6984 036234 001014

6985

6986 036236 013737 002340 002736

6987 036244 012737 150600 002734

6988 036252

036252 104456

036254 000012

036256 010215

036260 015016

T21.3: BGNSUB

TRAP C\$BSUB

JSR PC,CLRMBC

TST MBCFLG

BEQ 100\$

;CLEAR MASSBUS CONTROLLER

;TEST FLAG FOR ERROR

;CONTINUE IF NO ERROR

ERRDF 9,M.MBC1,ER.DMP

;DEVICE FATAL

TRAP C\$ERDF

.WORD 9

.WORD M.MBC1

.WORD ER.DMP

DOCLN

;CLEAN UP AND EXIT

TRAP C\$DCLN

100\$:

CLP R2

;CLEAR BUFFER INDEX REGISTER

MOV #400,R1

;LOAD DATA PATTERN

MOV R1,FP.DPAT

;AND INITIALIZE DISP PARM

150\$:

MOV R1,OBUFF(R2)

;LOAD ODD HIGH BYTE EVEN LOW BYTE

MOV #0,IBUFF(R2)

;CLEAR INPUT BUFFER

ADD #2,R2

;AND BUMP INDEX

CMP D.MAX,R2

;COMPARE WITH MAX BUFFER INDEX

BGT 150\$

;CONTINUE UNTIL BUFFER INITIALIZED

200\$:

MOV #-40,R0

;LOAD BLOCK SIZE = 32 WORDS/BYTES

JSR PC,WRTINI

;INITIALIZE FOR INTERFACE WRITE

MOV #WIE.CMD,@A.CS1

;ISSUE INTERFACE WRITE

MOV #10020,@A.IS

;CYCLE REQUEST WITH INVERT PARITY

JSR PC,TSTINT

;WAIT FOR INTERRUPT OR TIME OUT

JSR PC,RDREG

;READ REGISTERS

BIT #IS.IDP,R.IS

;TEST IDP BIT SET

BNE 300\$

;BRANCH IF SET

MOV R.IS,FP.ACT

;LOAD ACTUAL VALUE

MOV #150600,FP.EXP

;EXPECTED: ATA, ERR, IP, IDP & IRY

ERRHRD 10,M.IDP1,ER.REG

;IDP BIT NOT SET BY PARITY ERROR"

TRAP C\$ERHRD

.WORD 10

.WORD M.IDP1

.WORD ER.REG

ZDRMA0 DR70 REPAIR DIAGNOSTIC MACRO M1200 23-MAY-83 15:51 PAGE 193-1
TEST 21: CHECK INTERFACE STATUS IDP BIT

6989

6990 036262 004737 016510

JSR

PC,DSPDPAT

;DISPLAY DATA PATTERN

ZDRMAO DR70 REPAIR DIAGNOSTIC MACRO M1200 23-MAY-83 15:51 PAGE 194
 TEST 21: CHECK INTERFACE STATUS IDP BIT

```

6992
6993 036266 004737 015464      300$: JSR    PC,CLRDRI      ;ISSUE INTERFACE CLEAR
6994 036272 005737 003032      TST    DRIFLG      ;TEST ERROR FLAG
6995 036276 001405              BEQ    400$      ;BRANCH IF OK
6996
6997 036300              ERRHRD  11,M.ISR2,ER.DMP      ;"INTERFACE STATUS ERROR ON CLEAR"
      036300 104456      TRAP    C$ERHRD
      036302 000013      .WORD   11
      036304 011572      .WORD   M.ISR2
      036306 015074      .WORD   ER.DMP
6998 036310 000416      BR      500$      ;EXIT TEST
6999
7000 036312 032737 000400 002340 400$: BIT    #IS.IDP,R.IS      ;TEST FOR IDP BIT RESET
7001 036320 001412              BEQ    500$      ;BRANCH IF RESET
7002
7003 036322 013737 002340 002736      MOV    R.IS,FP.ACT      ;LOAD ACTUAL VALUE
7004 036330 012737 000200 002734      MOV    #200,FP.EXP      ;EXPECTED: IRY
7005 036336              ERRHRD  12,M.IDP2,ER.REG      ;"IDP NOT RESET BY DRIVE CLEAR"
      036336 104456      TRAP    C$ERHRD
      036340 000014      .WORD   12
      036342 010277      .WORD   M.IDP2
      036344 015016      .WORD   ER.REG
7006
7007 036346              500$: ENDSUB
      036346              L10133:
      036346 104403      TRAP    C$ESUB
  
```

ZDRMAO DR70 REPAIR DIAGNOSTIC MACRO M1200 23-MAY-83 15:51 PAGE 195
TEST 21: CHECK INTERFACE STATUS IDP BIT

```

7009 036350          STARS
                      *****
7010          :
7011          :
7012          :
7013          :
7014          :
7015          :
7016          :
7017          :
7018          :
7019 036350          STARS
                      *****
7020          :
7021 036350          BGNSUB
7021 036350          T21.4:
7021 036350          TRAP      C$BSUB
7022          :
7023 036352 004737 015342      JSR      PC,CLRMBC      ;CLEAR MASSBUS CONTROLLER
7024 036356 005737 003030      TST      MBCFLG      ;TEST FLAG FOR ERROR
7025 036362 001405              BEQ      200$          ;CONTINUE IF NO ERROR
7026          :
7027 036364          ERRDF     13,M.MBC1,ER.DMP      ;DEVICE FATAL
7027 036364 104455          TRAP      C$ERDF
7027 036366 000015          .WORD     13
7027 036370 011650          .WORD     M.MBC1
7027 036372 015074          .WORD     ER.DMP
7028 036374          DOCLN
7028 036374 104444          TRAP      C$DCLN          ;CLEAN UP AND EXIT
7029          :
7030 036376 012700 177740      200$: MOV      #-40,R0      ;LOAD BLOCK SIZE = 32 WORDS/BYTES
7031 036402 004737 015674      JSR      PC,WRTBLK      ;WRITE BLOCK TO INTERFACE
7032 036406 004737 015410      JSR      PC,TSTMBC      ;READ REGISTERS AND TEST FOR ERROR
7033 036412 005737 003030      TST      MBCFLG      ;TEST ERROR FLAG
7034 036416 001404              BEQ      225$          ;BRANCH IF NO ERROR
7035          :
7036 036420          ERRHRD     14,M.WRD2,ER.DMP      ;'XFER ERROR ON INTERFACE WRITE'
7036 036420 104456          TRAP      C$ERHRD
7036 036422 000016          .WORD     14
7036 036424 007324          .WORD     M.WRD2
7036 036426 015074          .WORD     ER.DMP
7037          :
7038 036430 012700 177740      225$: MOV      #-40,R0      ;LOAD BLOCK SIZE = 32 WORDS/BYTES
7039 036434 004737 015726      JSR      PC,RDINI      ;INITIALIZE FOR INTERFACE READ
7040 036440 012777 000171 143630  MOV      #RIE.CMD,2A.CS1 ;ISSUE INTERFACE READ
7041 036446 012777 010020 143634  MOV      #10020,2A.IS ;CYCLE REQUEST WITH INVERT PARITY
7042 036454 004737 015444      JSR      PC,ISTINT      ;WAIT FOR INTERRUPT OR TIME OUT
7043          :
7044 036460 004737 015606          JSR      PC,RDREG      ;READ REGISTERS
7045 036464 032737 000400 002340  BIT      #IS.IDP,R.IS ;TEST IDP BIT SET
7046 036472 001014              BNE      400$          ;BRANCH IF SET
7047          :
7048 036474 013737 002340 002736  MOV      R.IS,FP.ACT ;LOAD ACTUAL VALUE
7049 036502 012737 150600 002734  MOV      #150600,FP.EXP ;EXPECTED: ATA, ERR, IP, IDP & IRY
7050 036510          ERRHRD     15,M.IDP1,ER.REG      ;'IDP BIT NOT SET BY PARITY ERROR'
7050 036510 104456          TRAP      C$ERHRD
7050 036512 000017          .WORD     15

```

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 TEST 21: CHECK INTERFACE STATUS IDP BIT

	036514	010215		.WORD	M.IDP1	
	036516	015016		.WORD	ER.REG	
7051						
7052	036520	004737	016510	JSR	PC,DSPDPAT	;DISPLAY DATA PATTERN
7053						
7054	036524	052777	000400 143556 400\$:	BIS	#IS.IDP, @A.IS	;WRITE TO INTERFACE STATUS IDP
7055	036532	004737	015606	JSR	PC, RDREG	;READ REGISTERS AND
7056	036536	032737	000400 002340	BIT	#IS.IDP, R.IS	;TEST FOR IDP BIT RESET
7057	036544	001412		BEQ	500\$	;BRANCH IF RESET
7058						
7059	036546	013737	002340 002736	MOV	R.IS, FP.ACT	;LOAD ACTUAL VALUE
7060	036554	012737	000200 002734	MOV	#200, FP.EXP	;EXPECTED: IRY
7061	036562			ERRHRD	16, M.IDP3, ER.REG	; "INTERFACE STATUS IDP NOT RESET"
	036562	104456		TRAP	C\$ERHRD	
	036564	000020		.WORD	16	
	036566	010365		.WORD	M.IDP3	
	036570	015016		.WORD	ER.REG	
7062						
7063	036572		500\$:	ENDSUB		
	036572		L10134:			
	036572	104403		TRAP	C\$ESUB	
7064						
7065	036574	004737	015324	JSR	PC, CLRISR	;CLEAR SERVICE ROUTINE VECTOR
7066						
7067	036600	004737	015550	JSR	PC, CLRTST	;AND CLEAR TEST DATA
7068						
7069	036604			ENDTST		
	036604		L10130:			
	036604	104401		TRAP	C\$ETST	

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 TEST 22: VERIFY SW4 DISABLES INTERFACE AT00 BIT ATTN

```

7071 .SBTTL TEST 22: VERIFY SW4 DISABLES INTERFACE AT00 BIT ATTN
7072 036606 STARS
*****
7073 TEST DESCRIPTION:
7074
7075     VERIFY SW4 IN 'OFF' POSITION WILL DISABLE
7076     USER ATTENTION BIT AT00 FROM ASSERTING ATA
7077
7078 TEST STEPS:
7079
7080     IF NOT REVA AND ATO DISABLED THEN:
7081         CLEAR MBC AND CHECK FOR ERROR
7082         ISSUE INTERFACE CLEAR CMD AND TEST FOR ERROR STATUS
7083         SET FS REGISTER FUNCTION BIT F0
7084         READ IS REGISTER AND CHECK AT00 BIT SET & ATA BIT RESET
7085
7086 ERROR CONDITIONS:
7087
7088     IS REGISTER AT00 & ATA BITS NOT SET/RESET PROPERLY
7089
7090 036606 STARS
*****
7091
7092 036606 BGNTST
7093 036606
7094         000036
7095         000001
7096
7097 036606 013700 003010      MOV     SELECT,R0      ;READ SELECT WORD
7098 036612 042700 000036      BIC     #SELMASK,R0      ;CLEAR DON'T CARE SELECT BITS
7099 036616 022700 000001      CMP     #SELTEST,R0      ;COMPARE AND
7100 036622 001402              BEQ     50$              ;BRANCH IF EQUAL
7101
7102 036624              EXIT     TST                      ;EXIT TEST
7103         036624 104432      TRAP    C$EXIT
7104         036626 000164      .WORD   L10135-.
7105
7106 036630 004737 015342      50$: JSR     PC,CLRMBC      ;CLEAR MASSBUS CONTROLLER
7107 036634 005737 003030      TST     MBCFLG      ;TEST FLAG FOR ERROR
7108 036640 001405              BEQ     100$          ;CONTINUE IF NO ERROR
7109
7110 036642              ERRDF   1,M.MBC1,ER.DMP      ;DEVICE FATAL
7111         036642 104455      TRAP    C$ERDF
7112         036644 000001      .WORD   1
7113         036646 011650      .WORD   M.MBC1
7114         036650 015074      .WORD   ER.DMP
7115
7116 036652              DOCLN                      ;CLEAN UP AND EXIT
7117         036652 104444      TRAP    C$DCLN

