

DMP-11,
DMR11, M8207

M8207 STATIC DIAG
CZDMQEO

AH-E229E-MC
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MAY 1983
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Table with 15 columns and 15 rows. The table contains technical data, likely a static diagram or test results, organized in a grid format. The content is too faint to transcribe accurately but appears to include various numerical values and possibly component identifiers.

CZDMQE M8207 STATIC DIAG. #2
CZDMQE.P11 30-SEP-82 15:35

MACV11 30A(1052) 18-OCT-82 15:30 PAGE 2
PROGRAM DOCUMENT

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IDENTIFICATION

PRODUCT CODE: AC-E228E-MC
PRODUCT NAME: CZDMQE0 M8207 STATIC DIAG #2
PRODUCT DATE: OCTOBER 1982
MAINTAINER: DIAGNOSTICS MERRIMACK
AUTHOR: ED BADGER

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TABLE OF CONTENTS

36	
37	
38	
39	
40	
41	
42	
43	
44	
45	1.0 INTRODUCTION
46	1.1 PROGRAM ABSTRACT
47	1.2 REVISION HISTORY
48	1.3 HARDWARE INTRODUCTION
49	
50	2.0 HARDWARE REQUIREMENTS
51	
52	3.0 PRELIMINARY PROGRAM REQUIREMENTS
53	
54	4.0 GENERAL PROGRAM CONSIDERATIONS
55	4.1 DIAGNOSTIC SUPERVISOR
56	4.2 EXECUTION TIME
57	
58	5.0 PROGRAM LOAD MEDIA
59	
60	6.0 OPERATING INSTRUCTIONS
61	6.1 LOADING AND STARTING PROCEDURES
62	6.1.1 LOADING PROCEDURES
63	6.1.2 STARTING PROCEDURES
64	6.1.3 STEPS FOR QUICK AND SIMPLE EXECUTION
65	
66	6.2 INITIAL DIALOGUE
67	
68	6.3 PROGRAM OPTIONS
69	6.3.1 START COMMAND
70	6.3.2 RESTART COMMAND
71	6.3.3 CONTINUE COMMAND
72	6.3.4 PROCEED COMMAND
73	6.3.5 ADD COMMAND
74	6.3.6 DROP COMMAND
75	6.3.7 PRINT COMMAND
76	6.3.8 DISPLAY COMMAND
77	6.3.9 FLAGS COMMAND
78	6.3.10 ZFLAGS COMMAND
79	6.3.11 CONTROL CHARACTERS
80	6.3.12 HARDWARE PARAMETERS
81	6.3.13 SOFTWARE PARAMETERS
82	6.3.14 EXTENDED DISCUSSION OF P-TABLE DIALOGUE
83	
84	7.0 TEST DESCRIPTIONS
85	
86	8.0 ERROR INFORMATION
87	8.1 ERROR REPORTING
88	

CZDMQE M8207 STATIC DIAG. #2
CZDMQE.P11 30-SEP-82 15:35

MACV11 30A(1052) 18-OCT-82 15:30 PAGE 4
PROGRAM DOCUMENT

1.0 INTRODUCTION

1.1 PROGRAM ABSTRACT

THIS DIAGNOSTIC WAS DESIGNED TO TEST OUT THE M8200, M8204, OR M8207 MICROPROCESSOR. IT IS THE SECOND OF TWO DIAGNOSTICS FOR THESE OPTIONS.

THE PROGRAM WAS IMPLEMENTED USING THE DIAGNOSTIC SUPERVISOR.

THROUGH DIALOGUE WITH THE OPERATOR, THE PROGRAM WILL ALLOW MODIFICATION OF DEVICE PARAMETERS, SUCH AS UNIBUS ADDRESS, VECTOR ADDRESS, AND PROCESSOR TYPE.

1.2 REVISION HISTORY

THIS DIAGNOSTIC WAS REVISED FOR THE FOLLOWING REASONS

- REV A - ORIGINAL RELEASE
- REV B - CORRECT AN ERROR TYPEOUT IN TEST 26, CORRECT TIME DEPENDENT CODE IN TEST 20, CORRECT MACHINE DEPENDENT CODE IN TEST 37
- REV C - FIX NECESSARY FOR DMP MICROCODE CHANGE. MICROCODE CHANGE CAUSED TEST 43 TO FAIL
- REV D - NEW MICROCODE CAUSED ERRONEOUS DATA TO REMAIN IN HIGH BYTE OF R5 IN TEST 40.
- REV E - CHANGED TEST 26 AT THE REQUEST OF MANUFACTURING. THIS CHANGE WILL ALLOW TESTING OF BITS 4 AND 5 IN IBUS*13> (PC BITS 12 AND 13). THE DIAGNOSTIC ORIGINALLY ONLY TESTED A 12 BIT PC. THIS DID NOT EFFECT THE DMR; HOWEVER THE DMP-YA DOES USE A 14 BIT PC. THE CHANGE WAS PROPOSED BY MARTY DIMUZIO OF AUGUSTA MANUF.

1.3 HARDWARE INTRODUCTION

THE M820X MICROPROCESSOR USES AN EIGHT BIT DATA PATH WITH A SIXTEEN BIT INSTRUCTION MEMORY. THE INSTRUCTION MEMORY AND DATA MEMORY ARE TWO SEPARATE MEMORIES. THE MICROPROCESSOR IS DESIGNED FOR MOVING DATA AT HIGH RATES TO WORK AS A HIGH SPEED LINK BETWEEN PROCESSORS WHEN USED WITH A LINE UNIT. THE M8200 AND M8207 HAVE PROM INSTRUCTION MEMORIES. THE M8204 HAS WRITEABLE CONTROL STORE. THE MEMORY SIZES BETWEEN ALL THREE PROCESSORS VARY ALSO.

2.0 HARDWARE REQUIREMENTS

THE FOLLOWING HARDWARE IS REQUIRED TO RUN THE M8207 LOGIC TESTS:

PDP-11/04,05,10,20,30,34,35,40,45,50,60, OR 70
16K MEMORY
CONSOLE TERMINAL

CZDMQE M8207 STATIC DIAG. #2
CZDMQE.P11 30-SEP-82 15:35

MACY11 30A(1052) 18-OCT-82 15:30 PAGE 5
PROGRAM DOCUMENT

3.0 PRELIMINARY PROGRAM REQUIREMENTS

THE PROCESSOR AND MEMORY SHOULD BE THOROUGHLY TESTED PRIOR TO RUNNING THIS DIAGNOSTIC.

4.0 GENERAL PROGRAM CONSIDERATIONS

4.1 DIAGNOSTIC SUPERVISOR

THIS PROGRAM IS COMPATIBLE WITH THE STANDALONE DIAGNOSTIC SUPERVISOR, AND MUST BE LOADED TO BE CO-RESIDENT WITH THE SUPERVISOR, OR BE PREVIOUSLY COMBINED WITH THE SUPERVISOR AND LOADED AS A SINGLE FILE. IN EITHER CASE, THE COMBINED PROGRAM WILL NOT EXCEED 16K OF MEMORY.

4.2 EXECUTION TIME

THE TOTAL TIME REQUIRED TO RUN THE M8207 STATIC TESTS IS ABOUT 120 SECONDS PER PASS FOR EACH UNIT.

4.3 XXDP+

THIS PROGRAM MAY BE LOADED UNDER XXDP+, AND MAY BE RUN IN DUMP MODE OR CHAIN MODE.

4.4 ACT/SLIDE

THIS PROGRAM MAY BE LOADED UNDER ACT OR SLIDE AND MAY BE RUN IN DUMP MODE OR CHAIN MODE.

4.5 APT

THIS PROGRAM MAY BE LOADED BY THE APT SYSTEM (INCLUDING APT-RD) AND RUN IN PROGRAM MODE OR SCRIPT MODE.

4.6 MEMORY MANAGEMENT

MEMORY MANAGEMENT IS NOT UTILIZED IN THIS PROGRAM. IF IT IS INSTALLED, IT IS DISABLED BY THE PROGRAM.

4.7 MEMORY PARITY OPTION

IF PARITY MEMORY IS INSTALLED, MEMORY PARITY TRAPS ARE DISABLED BY THE PROGRAM.