```

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 TEST 22: VERIFY SW4 DISABLES INTERFACE AT00 BIT ATTN

```

7111
7 12 036654 004737 015464      100$: JSR    PC,CLRDRI      ;CLEAR DRIVE AND TEST FOR ERROR
7 13 036660 005737 003032      TST    DRIFLG        ;TEST ERROR FLAG
7114 036664 001405              BEQ    150$          ;CONTINUE IF NO ERROR
7115
7116 036666              ERRHRD  2,M.ISR2,ER.DMP      ;"INTERFACE STATUS ERROR ON CLEAR CMD"
      036666 104456          TRAP    C$ERHRD
      036670 000002          .WORD   2
      036672 011572          .WORD   M.ISR2
      036674 015074          .WORD   ER.DMP
7117 036676 000443          BR      400$
7118
7119 036700 012777 000400 143376 150$: MOV    #FS.F0,@A.FS      ;SET FUNCTION BIT FS
7120 036706 017737 143376 002736      MOV    @A.IS,FP.ACT    ;READ REGISTER
7121 036714 012777 000000 143362      MOV    #0,@A.FS      ;CLEAR FS REGISTER
7122
7123 036722 012737 000201 002734 200$: MOV    #201,FP.EXP    ;LOAD EXPECTED: IRY & AT00
7124 036730 032737 100000 002736      BIT    #IS.ATA,FP.ACT  ;TEST FOR ATA RESET
7125 036736 001413          BEQ    300$          ;CONTINUE IF RESET
7126
7127 036740 013737 002420 002730      MOV    NA.IS,FP.NAM    ;LOAD REGISTER NAME ADDRESS
7128 036746 013737 002450 002746      MOV    BA.IS,FP.TBL    ;LOAD REGISTER EXPAND TABLE ADDRESS
7129 036754          ERRHRD  3,M.SW4,ER.REG      ;"SW4 DOES NOT INIHIBIT ATO BIT SET"
      036754 104456          TRAP    C$ERHRD
      036756 000003          .WORD   3
      036760 012153          .WORD   M.SW4
      036762 015016          .WORD   ER.REG
7130 036764 000410          BR      400$
7131
7132 036766 023737 002736 002734 300$: CMP    FP.ACT,FP.EXP    ;COMPARE VALUE
7133 036774 001404          BEQ    400$          ;IDENTICAL: EXIT TEST
7134
7135 036776          ERRHRD  4,M.ISR1,ER.DMP      ;"INTERFACE STATUS ERROR"
      036776 104456          TRAP    C$ERHRD
      037000 000004          .WORD   4
      037002 011543          .WORD   M.ISR1
      037004 015074          .WORD   ER.DMP
7136
7137 037006 004737 015550      400$: JSR    PC,CLRTST      ;AND CLEAR TEST DATA
7138
7139 037012          ENDTST
      037012          L10135:
      037012 104401          TRAP    C$ETST
  
```

ZDRMA0 DR70 REPAIR DIAGNOSTIC MACRO M1200 23-MAY-83 15:51 PAGE 198
 TEST 23: VERIFY SW5 DISABLES INTERFACE AT03 BIT

```

7141 .SBTTL TEST 23: VERIFY SW5 DISABLES INTERFACE AT03 BIT
7142 037014 STARS
*****
7143 TEST DESCRIPTION:
7144
7145     VERIFY SW5 IN 'OFF' POSITION WILL DISABLE
7146     USER ATTENTION BIT AT03 FROM ASSERTING ATA
7147
7148 TEST STEPS:
7149
7150     IF NOT REVA AND AT03 DISABLED THEN:
7151     CLEAR MBC AND CHECK FOR ERROR
7152     ISSUE INTERFACE CLEAR CMD AND TEST FOR ERROR STATUS
7153     SET FS REGISTER FUNCTION BIT F3
7154     READ IS REGISTER AND CHECK AT03 BIT SET & ATA BIT RESET
7155
7156 ERROR CONDITIONS:
7157
7158     IS REGISTER AT03 & ATA BITS NOT SET/RESET PROPERLY
7159
7160 037014 STARS
*****
7161
7162 037014 BGNTST
7163 037014 T23::
7164           SELMASK =      B.UPAR + B.BYTE + B.ABORT + B.ATO
7165           SELTEST =      B.AT3
7166
7167 037014 013700 003010      MOV      SELECT,R0          ;READ SELECT WORD
7168 037020 042700 000035      BIC      #SELMASK,R0        ;CLEAR DON'T CARE SELECT BITS
7169 037024 022700 000002      CMP      #SELTEST,R0        ;COMPARE AND
7170 037030 001402              BEQ      50$                ;BRANCH IF EQUAL
7171
7172 037032              EXIT      TST                        ;EXIT TEST
7173 037032 104432              TRAP     C$EXIT
7174 037034 000164              .WORD   L10136-.
7175
7176 037036 004737 015342      50$:   JSR      PC,CLRMBC        ;CLEAR MASSBUS CONTROLLER
7177 037042 005737 003030      TST      MBCFLG              ;TEST FLAG FOR ERROR
7178 037046 001405              BEQ      100$                ;CONTINUE IF NO ERROR
7179
7178 037050              ERRDF    1,M.MBC1,ER.DMP          ;DEVICE FATAL
7179 037050 104455              TRAP     C$ERDF
7179 037052 000001              .WORD   1
7179 037054 011650              .WORD   M.MBC1
7179 037056 015074              .WORD   ER.DMP
7179 037060              DOCLN
7179 037060 104444              TRAP     C$DCLN              ;CLEAN UP AND EXIT

```

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 TEST 23: VERIFY SW5 DISABLES INTERFACE AT03 BIT

7181												
7182	037062	004737	015464		100\$:	JSR	PC,CLRDRI				:CLEAR DRIVE AND TEST FOR ERROR	
7183	037066	005737	003032			TST	DRIFLG				:TEST ERROR FLAG	
7184	037072	001405				BEQ	150\$				:CONTINUE IF NO ERROR	
7185												
7186	037074					ERRHRD	2,M.ISR2,ER.DMP				: "INTERFACE STATUS ERROR ON CLEAR CMD"	
	037074	104456				TRAP	C\$ERHRD					
	037076	000002				.WORD	2					
	037100	011572				.WORD	M.ISR2					
	037102	015074				.WORD	ER.DMP					
7187	037104	000443				BR	400\$				:EXIT TEST	
7188												
7189	037106	012777	004000	143170	150\$:	MOV	#FS.F3, @A.FS				:SET FUNCTION BIT F3	
7190	037114	017737	143170	002736		MOV	@A.IS,FP.ACT				:READ REGISTER	
7191	037122	012777	000000	143154		MOV	#0, @A.FS				:CLEAR FS REGISTER	
7192												
7193	037130	012737	000210	002734	200\$:	MOV	#210,FP.EXP				:LOAD EXPECTED: IRY & AT3	
7194	037136	032737	100000	002736		BIT	#IS.ATA,FP.ACT				:TEST FOR ATA RESET	
7195	037144	001413				BEQ	300\$				:CONTINUE IF RESET	
7196												
7197	037146	013737	002420	002730		MOV	NA.IS,FP.NAM				:LOAD REGISTER NAME ADDRESS	
7198	037154	013737	002450	002746		MOV	BA.IS,FP.TBL				:LOAD REGISTER EXPAND TABLE ADDRESS.	
7199	037162					ERRHRD	3,M.SW5,ER.REG				: "SW5 DOES NOT INIHIBIT AT3 BIT SET"	
	037162	104456				TRAP	C\$ERHRD					
	037164	000003				.WORD	3					
	037166	012233				.WORD	M.SW5					
	037170	015016				.WORD	ER.REG					
7200	037172	000410				BR	400\$				:EXIT TEST	
7201												
7202	037174	023737	002736	002734	300\$:	CMP	FP.ACT,FP.EXP				:COMPARE VALUE	
7203	037202	001404				BEQ	400\$				:IDENTICAL: EXIT TEST	
7204												
7205	037204					ERRHRD	4,M.ISR1,ER.DMP				: "INTERFACE STATUS ERROR"	
	037204	104456				TRAP	C\$ERHRD					
	037206	000004				.WORD	4					
	037210	011543				.WORD	M.ISR1					
	037212	015074				.WORD	ER.DMP					
7206												
7207	037214	004737	015550		400\$:	JSR	PC,CLRTST				:AND CLEAR TEST DATA	
7208												
7209	037220					ENDTST						
	037220				L10136:							
	037220	104401				TRAP	C\$ETST					

ZDRMA0 DR70 REPAIR DIAGNOSTIC MACRO M1200 23-MAY-83 15:51 PAGE 200
 TEST 24: VERIFY SW6 DISABLES INTERFACE ABORT LOGIC

7211
 7212 037222

.SBTTL TEST 24: VERIFY SW6 DISABLES INTERFACE ABORT LOGIC
 STARS

7213

TEST DESCRIPTION:

7214

VERIFY SW6 IN 'OFF' POSITION WILL DISABLE
 USER ATTENTION TRANSFER ABORT LOGIC

7215

TEST STEPS:

7216

IF AT03 ABORT DISABLED AND NOT REVA THEN:
 CLEAR MASSBUS CONTROLLER AND CHECK FOR ERROR
 ISSUE INTERFACE WRITE W/INT ENABLE & SET CYCLE REQUEST
 SET FS REGISTER FUNCTION BIT F3 AND WAIT FOR INTERRUPT
 READ REGISTERS, CHECK IRY SET AND WORD COUNT IS ZERO

7217

ERROR CONDITIONS:

7218

CONTROLLER NOT CLEARED BY MASSBUS INIT
 INTERFACE STATUS ERROR
 DATA LATE ERROR; ADJUST BANDWIDTH
 SW1-6 DOES NOT DISABLE AT3 TRANSFER ABORT LOGIC

7219

7220

7221

7222

7223

7224

7225

7226

7227

7228

7229

7230

7231

7232

7233 037222

STARS

7234

7235 037222

037222

BGNTST

T24::

7236

7237 000033

7238 000004

7239

7240 037222 013700 003010

7241 037226 042700 000033

7242 037232 022700 000004

7243 037236 001402

7244

7245 037240

037240 104432

037242 000244

SELMASK = B.UPAR + B.BYTE + B.AT3 + B.AT0
 SELTEST = B.ABORT
 MOV SELECT,R0 ;READ SELECT WORD
 BIC #SELSMASK,R0 ;MASK DON'T CARE SELECT BITS
 CMP #SELTEST,R0 ;COMPARE AND
 BEQ 50\$;BRANCH IF EQUAL

EXIT TST ;EXIT TEST
 TRAP C\$EXIT
 .WORD L!0137-

7246

7247 037244 004737 015274

7248

7249 037250 004737 015342

7250 037254 005737 003030

7251 037260 001405

7252

7253 037262

037262 104455

037264 000001

037266 011650

037270 015074

7254 037272

037272 104444

50\$: JSR PC,SETISR ;SETUP ISR VECTOR
 JSR PC,CLRMBIC ;CLEAR MASSBUS CONTROLLER
 TST MBCFLG ;TEST FLAG FOR ERROR
 BEQ 100\$;CONTINUE IF NO ERROR

ERRDF 1,M.MBC1,ER.DMP ;DEVICE FATAL
 TRAP C\$ERRDF
 .WORD 1
 .WORD M.MBC1
 .WORD ER.DMP
 DOCLN ;CLEAN UP AND EXIT
 TRAP C\$DOCLN

Address	Op Code	Op 2	Op 3	Op 4	Op 5	Op 6	Op 7	Op 8	Op 9	Op 10	Op 11	Op 12	Op 13	Op 14	Op 15	Op 16	Op 17	Op 18	Op 19	Op 20	Op 21	Op 22	Op 23	Op 24	Op 25	Op 26	Op 27	Op 28	Op 29	Op 30	Op 31	Op 32	Op 33	Op 34	Op 35	Op 36	Op 37	Op 38	Op 39	Op 40	Op 41	Op 42	Op 43	Op 44	Op 45	Op 46	Op 47	Op 48	Op 49	Op 50	Op 51	Op 52	Op 53	Op 54	Op 55	Op 56	Op 57	Op 58	Op 59	Op 60	Op 61	Op 62	Op 63	Op 64	Op 65	Op 66	Op 67	Op 68	Op 69	Op 70	Op 71	Op 72	Op 73	Op 74	Op 75	Op 76	Op 77	Op 78	Op 79	Op 80	Op 81	Op 82	Op 83	Op 84	Op 85	Op 86	Op 87	Op 88	Op 89	Op 90	Op 91	Op 92	Op 93	Op 94	Op 95	Op 96	Op 97	Op 98	Op 99	Op 100	Op 101	Op 102	Op 103	Op 104	Op 105	Op 106	Op 107	Op 108	Op 109	Op 110	Op 111	Op 112	Op 113	Op 114	Op 115	Op 116	Op 117	Op 118	Op 119	Op 120	Op 121	Op 122	Op 123	Op 124	Op 125	Op 126	Op 127	Op 128	Op 129	Op 130	Op 131	Op 132	Op 133	Op 134	Op 135	Op 136	Op 137	Op 138	Op 139	Op 140	Op 141	Op 142	Op 143	Op 144	Op 145	Op 146	Op 147	Op 148	Op 149	Op 150	Op 151	Op 152	Op 153	Op 154	Op 155	Op 156	Op 157	Op 158	Op 159	Op 160	Op 161	Op 162	Op 163	Op 164	Op 165	Op 166	Op 167	Op 168	Op 169	Op 170	Op 171	Op 172	Op 173	Op 174	Op 175	Op 176	Op 177	Op 178	Op 179	Op 180	Op 181	Op 182	Op 183	Op 184	Op 185	Op 186	Op 187	Op 188	Op 189	Op 190	Op 191	Op 192	Op 193	Op 194	Op 195	Op 196	Op 197	Op 198	Op 199	Op 200	Op 201	Op 202	Op 203	Op 204	Op 205	Op 206	Op 207	Op 208	Op 209	Op 210	Op 211	Op 212	Op 213	Op 214	Op 215	Op 216	Op 217	Op 218	Op 219	Op 220	Op 221	Op 222	Op 223	Op 224	Op 225	Op 226	Op 227	Op 228	Op 229	Op 230	Op 231	Op 232	Op 233	Op 234	Op 235	Op 236	Op 237	Op 238	Op 239	Op 240	Op 241	Op 242	Op 243	Op 244	Op 245	Op 246	Op 247	Op 248	Op 249	Op 250	Op 251	Op 252	Op 253	Op 254	Op 255	Op 256	Op 257	Op 258	Op 259	Op 260	Op 261	Op 262	Op 263	Op 264	Op 265	Op 266	Op 267	Op 268	Op 269	Op 270	Op 271	Op 272	Op 273	Op 274	Op 275	Op 276	Op 277	Op 278	Op 279	Op 280	Op 281	Op 282	Op 283	Op 284	Op 285	Op 286	Op 287	Op 288	Op 289	Op 290	Op 291	Op 292	Op 293	Op 294	Op 295	Op 296	Op 297	Op 298	Op 299	Op 300	Op 301	Op 302	Op 303	Op 304	Op 305	Op 306	Op 307	Op 308	Op 309	Op 310	Op 311	Op 312	Op 313	Op 314	Op 315	Op 316	Op 317	Op 318	Op 319	Op 320	Op 321	Op 322	Op 323	Op 324	Op 325	Op 326	Op 327	Op 328	Op 329	Op 330	Op 331	Op 332	Op 333	Op 334	Op 335	Op 336	Op 337	Op 338	Op 339	Op 340	Op 341	Op 342	Op 343	Op 344	Op 345	Op 346	Op 347	Op 348	Op 349	Op 350	Op 351	Op 352	Op 353	Op 354	Op 355	Op 356	Op 357	Op 358	Op 359	Op 360	Op 361	Op 362	Op 363	Op 364	Op 365	Op 366	Op 367	Op 368	Op 369	Op 370	Op 371	Op 372	Op 373	Op 374	Op 375	Op 376	Op 377	Op 378	Op 379	Op 380	Op 38
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TEST 25: USER DATA WORD BLOCK TRANSFER