CZDMQE M8207 STATIC DIAG. #2
CZDMQE.P11 30-SEP-82 15:35

MACV11 30A(1052) 18-OCT-82 15:30 PAGE 6
PROGRAM DOCUMENT

4.8 ERROR LOGGING

THE NUMBER OF ERRORS WHICH HAVE OCCURRED ON EACH DEVICE UNDER TEST SINCE THE LAST START OR RESTART COMMAND IS KEPT IN AN ERROR LOG. THIS LOG MAY BE PRINTED BY USING THE 'PRINT' COMMAND (SEE SECTION 6.3.8).

5.0 PROGRAM LOAD MEDIA

THIS PROGRAM CAN BE LOADED FROM PAPER TAPE USING THE ABSOLUTE LOADER OR FROM ACT, SLIDE, OR APT SYSTEMS, OR FROM ANY MEDIA SUPPORTED BY XXDP+. WHEN USING THE PAPER TAPE ABSOLUTE LOADER, THE PROGRAM SHOULD BE LOADED FIRST, FOLLOWED BY THE DIAGNOSTIC SUPERVISOR. WHEN USING XXDP+, THE DIAGNOSTIC SUPERVISOR SHOULD BE LOADED FIRST, FOLLOWED BY THE DIAGNOSTIC PROGRAM.

6.0 OPERATING INSTRUCTIONS

6.1 LOADING AND STARTING PROCEDURES

6.1.1 LOADING PROCEDURES

THIS PROGRAM MAY BE LOADED FROM PAPER TAPE USING THE ABSOLUTE LOADER. IT MAY ALSO BE LOADED FROM ANY XXDP+ LOAD MEDIA. WHEN LOADED UNDER XXDP+, THE DIAGNOSTIC SUPERVISOR WILL BE LOADED AUTOMATICALLY.

6.1.2 STARTING PROCEDURES

THE PROGRAM STARTS AT LOCATION 200. USE STANDARD DEC PROCEDURES TO START THE PROGRAM.

6.1.3 STEPS FOR QUICK AND SIMPLE EXECUTION

THE DIAGNOSTIC CAN BE EXECUTED STANDALONE UNDER XXDP+ WITHOUT READING THE REMAINDER OF THIS DOCUMENT, AS FOLLOWS:

- A) LOAD AND START DIAGNOSTIC USING RUN COMMAND
- B) RECEIVE DIAGNOSTIC SUPERVISOR PROMPT (DR>)
- C) ENTER STA<CR>
- D) ANSWER HARDWARE AND SOFTWARE QUESTIONS
- E) GET END OF PASS MESSAGES OR ERROR MESSAGES
- F) TO END EXECUTION, ENTER CONTROL/C

6.2 INITIAL DIALOGUE

AFTER THE PROGRAM AND THE SUPERVISOR ARE LOADED AND THE PROGRAM IS STARTED, THE FOLLOWING IDENTIFICATION IS TYPED:

CZDMQE M8207 STATIC DIAG. #2
CZDMQE.P11 30-SEP-82 15:35

MACY11 30A(1052) 18-OCT-82 15:30 PAGE 7
PROGRAM DOCUMENT

DRS LOADED
DIAG. RUN-TIME SERVICES
CZDMQ-D-0
M8207 DIAG. #2 OF 2
UNIT IS M8200,M8204,OR M8207
DR>

THE OPERATOR THEN PROCEEDS BY TYPING ONE OR MORE OF THE
COMMANDS DESCRIBED IN THE FOLLOWING SECTION 6.3.(FOR MORE
DETAILED INFORMATION, REFER TO THE DIAGNOSTIC SUPERVISOR
FUNCTIONAL SPECIFICATION).

6.3 PROGRAM OPTIONS

6.3.1 START COMMAND

STA(RT)/TESTS:<TEST-LIST>/PASS:<PASS-CNT>/FLAGS:
<FLAG-LIST>/EOP:<INCR>

6.3.1.1 TESTS SWITCH (/TESTS:<TEST-LIST>)

<TEST-LIST> IS A SEQUENCE OF DECIMAL NUMBERS (1:2 ETC.) OR
RANGES OF DECIMAL NUMBERS (1-5:8-10 ETC.) THAT SPECIFY THE
TESTS TO BE EXECUTED. THE NUMBERS ARE SEPARATED BY COLONS.
THE NUMBERS RANGE FROM 1 TO THE LARGEST TEST NUMBER IN THE
DIAGNOSTIC. THEY MAY BE SPECIFIED IN ANY ORDER. TESTS WILL
BE EXECUTED IN NUMERICAL ORDER REGARDLESS OF THE ORDER OF
SPECIFICATION. THE DEFAULT IS TO EXECUTE ALL TESTS. ON
THIS AND ALL SWITCHES, THE ANGLE BRACKETS <> ARE PUNCTUATION
USED IN THE DEFINITION ONLY, AND ARE NOT TO BE TYPED BY THE
OPERATOR. SEE EXAMPLE AT END OF 6.3.1.5.