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7300 .SBTTL TEST 25: USER DATA WORD BLOCK TRANSFER
7301 037510 STARS
:*****
7302 :
7303 : TEST DESCRIPTION:
7304 :
7305 :     PERFORM 64-WORD DMA DATA TRANSFERS, WITH USER SPECIFIED PATTERN
7306 :     COMPARE DATA READ AGAINST DATA WRITTEN
7307 :
7308 : TEST STEPS:
7309 :
7310 :     IF NOT BYTE MODE AND DPFLG THEN:
7311 :         SETUP INTERRUPT SERVICE ROUTINE VECTOR
7312 :         GET DATA PATTERN FROM OPERATOR, AND SETUP BUFFER PATTERN
7313 :         EXECUTE SUBTEST 1 AND CLEAR INTERRUPT VECTOR
7314 :         TEST FOR OPERATOR CONTROL/C TO EXIT
7315 :
7316 : ERROR CONDITIONS:
7317 :
7318 :     MASSBUS CONTROLLER ERROR STATUS
7319 :     DATA TRANSFER NOT COMPLETE
7320 :     NO INTERRUPT ON DATA TRANSFER COMPLETE
7321 :     DATA RECEIVED DOES NOT MATCH EXPECTED DATA
7322 037510 STARS
:*****
7323 :
7324 037510 BGNTST
7325 037510 T25::
7326 000010 SELTEST = B.BYTE
7327 :
7328 037510 005737 002242 TST DPFLG ;TEST DP FLAG
7329 037514 001002 BNE 25$ ;BRANCH IF SET
7330 :
7331 037516 EXIT TST ;FLAG NOT SET: EXIT TEST
7332 037516 104432 TRAP C$EXIT
7333 037520 000514 .WORD L10140-.
7334 :
7335 037522 013700 003010 25$: MOV SELECT,R0 ;READ SELECT WORD
7336 037526 032700 000010 BIT #SELTEST,R0 ;AND TEST BYTE MODE BIT SET
7337 037532 001402 BEQ 50$ ;BRANCH IF NOT SET
7338 :
7339 037534 EXIT TST ;BYTE MODE: EXIT TEST
7340 037534 104432 TRAP C$EXIT
7341 037536 000476 .WORD L10140-.
7342 :
7343 037540 004737 015274 50$: JSR PC,SETISR ;SETUP INTERRUPT SERVICE VECTOR
7344 037544 012737 000000 002514 MOV #0,D.WDP ;CLEAR USER DATA PATTERN
7345 037552 012737 000100 002506 MOV #100,D.BLOCK ;INITIALIZE BLOCK SIZE
7346 037560 012737 000200 002512 MOV #200,D.MAX ;INITIALIZE MAX DATA BUFFER INDEX
7347 :
7348 037566 104443 100$: GMANID Q.WDP,D.WDP,0,-1,0,177777,YES
7349 037570 000406 TRAP C$GMAN
7350 037572 002514 BR 10000$
7351 037574 000032 .WORD D.WDP
7352 037576 014220 .WORD T$CODE
7353 .WORD Q.WDP

```

ZDRMA0 DR70 REPAIR DIAGNOSTIC MACRO M1200 23-MAY-83 15:51 PAGE 202-1
 TEST 25: USER DATA WORD BLOCK TRANSFER

	037600	177777		.WORD	-1	
	037602	000000		.WORD	T\$LOLIM	
	037604	177777		.WORD	T\$HILIM	
	037606		10000\$:			
7345						
7346	037606		200\$:	GMANID	Q.WBL,D.BLOCK,D,-1,1,100,YES	
	037606	104443		TRAP	C\$GMAN	
	037610	000406		BR	10001\$	
	037612	002506		.WORD	D.BLOCK	
	037614	000052		.WORD	T\$CODE	
	037616	014274		.WORD	Q.WBL	
	037620	177777		.WORD	-1	
	037622	000001		.WORD	T\$LOLIM	
	037624	000100		.WORD	T\$HILIM	
	037626		10001\$:			
7347						
7348	037626	013701	002506	MOV	D.BLOCK,R1	:LOAD USER BLOCK SIZE
7349	037632	006301		ASL	R1	:DOUBLE FOR ADDRESS INDEX
7350	037634	010137	002512	MOV	R1,D.MAX	:AND SAVE AS MAX INDEX
7351	037640	005437	002506	NEG	D.BLOCK	:COMPLEMENT
7352						
7353	037644	005002		LP.WDP:	CLR R2	:WORD PATTERN LOOP LABEL
7354	037646	013701	002514	MOV	D.WDP,R1	:LOAD DATA PATTERN
7355	037652	010137	002744	MOV	R1,FP.DPAT	:INITIALIZE DISPLAY PARM
7356						
7357	037656	010162	004054	250\$:	MOV R1,0BUF(R2)	:LOAD USER PATTERN INTO BUFFER
7358	037662	012762	000000	MOV	#0,IBUF(R2)	:CLEAR INPUT BUFFER
7359	037670	062702	000002	ADD	#2,R2	:AND BUMP INDEX
7360	037674	023702	002512	CMP	D.MAX,R2	:COMPARE WITH MAX BUFFER INDEX
7361	037700	003366		BGT	250\$	:CONTINUE UNTIL BUFFER INITIALIZED

ZDRMA0 DR70 REPAIR DIAGNOSTIC MACRO M1200 23-MAY-83 15:51 PAGE 203
TEST 25: USER DATA WORD BLOCK TRANSFER

7363 037702

STARS

:*****

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7373

7374

7375

7376

7377

7378

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7380 037702

STARS

:*****

7381

7382 037702

037702

037702 104402

7383

7384 037704 004737 015342

7385 037710 005737 003030

7386 037714 001405

7387

7388 037716

037716 104455

037720 000001

037722 011650

037724 015074

7389 037726

037726 104444

7390

7391 037730 005002

7392

7393 037732 013700 002506

7394 037736 004737 015674

7395 037742 004737 015410

7396 037746 005737 003022

7397 037752 001005

7398

7399 037754

037754 104456

037756 000002

037760 010706

037762 015074

7400 037764 000407

7401

7402 037766 005737 003030

7403 037772 001404

7404

7405 037774

037774 104456

T25.1: BGNSUB

TRAP C\$BSUB

JSR PC,CLRMBC

TST MBCFLG

BEQ 100\$

ERRDF 1,M.MBC1,ER.DMP

TRAP C\$ERDF

.WORD 1

.WORD M.MBC1

.WORD ER.DMP

DOCLN

TRAP C\$DCLN

100\$: CLR R2

200\$: MOV D.BLOCK,R0

JSR PC,WRIBLK

JSR PC,TSTMBC

TST INTFLG

BNE 250\$

ERRHRD 2,M.INT1,ER.DMP

TRAP C\$ERHRD

.WORD 2

.WORD M.INT1

.WORD ER.DMP

BR 300\$

250\$: TST MBCFLG

BEQ 300\$

ERRHRD 3,M.WRD2,ER.DMP

TRAP C\$ERHRD

;CLEAR MASSBUS CONTROLLER

;TEST FLAG FOR ERROR

;CONTINUE IF NO ERROR

;DEVICE FATAL

;CLEAN UP AND EXIT

;CLEAR BUFFER INDEX REGISTER

;LOAD BLOCK SIZE

;WRITE BLOCK TO INTERFACE

;READ REGISTERS AND TEST ERRORS

;TEST FOR INTERRUPT

;BRANCH IF INTERRUPT RECEIVED

; 'NOT INTERRUPT ON WORD XFER EBL'

;EXIT SEGMENT

;TEST FOR ERROR

;CONTINUE IF RESET

; 'WORD XFER ERROR ON INTERFACE WRITE'

ZDRMAO DR70 REPAIR DIAGNOSTIC MACRO M1200 23-MAY-83 15:51 PAGE 203-1
 TEST 25: USER DATA WORD BLOCK TRANSFER

	037776	000003		.WORD	3	
	040000	007324		.WORD	M.WRD2	
	040002	015074		.WORD	ER.DMP	
7406						
7407	040004	013700	002506	300\$:	MOV	D.BLOCK,R0
7408	040010	004737	015642		JSR	PC,RDBLK
7409	040014	004737	015410		JSR	PC,TSTMBC
7410	040020	005737	003022		TST	INTFLG
7411	040024	001005			BNE	350\$
7412						
7413	040026			ERRHRD	4,M.INT1,ER.DMP	
	040026	104456		TRAP	C\$ERHRD	
	040030	000004		.WORD	4	
	040032	010706		.WORD	M.INT1	
	040034	015074		.WORD	ER.DMP	
7414	040036	000407		BR	400\$	
7415						
7416	040040	005737	003030	350\$:	TST	MBCFLG
7417	040044	001404			BEQ	400\$
7418						
7419	040046			ERRHRD	5,M.WRD3,ER.DMP	
	040046	104456		TRAP	C\$ERHRD	
	040050	000005		.WORD	5	
	040052	007373		.WORD	M.WRD3	
	040054	015074		.WORD	ER.DMP	

;LOAD BLOCK SIZE
 ;READ BLOCK FROM INTERFACE
 ;READ REGISTERS AND TEST ERRORS
 ;TEST FOR INTERRUPT
 ;BRANCH IF INTERRUPT RECEIVED
 ;'NOT INTERRUPT ON WORD XFER EBL'
 ;EXIT SEGMENT
 ;TEST FOR ERROR
 ;CONTINUE IF RESET
 ;'WORD XFER ERROR ON INTERFACE READ''

ZDRMA0 DR70 REPAIR DIAGNOSTIC MACRO M1200 23-MAY-83 15:51 PAGE 204
 TEST 25: USER DATA WORD BLOCK TRANSFER

7421											
7422	040056	005002			400\$:	CLR	R2				;CLEAR BUFFER INDEX REGISTER
7423	040060	005037	003026			CLR	ERRFLG				;CLEAR ERROR COUNT
7424											
7425	040064	026262	003054	004054	425\$:	CMP	IBUF(R2),OBUF(R2)				;COMPARE DATA
7426	040072	001427				BEQ	475\$				;IDENTICAL: CONTINUE
7427											
7428	040074	005737	003026			TST	ERRFLG				;TEST ERROR COUNT
7429	040100	001004				BNE	450\$				;BRANCH IF NOT FIRST ERROR
7430											
7431	040102					ERRHRD	6,M.WRD4,ER.DATA				; 'DATA COMPARISON ERROR'
	040102	104456				TRAP	C\$ERHRD				
	040104	000006				.WORD	6				
	040106	007441				.WORD	M.WRD4				
	040110	015172				.WORD	ER.DATA				
7432											
7433	040112	005237	003026		450\$:	INC	ERRFLG				;BUMP ERROR COUNT
7434	040116	022737	000010	003026		CMP	#8,ERRFLG				;COMPARE WITH MAX ERROR COUNT
7435	040124	002412				BLT	475\$				;BRANCH IF MAX LESS THAN COUNT
7436											
7437	040126	010237	002742			MOV	R2,FP.NDX				;SAVE DATA INDEX
7438	040132	016237	003054	002736		MOV	IBUF(R2),FP.ACT				;SAVE RECEIVED DATA
7439	040140	016237	004054	002734		MOV	OBUF(R2),FP.EXP				;SAVE DATA SENT
7440	040146	004737	016374			JSR	PC,DSPDATA				;AND DISPLAY DATA
7441											
7442	040152	062702	000002		475\$:	ADD	#2,R2				;BUMP INDEX
7443	040156	023702	002512			CMP	D.MAX,R2				;COMPARE WITH MAX BUFFER INDEX
7444	040162	003340				BGT	425\$				;CONTINUE UNTIL INDEX EQUALS MAX
7445											
7446	040164	005737	003026		500\$:	TST	ERRFLG				;TEST NUMBER ERRORS
7447	040170	001414				BEQ	600\$				;BRANCH IF NO ERRORS
7448											
7449	040172					PRINTX	#F.ERCNT,ERRFLG				;PRINT SUBTEST ERROR COUNT
	040172	013746	003026			MOV	ERRFLG,-(SP)				
	040176	012746	013304			MOV	#F.ERCNT,-(SP)				
	040202	012746	000002			MOV	#2,-(SP)				
	040206	010600				MOV	SP,R0				
	040210	104415				TRAP	C\$PNTX				
	040212	062706	000006			ADD	#6,SP				
7450	040216	005237	003004			INC	ERRCNT				;ADD TO TEST ERROR COUNT
7451											
7452	040222				600\$:	ENDSUB					
	040222				L10141:						
	040222	104403				TRAP	C\$ESUB				
7453											
7454	040224					BREAK					;TEST FOR CONTROL/C
	040224	104422				TRAP	C\$BRK				
7455											
7456	040226	000606				BR	LP.WDP				;LOOP BACK
7457											
7458	040230	004737	015550		700\$:	JSR	PC,CLRTST				;AND CLEAR TEST DATA
7459											
7460	040234					ENDTST					;END OF TEST
	040234				L10140:						
	040234	104401				TRAP	C\$ETST				

ZDRMAN DR70 REPAIR DIAGNOSTIC MACRO M1200 23-MAY-83 15:51 PAGE 205
 TEST 26: USER DATA BYTE BLOCK TRANSFER

7462
 7463 040236

.SBTTL TEST 26: USER DATA BYTE BLOCK TRANSFER

STARS

TEST DESCRIPTION:

PERFORM 64-BYTE DMA DATA TRANSFERS, WITH USER SPECIFIED PATTERN
 COMPARE DATA READ AGAINST DATA WRITTEN

TEST STEPS:

IF BYTE MODE AND DPFLG THEN:

SETUP INTERRUPT SERVICE ROUTINE VECTOR
 GET DATA PATTERN FROM OPERATOR, AND SETUP BUFFER PATTERN
 EXECUTE SUBTEST 1 AND CLEAR INTERRUPT VECTOR
 TEST FOR OPERATOR CONTROL/C TO EXIT

ERROR CONDITIONS:

MASSBUS CONTROLLER ERROR STATUS
 DATA TRANSFER NOT COMPLETE
 NO INTERRUPT ON DATA TRANSFER COMPLETE
 DATA RECEIVED DOES NOT MATCH EXPECTED DATA

STARS

7485
 7486 040236
 040236

BGNTST

T26::

7487
 7488 000010
 7489
 7490 040236 005737 002242
 7491 040242 001002
 7492
 7493 040244
 040244 104432
 040246 000536

SELTEST = B.BYTE

TST DPFLG ;TEST DP FLAG
 BNE 25\$;BRANCH IF SET

EXIT TST ;FLAG NOT SET: EXIT TEST
 TRAP C\$EXIT
 .WORD L10142-

7494
 7495 040250 013700 003010
 7496 040254 032700 000010
 7497 040260 001002
 7498
 7499 040262
 040262 104432
 040264 000520

25\$: MOV SELECT,RO ;READ SELECT WORD
 BIT #SELTEST,RO ;AND TEST BYTE MODE BIT SET
 BNE 50\$;BRANCH IF SET

EXIT TST ;BYTE MODE: EXIT TEST
 TRAP C\$EXIT
 .WORD L10142-

7500
 7501 040266 004737 015274
 7502 040272 012737 000000 002516
 7503 040300 012737 000100 002506
 7504 040306 012737 000100 002512
 7505

50\$: JSR PC,SETISR ;SETUP INTERRUPT SERVICE VECTOR
 MOV #0,D.BDP ;RESET USER DATA PATTERN
 MOV #100,D.BLOCK ;INITIALIZE BLOCK SIZE
 MOV #100,D.MAX ;INITIALIZE MAX DATA BUFFER INDEX

7506 040314
 040314 104443
 040316 000406
 040320 002516
 040322 000032
 040324 014246

100\$: CMANID Q.BDP,D.BDP,0,-1,0,377,YES
 TRAP C\$GMAN
 BR 10000\$
 .WORD D.BDP
 .WORD T\$CODE
 .WORD Q.BDP

ZDRMAO DR70 REPAIR DIAGNOSTIC MACRO M1200 23-MAY-83 15:51 PAGE 205-1
 TEST 26: USER DATA BYTE BLOCK TRANSFER

040326	177777			.WORD	-1	
040330	000000			.WORD	T\$LOLIM	
040332	000377			.WORD	T\$HILIM	
040334						
7507				10000\$:		
7508	040334	005001		CLR	R1	;CLEAR REGISTER
7509	040336	113701	002516	MOVB	D.BDP,R1	;LOAD BYTE PATTERN
7510	040342	000301		SWAB	R1	;SWAP BYTES
7511	040344	050137	002516	BIS	R1,D.BDP	;SETUP HIGH BYTE
7512						
7513	040350			200\$:	GMANID	Q.BBL,D.BLOCK,D,-1,10,100,YES
	040350	104443		TRAP	C\$GMAN	
	040352	000406		BR	10001\$	
	040354	002506		.WORD	D.BLOCK	
	040356	000052		.WORD	T\$CODE	
	040360	014314		.WORD	Q.BBL	
	040362	177777		.WORD	-1	
	040364	000010		.WORD	T\$LOLIM	
	040366	000100		.WORD	T\$HILIM	
	040370			10001\$:		
7514						
7515	040370	013701	002506	MOV	D.BLOCK,R1	;LOAD USER BLOCK SIZE
7516	040374	042701	000001	BIC	#1,R1	;INSURE NUMBER OF BYTES IS EVEN
7517	040400	010137	002512	MOV	R1,D.MAX	;SAVE AS MAX INDEX
7518	040404	006201		ASR	R1	;DIVIDE BY TWO
7519	040406	005401		NEG	R1	;COMPLEMENT
7520	040410	010137	002506	MOV	R1,D.BLOCK	;AND RESTORE
7521						
7522	040414	005002		LP.BDP:	CLR	R2
7523	040416	013701	002516	MOV	D.BDP,R1	;WORD PATTERN LOOP LABEL
7524	040422	010137	002744	MOV	R1,FP.DPAT	;LOAD DATA PATTERN
7525						;INITIALIZE DISPLAY PATTERN
7526	040426	010162	004054	250\$:	MOV	R1,0BUF(R2)
7527	040432	012762	000000	MOV	#0,IBUF(R2)	;LOAD USER PATTERN INTO BUFFER
7528	040440	062702	000002	ADD	#2,R2	;CLEAR INPUT BUFFER
7529	040444	023702	002512	CMP	D.MAX,R2	;AND BUMP INDEX
7530	040450	003366		BGT	250\$	;COMPARE WITH MAX BUFFER INDEX
						;CONTINUE UNTIL BUFFER INITIALIZED

ZDRMAO DR70 REPAIR DIAGNOSTIC MACRO M1200 23-MAY-83 15:51 PAGE 206
 TEST 26: USER DATA BYTE BLOCK TRANSFER

7532 040452

STARS

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7549 040452

STARS

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7551 040452

040452

040452 104402

7552

7553 040454 004737 015342

7554 040460 005737 003030

7555 040464 001405

7556

7557 040466

040466 104455

040470 000001

040472 011650

040474 015074

7558 040476

040476 104444

7559

7560 040500 005002

7561

7562 040502 013700 002506

7563 040506 004737 015674

7564 040512 004737 015410

7565 040516 005737 003022

7566 040522 001005

7567

7568 040524

040524 104456

040526 000002

040530 010706

040532 015074

7569 040534 000407

7570

7571 040536 005737 003030

7572 040542 001404

7573

7574 040544

040544 104456

T26.1: BGNSUB

TRAP C\$BSUB

JSR PC,CLRMBC ;CLEAR MASSBUS CONTROLLER

TST MBCFLG ;TEST FLAG FOR ERROR

BEQ 100\$;CONTINUE IF NO ERROR

ERRDF 1,M.MBC1,ER.DMP ;DEVICE FATAL

TRAP C\$ERDF

.WORD 1

.WORD M.MBC1

.WORD ER.DMP

DOCLN ;CLEAN UP AND EXIT

TRAP C\$DCLN

100\$: CLR R2 ;CLEAR BUFFER INDEX REGISTER

200\$: MOV D.BLOCK,R0 ;LOAD BLOCK SIZE

JSR PC,WRTBLK ;WRITE BLOCK TO INTERFACE

JSR PC,TSTMBC ;READ REGISTERS AND TEST ERRORS

TST INTFLG ;TEST FOR INTERRUPT

BNE 250\$;BRANCH IF INTERRUPT RECEIVED

ERRHRD 2,M.INT1,ER.DMP ;'NOT INTERRUPT ON WORD XFER EBL'

TRAP C\$ERHRD

.WORD 2

.WORD M.INT1

.WORD ER.DMP

BR 300\$;EXIT SEGMENT

250\$: TST MBCFLG ;TEST FOR ERROR

BEQ 300\$;CONTINUE IF RESET

ERRHRD 3,M.BYT2,ER.DMP ;'WORD XFER ERROR ON INTERFACE WRITE'

TRAP C\$ERHRD

ZDRMAO DR70 REPAIR DIAGNOSTIC MACRO M1200 23-MAY-83 15:51 PAGE 206-1
 TEST 26: USER DATA BYTE BLOCK TRANSFER

	040546	000003		.WORD	3	
	040550	007533		.WORD	M.BYT2	
	040552	015074		.WORD	ER.DMP	
7575						
7576	040554	013700	002506	300\$:	MOV	D.BLOCK,R0
7577	040560	004737	015642		JSR	PC,RDBLK
7578	040564	004737	015410		JSR	PC,TSTMBC
7579	040570	005737	003022		TST	INTFLG
7580	040574	001005			BNE	350\$
7581						
7582	040576				ERRHRD	4,M.INT1,ER.DMP
	040576	104456			TRAP	C\$ERHRD
	040600	000004			.WORD	4
	040602	010706			.WORD	M.INT1
	040604	015074			.WORD	ER.DMP
7583	040606	000407			BR	400\$
7584						
7585	040610	005737	003030	350\$:	TST	MBCFLG
7586	040614	001404			BEQ	400\$
7587						
7588	040616				ERRHRD	5,M.BYT3,ER.DMP
	040616	104456			TRAP	C\$ERHRD
	040620	000005			.WORD	5
	040622	007602			.WORD	M.BYT3
	040624	015074			.WORD	ER.DMP

						;LOAD BLOCK SIZE
						;READ BLOCK FROM INTERFACE
						;READ REGISTERS AND TEST ERRORS
						;TEST FOR INTERRUPT
						;BRANCH IF INTERRUPT RECEIVED
						;'NOT INTERRUPT ON WORD XFER EBL''
						;EXIT SEGMENT
						;TEST FOR ERROR
						;CONTINUE IF RESET
						;'WORD XFER ERROR ON INTERFACE READ''

Address	Op-Code	Register	Index	Label	Instruction	Comment
7590						
7591	040626	005002		400\$:	CLR R2	;CLEAR BUFFER INDEX REGISTER
7592	040630	005037	003026		CLR ERRFLG	;CLEAR ERROR COUNT
7593						
7594	040634	026262	003054	004054	425\$: CMP IBUF(R2),OBUF(R2)	;COMPARE DATA
7595	040642	001427			BEQ 475\$	;IDENTICAL: CONTINUE
7596						
7597	040644	005737	003026		TST ERRFLG	;TEST ERROR COUNT
7598	040650	001004			BNE 450\$	;BRANCH IF NOT FIRST ERROR
7599						
7600	040652				ERRHRD 6,M.BYT4,ER.DATA	; 'DATA COMPARISON ERROR'
	040652	104456			TRAP C\$ERHRD	
	040654	000006			.WORD 6	
	040656	007650			.WORD M.BYT4	
	040660	015172			.WORD ER.DATA	
7601						
7602	040662	005237	003026		450\$: INC ERRFLG	;BUMP ERROR COUNT
7603	040666	022737	000010	003026	CMP #8,ERRFLG	;COMPARE WITH MAX ERROR COUNT
7604	040674	002412			BLT 475\$	;BRANCH IF MAX LESS THAN COUNT
7605						
7606	040676	010237	002742		MOV R2,FP.NDX	;SAVE DATA INDEX
7607	040702	016237	003054	002736	MOV IBUF(R2),FP.ACT	;SAVE RECEIVED DATA
7608	040710	016237	004054	002734	MOV OBUF(R2),FP.EXP	;SAVE DATA SENT
7609	040716	004737	016374		JSR PC,DSPDATA	;AND DISPLAY DATA
7610						
7611	040722	062702	000002		475\$: ADD #2,R2	;BUMP INDEX
7612	040726	023702	002512		CMP D.MAX,R2	;COMPARE WITH MAX BUFFER INDEX
7613	040732	003340			BGT 425\$	;CONTINUE UNTIL INDEX EQUALS MAX
7614						
7615	040734	005737	003026		500\$: TST ERRFLG	;TEST NUMBER ERRORS
7616	040740	001414			BEQ 600\$	;BRANCH IF NO ERRORS
7617						
7618	040742				PF.INTX #F.ERCNT,ERRFLG	;PRINT SUBTEST ERROR COUNT
	040742	013746	003026		MOV ERRFLG,-(SP)	
	040746	012746	013304		MOV #F.ERCNT,-(SP)	
	040752	012746	000002		MOV #2,-(SP)	
	040756	010600			MOV SP,R0	
	040760	104415			TRAP C\$PNTX	
	040762	062706	000006		ADD #6,SP	
7619	040766	005237	003004		INC ERRCNT	;ADD TO TEST ERROR COUNT
7620						
7621	040772				600\$: ENDSUB	
	040772			L10143:	TRAP C\$ESUB	
	040772	104403				
7622						
7623	040774				BREAK	;TEST FOR CONTROL/C
	040774	104422			TRAP C\$BRK	
7624						
7625	040776	000606			BR LP.BDP	;LOOP BACK
7626						
7627	041000	004737	015550		700\$: JSR PC,CLRTST	;AND CLEAR TEST DATA
7628						
7629	041004				ENDTST	;END OF TEST
	041004			L10142:		
	041004	104401			TRAP C\$ETST	

ZDRMA0 DR70 REPAIR DIAGNOSTIC MACRO M1200 23-MAY-83 15:51 PAGE 208
 TEST 27: ADJUST TRANSFER BANDWIDTH

7631
 7632 041006

.SBTTL TEST 27: ADJUST TRANSFER BANDWIDTH
 STARS

7633

TEST DESCRIPTION:

7634

MANUAL TEST FOR ADJUSTING SCLK PERIOD
 LOOP ON 64 WORD WRITE

7635

7636

7637

7638

7639

7640

7641

7642

7643

7644

7645 041006

TEST STEPS:

IF BWFLG SET THEN: REPEAT
 CLEAR MASSBUS CONTROLLER AND CHECK FOR ERROR
 INITIALIZE REGISTERS FOR READ W/INT ENABLE
 SET CYCLE REQUEST, DELAY AND READ REGISTERS

STARS

7646

7647 041006

041006

BGNTST

T27::

7648

7649 041006 005737 002244

7650 041012 001002

7651

7652 041014

041014 104432

041016 000110

TST BWFLG ;TEST BW FLAG
 BNE 50\$;BRANCH IF SET
 EXIT TST ;FLAG NOT SET: EXIT TEST
 TRAP C\$EXIT
 .WORD L10144-

7653

7654 041020 004737 015342

7655 041024 005737 003030

7656 041030 001405

7657

7658 041032

041032 104455

041034 000001

041036 011650

041040 015074

50\$: JSR PC,CLRMBL ;CLEAR MASSBUS CONTROLLER
 TST MBLFLG ;TEST FLAG FOR ERROR
 BEQ 100\$;CONTINUE IF NO ERROR

ERRDF 1,M.MBC1,ER.DMP ;DEVICE FATAL
 TRAP C\$ERRDF
 .WORD 1
 .WORD M.MBC1
 .WORD ER.DMP
 DOCLN
 TRAP C\$DOCLN ;CLEAN UP AND EXIT

7659 041042

041042 104444

7660

7661 041044 012737 177700 002506 100\$:

7662 041052 004737 015274

7663

7664 041056

041056 012746 013544

041062 012746 000001

041066 010600

041070 104414

041072 062706 000004

MOV #-100,D.BLOCK ;INITIALIZE FOR 64 WORD BLOCKS
 JSR PC,SETISR ;SETUP ISR VECTOR

PRINTB #F.BW ;PRINT MESSAGE AND BEGIN LOOP
 MOV #F.BW,-(SP)
 MOV #1,-(SP)
 MOV SP,R0
 TRAP C\$PNTB
 ADD #4,SP

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TEST 27: ADJUST TRANSFER BANDWIDTH

7666						
7667	041076	013700	002506	200\$:	MOV	D.BLOCK,R0
7668	041102	004737	015674		JSR	PC,WRTBLK
7669	041106	004737	015410		JSR	PC,TSTMBC
7670						
7671	041112				BREAK	
	041112	104422			TRAP	C\$BRK
7672						
7673	041114	000770			BR	200\$
7674						
7675	041116	004737	015324	400\$:	JSR	PC,CLRISR
7676						
7677	041122	004737	015550		JSR	PC,CLRTST
7678						
7679	041126				ENDTST	
	041126			L10144:		
	041126	104401			TRAP	C\$ETST
7680						
7681	041130				ENDMOD	

ZDRMAO DR70 REPAIR DIAGNOSTIC MACRO M1200 23-MAY-83 15:51 PAGE 210

7683

.SBTTL

7686
7697
7698
7726
7727 041130
7728
7729 041130

.SBTTL HARDWARE PARAMETER CODING SECTION

BGNMOD

STARS

P-TABLE PARAMETER CODING:

OFFSET	DESCRIPTION
0	DEVICE CSR ADDRESS
2	INTERRUPT VECTOR ADDRESS
4	BUS REQUEST PRIORITY
6	DRIVE/UNIT NUMBER

STARS

7740
7741 041130
041130 000022
041132

BGNHRD
.WORD L10145-L\$HARD/2

L\$HARD::

7742
7743 041132
041132 000031
041134 041176
041136 000000
041140 177776

GPRMA PQ.CSR,0,0,0,177776,YES ;DEVICE BASE ADDRESS
.WORD T\$CODE
.WORD PQ.CSR
.WORD T\$LOLIM
.WORD T\$HILIM

7744
7745 041142
041142 001031
041144 041216
041146 000000
041150 000776

GPRMA PQ.VEC,2,0,0,776,YES ;INTERRUPT VECTOR ADDRESS
.WORD T\$CODE
.WORD PQ.VEC
.WORD T\$LOLIM
.WORD T\$HILIM

7746
7747 041152
041152 002052
041154 041236
041156 177777
041160 000000
041162 000006

GPRMD PQ.PRI,4,D,-1,0,6,YES ;BUS REQUEST PRIORITY
.WORD T\$CODE
.WORD PQ.PRI
.WORD -1
.WORD T\$LOLIM
.WORD T\$HILIM

7748
7749 041164
041164 003052
041166 041256
041170 177777
041172 000000
041174 000007

GPRMD PQ.DRI,6,D,-1,0,7,YES ;DRIVE SELECT
.WORD T\$CODE
.WORD PQ.DRI
.WORD -1
.WORD T\$LOLIM
.WORD T\$HILIM

7750
7751 041176

ENDHRD
.EVEN

L10145:

041176
7752

ZDRMAO DR70 REPAIR DIAGNOSTIC MACRO M1200 23-MAY-83 15:51 PAGE 212
 HARDWARE PARAMETER CODING SECTION

7754
 7755 041176

STARS

7756
 7757
 7758 041176

STARS

P-TABLE QUESTION STORAGE

7759

7760

7761

7762 041176

7763

7764 041216

7765

7766 041236

7767

7768 041256

7769

7770

7771

.NLIST BEX

104 105 126 PQ.CSR: .ASCIZ /DEVICE ADDRESS/

.EVEN

126 105 103 PQ.VEC: .ASCIZ /VECTOR ADDRESS/

.EVEN

120 122 111 PQ.PRI: .ASCIZ /PRIORITY /

.EVEN

104 122 111 PQ.DRI: .ASCIZ /DRIVE /

.EVEN

.LIST BEX

ZDRMA0 DR70 REPAIR DIAGNOSTIC MACRO M1200 23-MAY-83 15:51 PAGE 213
SOFTWARE P-TABLE PARAMETER CODING

```

7773      .SBTTL      SOFTWARE P-TABLE PARAMETER CODING
7774
7775 041276      STARS
*****
7776      :
7777      :      SOFTWARE P-TABLE PARAMETER CODING:
7778      :
7779      :      OFFSET      DESCRIPTION
7780      :
7781      :      0      DR70 REV 'A'
7782      :      2      SWITCH 4 ATO ATTN DISABLE
7783      :      4      SWITCH 5 AT3 ATTN DISABLE
7784      :      6      SWITCH 6 AT3 ABORT LOGIC DISABLE
7785      :      8      SWITCH 7 BYTE MODE TRANSFER
7786      :      10     SWITCH 8 USER PARITY ENABLE
7787      :      12     ADJUST TRANSFER BANDWIDTH
7788 041276      STARS
*****
7789
7790 041276      BGNSFT
041276 000030      .WORD L10146-L$SOFT/2
041300      L$SOFT::
7791
7792 041300      GPRML      SQ.REV,0,1,YES      ;ASK FOR REV INFO
041300 000130      .WORD      T$CODE
041302 041360      .WORD      SQ.REV
041304 000001      .WORD      1
7793
7794 041306      GPRML      SQ.SW4,2,1,YES      ;ASK FOR ATO ATTN DISABLE
041306 001130      .WORD      T$CODE
041310 041410      .WORD      SQ.SW4
041312 000001      .WORD      1
7795
7796 041314      GPRML      SQ.SW5,4,1,YES      ;ASK FOR AT3 ATTN DISABLE
041314 002130      .WORD      T$CODE
041316 041450      .WORD      SQ.SW5
041320 000001      .WORD      1
7797
7798 041322      GPRML      SQ.SW6,6,1,YES      ;ASK FOR AT3 XFER ABORT DISABLE
041322 003130      .WORD      T$CODE
041324 041510      .WORD      SQ.SW6
041326 000001      .WORD      1
7799
7800 041330      GPRML      SQ.SW7,10,1,YES     ;ASK FOR BYTE MODE TRANSFER
041330 004130      .WORD      T$CODE
041332 041562      .WORD      SQ.SW7
041334 000001      .WORD      1
7801
7802 041336      GPRML      SQ.SW8,12,1,YES     ;ASK FOR USER PARITY ENABLE
041336 005130      .WORD      T$CODE
041340 041622      .WORD      SQ.SW8
041342 000001      .WORD      1
7803
7804 041344      GPRML      SQ.DP,14,1,YES      ;ASK IF USER DATA PATTERN TEST
041344 006130      .WORD      T$CODE
041346 041666      .WORD      SQ.DP
041350 000001      .WORD      1

```

ZDRMAO DR70 REPAIR DIAGNOSTIC MACRO M1200 23-MAY-83 15:51 PAGE 213-1
SOFTWARE P-TABLE PARAMETER CODING

7805

7806 041352

041352 007130

041354 041726

041356 000001

7807

7808 041360

041360

7809

GPRML SQ.BW,16,1,YES

.WORD T\$CODE

.WORD SQ.BW

.WORD 1

;ASK IF ADJUST TRANSFER BANDWIDTH

ENDSFT

.EVEN

L10146:

ZDRMAO DR70 REPAIR DIAGNOSTIC MACRO M1200 23-MAY-83 15:51 PAGE 214
SOFTWARE P-TABLE PARAMETER CODING

```
7811
7812 041360          STARS
                      :*****
7813
7814                :
7815 041360          STARS
                      :*****
7816
7817                .NLIST BEX
7818
7819 041360          122    105    126  SQ.REV:      .ASCIZ  /REVISION 'A' INTERFACE/
7820
7821 041410          101    124    060  SQ.SW4:      .ASCIZ  /ATO ATTN DISABLED [SW4 'OFF']/
7822
7823 041450          101    124    063  SQ.SW5:      .ASCIZ  /AT3 ATTN DISABLED [SW5 'OFF']/
7824
7825 041510          101    124    063  SQ.SW6:      .ASCIZ  /AT3 TRANSFER ABORT DISABLED [SW6 'OFF']/
7826
7827 041562          102    131    124  SQ.SW7:      .ASCIZ  /BYTE MODE OPERATION [SW7 'ON']/
7828
7829 041622          111    116    120  SQ.SW8:      .ASCIZ  /INPUT PARITY DISABLED [SW8 'OFF']/
7830
7831 041666          117    120    105  SQ.DP:       .ASCIZ  /OPERATOR SPECIFIED DATA PATTERN/
7832
7833 041726          101    104    112  SQ.BW:       .ASCIZ  /ADJUST TRANSFER BANDWIDTH/
7834
7835
7836                .LIST BEX
7837
```

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SOFTWARE P-TABLE PARAMETER CODING

7839

7840 041760

7841

7842 041760

7843

7844 042060

042060 042100

042062 000006

042064

7845

\$PATCH::

.BLKW 40 ;32 WORD PATCH AREA

LASTAD

.EVEN

.WORD T\$FREE

.WORD T\$SIZE

L\$LAST::

ZDRMA0 DR70 REPAIR DIAGNOSTIC MACRO M1200 23-MAY-83 15:51 PAGE 216
 SETUP P-TABLE SECTION

```

7847      .SBTTL  SETUP P-TABLE SECTION
7848
7849 042064 STARS
          :*****
7850      :
7851      :
7852 042064 :
          :
          :      INITIALIZE P-TABLE FOR ONE UNIT
          :
          : STARS
          :*****
7853      :
7854 042064      BGNSETUP      1
7855
7856 042064      BGNPTAB
          042064      .WORD      0
          042066      .WORD      L10151-./2-1
          042070
L10147:
7857
7858 042070      172440      .WORD      CSRADR      :DEFAULT CSR ADDRESS
7859 042072      000224      .WORD      VECADR      :DEFAULT VECTOR ADDRESS
7860 042074      000005      .WORD      BRPRI      :DEFAULT BR PRIORITY
7861 042076      000000      .WORD      0      :DEFAULT DRIVE/CONTROLLER
7862
7863 042100      ENDPTAB
          042100
L10151:
7864
7865 042100      ENDSETUP
7866
7867 042100      ENDMOD
7868
7869      000001      .END
  
```

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SYMBOL TABLE

ABOFLG	002234	G	BIT5	=	000040	G	CS2.PG=	002000	G	C\$SVEC=	000037	E\$END	=	002100	
ADR	=	000020	G	BIT6	=	000100	G	CS2.UP=	020000	G	C\$TPRI=	000013	E\$LOAD=	000035	
ASSEMB=	000010		BIT7	=	000200	G	CS2.U0=	000001	G	DIAGMC=	000000	FP.ACT	002736	G	
ATOFLG	002230	G	BIT8	=	000400	G	CS2.U1=	000002	G	DLY	016042	G	FP.ADR	002732	G
AT3FLG	002232	G	BIT9	=	001000	G	CS2.U2=	000004	G	DLYCNT	003034	G	FP.BIT	002750	G
A.AS	002314	G	BLK	=	000040		CS2.WC=	040000	G	DMACNT	003036	G	FP.DPA	002744	G
A.BA	002302	G	BOE	=	000400	G	C\$AU	=	000052	DMADLY	016016	G	FP.EXP	002734	G
A.BAE	002322	G	BRPRI	=	000005	G	C\$AUTO=	000061	DPFLG	002242	G	FP.NAM	002730	G	
A.CS1	002276	G	BWFLG	002244	G	C\$BRK	=	000022	DRIFLG	003032	G	FP.NDX	002742	G	
A.CS2	002306	G	BYTFLG	002236	G	C\$BSEG=	000004	DRIVE	003000	G	FP.TBL	002746	G		
A.CS3	002324	G	B.ABOR=	000004	G	C\$BSUB=	000002	DSPBIT	017006	G	FP.XOR	002740	G		
A.DT	002320	G	B.AS	006064	G	C\$CEFG=	000045	DSPDAT	016374	G	FS.F0	=	000400	G	
A.FS	002304	G	B.ATO	=	000001	G	C\$CLCK=	000062	DSPDPA	016510	G	FS.F1	=	001000	G
A.IB	002312	G	B.AT3	=	000002	G	C\$CLEA=	000012	DSPFIL	016536	G	FS.F2	=	002000	G
A.IS	002310	G	B.BIT	006134	G	C\$CLOS=	000035	DSPREG	016054	G	FS.F3	=	004000	G	
A.OB	002316	G	B.BYTE=	000010	G	C\$CLP1=	000006	DSPSTA	016164	G	FS.F4	=	010000	G	
A.SIZ	=	000030	G	B.CS1	005512	G	C\$CVEC=	000036	D.AS	002264	G	FS.F5	=	020000	G
A.TBL	002276	G	B.CS2	005702	G	C\$DCLN=	000044	D.BA	002252	G	FS.F6	=	040000	G	
A.WC	002300	G	B.FS	005602	G	C\$DODU=	000051	D.BAE	002272	G	FS.F7	=	100000	G	
BA.AS	002454	G	B.IS	005776	G	C\$DRPT=	000024	D.BDP	002516	G	FS.ST0=	000001	G		
BA.BA	002442	G	B.REVA=	000200	G	C\$DU	=	000053	D.BLOC	002506	G	FS.ST1=	000002	G	
BA.BAE	002462	G	B.UPAR=	000020	G	C\$EDIT=	000003	D.CS1	002246	G	FS.ST2=	000004	G		
BA.CS1	002436	G	CBFLG	003050	G	C\$ERDF=	000055	D.CS2	002256	G	FS.ST3=	000010	G		
BA.CS2	002446	G	CLRDRI	015464	G	C\$ERHR=	000056	D.CS3	002274	G	FS.ST4=	000020	G		
BA.CS3	002464	G	CLRISR	015324	G	C\$ERRO=	000060	D.DT	002270	G	FS.ST5=	000040	G		
BA.DT	002460	G	CLRMBC	015342	G	C\$ERSF=	000054	D.FILP	002504	G	FS.ST6=	000100	G		
BA.FS	002444	G	CLRTRA	015264	G	C\$ERSO=	000057	D.FIL1	014371	G	FS.ST7=	000200	G		
BA.IB	002452	G	CLRTST	015550	G	C\$ESCA=	000010	D.FIL2	014437	G	F\$AU	=	000015		
BA.IS	002450	G	CLR.CM=	000011	G	C\$ESEG=	000005	D.FS	002254	G	F\$AUTO=	000020			
BA.OB	002456	G	CPUFLG	003012	G	C\$ESUB=	000003	D.IB	002262	G	F\$BGN	=	000040		
BA.SIZ=	000030	G	CPUID	=	177764	G	C\$ETST=	000001	D.IS	002260	G	F\$CLEA=	000007		
BA.TBL	002436	G	CR	=	000015		C\$EXIT=	000032	D.LPCN	002510	G	F\$DU	=	000016	
BA.WC	002440	G	CSRADR=	172440	G	C\$GETB=	000026	D.MAX	002512	G	F\$END	=	000041		
BFR	005054	G	CSRFLG	003042	G	C\$GETW=	000027	D.OB	002266	G	F\$HARD=	000004			
BFRSIZ=	001000	G	CS1.A1=	001000	G	C\$GMAN=	000043	D.SIZ	=	000030	G	F\$HW	=	000013	
BITCNT	003006	G	CS1.DV=	004000	G	C\$GPHR=	000042	D.TBL	002246	G	F\$INIT=	000006			
BIT0	=	000001	G	CS1.F0=	000002	G	C\$GPLO=	000030	D.WC	002250	G	F\$JMP	=	000050	
BIT00	=	000001	G	CS1.F1=	000004	G	C\$GPRI=	000040	D.WDP	002514	G	F\$MOD	=	000000	
BIT01	=	000002	G	CS1.F2=	000010	G	C\$INIT=	000011	EF.CON=	000036	G	F\$MSG	=	000011	
BIT02	=	000004	G	CS1.F3=	000020	G	C\$INLP=	000020	EF.NEW=	000035	G	F\$PROT=	000021		
BIT03	=	000010	G	CS1.F4=	000040	G	C\$MANI=	000050	EF.PWR=	000034	G	F\$PWR	=	000017	
BIT04	=	000020	G	CS1.G0=	000001	G	C\$MEM	=	000031	EF.RES=	000037	G	F\$RPT	=	000012
BIT05	=	000040	G	CS1.IE=	000100	G	C\$MSG	=	000023	EF.STA=	000040	G	F\$SEG	=	000003
BIT06	=	000100	G	CS1.MC=	020000	G	C\$OPEN=	000034	EOL	005350	G	F\$SOFT=	000005		
BIT07	=	000200	G	CS1.PS=	002000	G	C\$PNTB=	000014	ERRBLK	005174	G	F\$SRV	=	000010	
BIT08	=	000400	G	CS1.RD=	000200	G	C\$PNTF=	000017	ERRCNT	003004	G	F\$SUB	=	000002	
BIT09	=	001000	G	CS1.SC=	100000	G	C\$PNTS=	000016	ERRFLG	003026	G	F\$SW	=	000014	
BIT1	=	000002	G	CS1.TR=	040000	G	C\$PNTX=	000015	ERRMSG	005172	G	F\$TEST=	000001		
BIT10	=	002000	G	CS2.BA=	000010	G	C\$QIO	=	000377	ERRNBR	005170	G	F.ADR1	012626	G
BIT11	=	004000	G	CS2.CL=	000040	G	C\$RDBU=	000007	ERRNDX	003002	G	F.ADR2	012650	G	
BIT12	=	010000	G	CS2.DL=	100000	G	C\$REFG=	000047	ERRTYP	005166	G	F.BITS	014210	G	
BIT13	=	020000	G	CS2.IR=	000100	G	C\$RESE=	000033	ER.ADR	014452	G	F.BW	013544	G	
BIT14	=	040000	G	CS2.MD=	000400	G	C\$REVI=	000003	ER.DAT	015172	G	F.CBL	013464	G	
BIT15	=	100000	G	CS2.MX=	001000	G	C\$RFLA=	000021	ER.DMP	015074	G	F.CRLF	014214	G	
BIT2	=	000004	G	CS2.NE=	010000	G	C\$RPT	=	000025	ER.INI	014640	G	F.CSR	013660	G
BIT3	=	000010	G	CS2.OR=	000200	G	C\$SEFG=	000046	ER.REG	015016	G	F.DAT1	013166	G	
BIT4	=	000020	G	CS2.PA=	000020	G	C\$SPRI=	000041	EVL	=	000004	G	F.DAT2	013244	G

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 SYMBOL TABLE

F.DMP1	012664	G	IN.OB	002376	G	LSDEPO	002011	G	L10014	020212	L10105	031170
F.DMP2	012716	G	IN.SIZ=	000030	G	LSDESC	005226	G	L10015	020226	L10106	031254
F.DMP3	012750	G	IN.TBL	002356	G	LSDES	002076	G	L10016	020232	L10107	031546
F.DMP4	013020	G	IN.WC	002360	G	LSDEVP	002060	G	L10017	020236	L10110	031434
F.DPAT	013624	G	ISR	= 000100	G	LSDISP	002124	G	L10020	020554	L10111	031534
F.ERCN	013304	G	IS.ATA=	100000	G	LSPLY	002116	G	L10021	020406	L10112	033542
F.MODE	013340	G	IS.ATO=	000001	G	LSDTP	002040	G	L10022	020546	L10113	032154
F.NAM	012607	G	IS.AT1=	000002	G	LSDTYP	002034	G	L10023	020700	L10114	032524
F.NED	013732	G	IS.AT2=	000004	G	LSDU	020230	G	L10024	021426	L10115	033114
F.PERR	013412	G	IS.AT3=	000010	G	LSDUT	002072	G	L10025	021006	L10116	033516
F.PWR	014000	G	IS.CYC=	000020	G	LSDVTY	005176	G	L10026	021054	L10117	034246
F.REG1	013056	G	IS.ERO=	002000	G	LSEF	002052	G	L10027	021232	L10120	034002
F.REG2	013132	G	IS.ERR=	040000	G	LENVI	002044	G	L10030	021420	L10121	034234
F.RPT1	014074	G	IS.ICP=	001000	G	LSERRT	005166	G	L10031	022214	L10122	034766
F.RPT2	014164	G	IS.IDP=	000400	G	LSETP	002102	G	L10032	021574	L10123	034514
F.UNIT	014036	G	IS.IP =	010000	G	LSEXP1	002046	G	L10033	021642	L10124	034754
F.VAL	012616	G	IS.IRY=	000200	G	LSEXP4	002064	G	L10034	022020	L10125	035334
GSCNTO=	000200		IS.XAB=	004000	G	LSEXP5	002066	G	L10035	022206	L10126	035170
G\$DELM=	000372		IXE	= 004000	G	LSHARD	04 72	G	L10036	023004	L10127	035322
G\$DISP=	000003		ISAU	= 000041		LSHIME	002120	G	L10037	022340	L10130	036604
G\$EXCP=	000400		ISAUTO=	000041		LSHPCP	002016	G	L10040	022406	L10131	035634
G\$HILI=	000002		ISCLN =	000041		LSHPTP	002022	G	L10041	022572	L10132	036104
G\$LOLI=	000001		ISDU	= 000041		LSHW	002214	G	L10042	022776	L10133	036346
G\$NO	= 000000		ISHRD =	000041		LSICP	002104	G	L10043	023324	L10134	036572
G\$OFFS=	000400		ISINIT=	000041		LSINIT	017322	G	L10044	023170	L10135	037012
G\$OF SI=	000376		ISMOD =	000041		LSLADP	002026	G	L10045	023306	L10136	037220
G\$PRMA=	000001		ISMSG =	000041		LSLAST	042064	G	L10046	023674	L10137	037506
G\$PRMD=	000002		ISPROT=	000040		LSLOAD	002100	G	L10047	023504	L10140	040234
G\$PRML=	000000		ISPTAB=	000041		LSLUN	002074	G	L10050	023666	L10141	040222
G\$RADA=	000140		IS\$PWR =	000041		LSMREV	002050	G	L10051	024050	L10142	041004
G\$RADB=	000000		IS\$RPT =	000041		LSNAME	002000	G	L10052	023776	L10143	040772
G\$RADL=	000040		IS\$SEG =	000041		LS\$PRIO	002042	G	L10053	024042	L10144	041126
G\$RADL=	000120		IS\$SETU=	000041		LS\$PROT	017314	G	L10054	024516	L10145	041176
G\$RADO=	000020		IS\$FT =	000041		LS\$PRT	002112	G	L10055	024164	L10146	041360
G\$XFER=	000004		IS\$RV =	000041		LS\$REPP	002062	G	L10056	024240	L10147	042070
G\$YES =	000010		IS\$UB =	000041		LS\$REV	002010	G	L10057	024360	L10151	042100
HELP	= 000000		ISTST =	000041		LS\$RPT	017172	G	L10060	024510	MAXTST=	000033 G
HLPFLG	003016	G	JSJMP =	000167		LS\$SOFT	041300	G	L10061	025036	MBCFLG	003030 G
HOE	= 100000	G	LF	= 000012		LS\$SPC	002056	G	L10062	024650	M.ABT1	006375 G
HRDTBL	002772	G	LINBUF	005260	G	LS\$PCP	002020	G	L10063	024740	M.ABT2	006447 G
IBE	= 010000	G	LINE	005256	G	LS\$PTP	002024	G	L10064	025024	M.ABT3	006520 G
IBUF	003054	G	LOE	= 040000	G	LS\$STA	002030	G	L10065	025316	M.ABT4	006572 G
IDU	= 000040	G	LOGUNI	002774	G	LS\$SW	002226	G	L10066	025204	M.ADR1	006234 G
IER	= 020000	G	LOT	= 000010	G	LS\$TEST	002114	G	L10067	025304	M.ADR2	006263 G
INIFLG	003014	G	LP.BDP	040414		LS\$TML	002014	G	L10070	027532	M.ASB1	006314 G
INTFLG	003022	G	LP.BXF	031606		LS\$UNIT	002012	G	L10071	025776	M.ATA1	006643 G
INTSRV	015226	G	LP.UAT	023054		L10000	002224		L10072	026412	M.ATA2	006706 G
IN.AS	002374	G	LP.WDP	037644		L10001	002246		L10073	027044	M.ATA3	006740 G
IN.BA	002362	G	LP.WXF	025364		L10002	014636		L10074	027506	M.ATA4	007005 G
IN.BAE	002402	G	LSACP	002110	G	L10003	015014		L10075	030232	M.ATA5	007060 G
IN.CS1	002356	G	LSAPT	002036	G	L10004	015072		L10076	027766	M.ATA6	007135 G
IN.CS2	002366	G	LSAU	020234	G	L10005	015170		L10077	030220	M.BYT1	007500 G
IN.CS3	002404	G	LSAUT	002070	G	L10006	015216		L10100	030746	M.BYT2	007533 G
IN.DT	002400	G	LSAUTO	020212	G	L10007	015224		L10101	030474	M.BYT3	007602 G
IN.FS	002364	G	LS\$CCP	002106	G	L10010	015232		L10102	030734	M.BYT4	007650 G
IN.IB	002372	G	LS\$CLEA	020214	G	L10011	017312		L10103	031266	M.CSR1	007210 G
IN.IS	002370	G	LS\$CO	002032	G	L10013	020210		L10104	031100	M.CSR2	007237 G

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SYMBOL TABLE

M.DLT1	007707	G	N.BAE	005472	G	REG1	002754	G	TRAP4	015220	G	T10.2	024652
M.ERO1	007751	G	N.CS1	005352	G	REG2	002756	G	TRPFLG	003024	G	T10.3	024742
M.ERO2	010017	G	N.CS2	005412	G	REG3	002760	G	TSTINT	015444	G	T11	025040 G
M.ERR1	010064	G	N.CS3	005502	G	REG4	002762	G	TSTMBC	015410	G	T11.1	025106
M.ERR2	010116	G	N.DT	005462	G	REG5	002764	G	T\$ARGC=	000001		T11.2	025206
M.FSR1	010163	G	N.FS	005402	G	REG6	002766	G	T\$CODE=	007130		T12	025320 G
M.ICP1	010450	G	N.IB	005432	G	REG7	002770	G	T\$ERRN=	000001		T12.1	025364
M.ICP2	010535	G	N.IS	005422	G	REVFLG	002226	G	T\$EXCP=	000000		T12.2	026000
M.ICP3	010623	G	N.OB	005452	G	RIE.CM=	000171	G	T\$FLAG=	000040		T12.3	026414
M.IDP1	010215	G	N.SIZ =	000140	G	RIE2.C=	000177	G	T\$FREE=	042100		T12.4	027046
M.IDP2	010277	G	N.TBL	005352	G	RP.ERR	002620	G	T\$GMAN=	000000		T13	027534 G
M.IDP3	010365	G	N.WC	005362	G	RP.PAS	002520	G	T\$HILI=	000007		T13.1	027572
M.INT1	010706	G	OBUF	004054	G	RP.SIZ=	000100	G	T\$LAST=	000001		T13.2	027770
M.INT2	010761	G	ONEFIL=	000001		R.AS	002344	G	T\$LOLI=	000000		T14	030234 G
M.IRY1	011034	G	OSAPTS=	000000		R.BA	002332	G	T\$LSYM=	010000		T14.1	030272
M.IRY2	011102	G	OSAU =	000000		R.BAE	002352	G	T\$LTNO=	000033		T14.2	030476
M.IRY3	011162	G	OSBGNR=	000001		R.CS1	002326	G	T\$NEST=	177777		T15	030750 G
M.IRY4	011246	G	OSBGNS=	000001		R.CS2	002336	G	T\$NS0 =	000000		T15.1	031016
M.IRY5	011320	G	OSDU =	000000		R.CS3	002354	G	T\$NS1 =	000005		T15.2	031102
M.IRY6	011363	G	OSERRT=	000000		R.DT	002350	G	T\$NS2 =	000002		T15.3	031172
M.IRY7	011426	G	OSGNSW=	000001		R.ERR	002470	G	T\$PCNT=	000000		T16	031270 G
M.IRY8	011500	G	OSPOIN=	000001		R.FS	002334	G	T\$PTAB=	010150		T16.1	031336
M.ISR1	011543	G	OSSETU=	000001		R.IB	002342	G	T\$PTHV=	000001		T16.2	031436
M.ISR2	011572	G	PARFLG	002240	G	R.IS	002340	G	T\$PTNU=	000001		T17	031550 G
M.MBC1	011650	G	PERFLG	003052	G	R.MAX	002466	G	T\$SAVL=	177777		T17.1	031606
M.MBC2	011717	G	PNT =	001000	G	R.OB	002346	G	T\$SEGL=	177777		T17.2	032156
M.RDY1	011750	G	PQ.CSR	041176		R.SAD	002474	G	T\$SIZE=	000006		T17.3	032526
M.RDY2	012024	G	PQ.DRI	041256		R.SDR	002502	G	T\$SUBN=	000000		T17.4	033116
M.REG1	012076	G	PQ.PRI	041236		R.SIN	002476	G	T\$TAGL=	177777		T18	033544 G
M.REG2	012134	G	PQ.VEC	041216		R.SIZ =	000030	G	T\$TAGN=	010152		T18.1	033606
M.SW4	012153	G	PRI =	002000	G	R.SRH	002500	G	T\$TEMP=	000000		T18.2	034004
M.SW5	012233	G	PRI00 =	000000	G	R.SST	002472	G	T\$TEST=	000033		T19	034250 G
M.SW6	012313	G	PRI01 =	000040	G	R.TBL	002326	G	T\$TSTM=	177777		T19.1	034312
M.TRE1	012371	G	PRI02 =	000100	G	R.WC	002330	G	T\$TSTS=	000001		T19.2	034516
M.UAT1	012454	G	PRI03 =	000140	G	SELECT	003010	G	T\$SAU =	010017		T2	020556 G
M.UAT2	012531	G	PRI04 =	000200	G	SELMAS=	000033		T\$SAUT=	010014		T20	034770 G
M.WRD1	007271	G	PRI05 =	000240	G	SELTES=	000010		T\$SCLE=	010015		T20.1	035026
M.WRD2	007324	G	PRI06 =	000300	G	SETISR	015274	G	T\$SDAT=	010151		T20.2	035172
M.WRD3	007373	G	PRI07 =	000340	G	SETRAP	015234	G	T\$SDU =	010016		T21	035336 G
M.WRD4	007441	G	PS =	177776	G	SILOCN	003040	G	T\$SHAR=	010145		T21.1	035374
NA.AS	002424	G	PT.CSR	002720	G	SILODL	016030	G	T\$SHW =	010000		T21.2	035636
NA.BA	002412	G	PT.DRI	002726	G	SQ.BW	041726		T\$SINI=	010013		T21.3	036106
NA.BAE	002432	G	PT.PRI	002724	G	SQ.DP	041666		T\$SMMSG=	010006		T21.4	036350
NA.CS1	002406	G	PT.VEC	002722	G	SQ.REV	041360		T\$SPC =	000001		T22	036606 G
NA.CS2	002416	G	PWRFLG	003046	G	SQ.SW4	041410		T\$SPRO=	010012		T23	037014 G
NA.CS3	002434	G	Q.BRL	014314	G	SQ.SW5	041450		T\$SPTA=	010150		T24	037222 G
NA.DT	002430	G	Q.BDP	014246	G	SQ.SW6	041510		T\$SRPT=	010011		T25	037510 G
NA.FS	002414	G	Q.HLP1	014334	G	SQ.SW7	041562		T\$SSOF=	010146		T25.1	037702
NA.IB	002422	G	Q.HLP2	014402	G	SQ.SW8	041622		T\$SSRV=	010010		T26	040236 G
NA.IS	002420	G	Q.WBL	014274	G	SVCGBL=	000000		T\$SSUB=	010143		T26.1	040452
NA.OB	002426	G	Q.WDP	014220	G	SVCINS=	000000		T\$SSW =	010001		T27	041006 G
NA.SIZ=	000030	G	RDBLK	015642	G	SVCISB=	000000		T\$STES=	010144		T3	020702 G
NA.TBL	002406	G	RDINI	015726	G	SVCTAG=	000000		T1	020240	G	T3.1	020742
NA.WC	002410	G	RDREG	015606	G	SVCTST=	000000		T1.1	020240		T3.2	021010
NEDFLG	003044	G	RD.CMD=	000071	G	S\$LSYM=	010000		T1.2	020410		T3.3	021056
N.AS	005442	G	RD2.CM=	000077	G	TAB =	000011		T10	024520	G	T3.4	021234
N.BA	005372	G	REG0	002752	G	TABFLG	003020	G	T10.1	024566		T4	021430 G

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SYMBOL TABLE

T4.1	021470	T5.4	022574	T8.1	023736	UAM	= 000200 G	WR.CMD=	000061 G
T4.2	021576	T6	023006 G	T8.2	024000	UNITPO	002776 G	WR2.CM=	000067 G
T4.3	021644	T6.1	023054	T9	024052 G	VECADR=	000224 G	XSALWA=	000000
T4.4	022022	T6.2	023172	T9.1	024052	WIE.CM=	000161 G	XSFALS=	000040
T5	022216 G	T7	023326 G	T9.2	024166	WIE2.C=	000167 G	X\$OFFS=	000400
T5.1	022274	T7.1	023366	T9.3	024242	WRTBLK	015674 G	X\$TRUE=	000020
T5.2	022342	T7.2	023506	T9.4	024362	WRTINI	015762 G	\$PATCH	041760 G
T5.3	022410	T8	023676 G						

. ABS. 042100 000
ERRORS DETECTED: 0

VIRTUAL MEMORY USED: 28461 WORDS (112 PAGES)

DYNAMIC MEMORY: 17282 WORDS (66 PAGES)

ELAPSED TIME: 00:07:01

ZDRMA0.BIN/DS:GBL/EN:ABS:AMA,ZDRMA0/-SP/CR=SVC33/ML,ZDRMA0.P11