6.3.1.2 PASS SWITCH (/PASS:<PASS-CNT>)

<PASS-CNT> IS A DECIMAL NUMBER INDICATING THE DESIRED NUMBER
OF PASSES. A PASS IS DEFINED AS THE EXECUTION OF THE FULL
DIAGNOSTIC (ALL SELECTED TESTS) AGAINST ALL UNITS SUBMITTED.
THE DEFAULT IS NON-ENDING EXECUTION. IN THIS CASE EXIT FROM
THE PROGRAM IS ACCOMPLISHED EITHER BY TYPING A CONTROL/C OR
BY OCCURANCE OF AN ERROR WITH THE HALT ON ERROR FLAG BEING
SET. THE EXIT IS A RETURN TO COMMAND MODE. SEE EXAMPLE AT
END OF 6.3.1.5.

6.3.1.3 FLAGS SWITCH (/FLAGS:<FLAG-LIST>)

<FLAG-LIST> IS A SEQUENCE OF ELEMENTS OF THE FORM <FLAG>,
<FLAG=1>, OR <FLAG=0>, SEPARATED BY COLONS, WHERE <FLAG> HAS
ONE OF THE FOLLOWING VALUES:

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HOE HALT ON ERROR, CAUSING COMMAND MODE TO BE
ENTERED WHEN AN ERROR IS ENCOUNTERED
LOE LOOP ON ERROR, CAUSING THE DIAGNOSTIC TO LOOP
CONTINUOUSLY WITHIN THE SMALLEST DEFINED BLOCK
OF CODING (SEGMENT, SUBTEST, OR TEST) CONTAIN-
ING THE ERROR
IER INHIBIT ERROR REPORTING
IBE INHIBIT BASIC ERROR REPORTS
IXE INHIBIT EXTENDED ERROR REPORTS
PRI DIRECT ALL MESSAGES TO A LINE PRINTER
PNT PRINT NUMBER OF TEST BEING EXECUTED
BOE BELL ON ERROR
UAM RUN IN UNATTENDED MODE, BYPASSING MANUAL
INTERVENTION TESTS
ISR INHIBIT STATISTICAL REPORTS
IDU INHIBIT DROPPING OF UNITS BY DIAGNOSTIC
LOT LOOP ON TEST

THE FLAGS NAMED OR EQUATED TO 1 ARE SET, THOSE EQUATED TO 0
ARE CLEARED. A FLAG NOT SPECIFIED IS CLEARED. IF THE FLAGS
SWITCH IS NOT GIVEN ALL FLAGS ARE CLEARED. SEE EXAMPLE AT
END OF 6.3.1.5.

6.3.1.4 END OF PASS SWITCH (/EOP:<INCR>)

<INCR> IS A DECIMAL NUMBER INDICATING HOW OFTEN (IN TERMS OF
PASSES) IT IS DESIRED THAT THE END OF PASS MESSAGE BE
PRINTED. THE DEFAULT IS AT THE END OF EVERY PASS. SEE
EXAMPLE AT END OF 6.3.1.5.

6.3.1.5 EFFECT OF START COMMAND

THE EFFECT OF THE START COMMAND IS TO INITIATE THE HARDWARE
PARAMETER DIALOGUE, THE SOFTWARE PARAMETER DIALOGUE, AND
THEN THE DIAGNOSTIC TESTS THEMSELVES.

THE HARDWARE PARAMETER DIALOGUE COMMENCES WITH THE QUESTION
"N UNITS?" TO WHICH THE OPERATOR REPLIES WITH A DECIMAL
NUMBER N FROM 1 TO 16. THE TERM "UNIT" REFERS TO THE DEVICE
TO WHICH THIS SERIES OF DIAGNOSTICS IS DEDICATED. FOLLOWING
THIS ARE THE QUESTIONS WHEREBY THE P-TABLES THEMSELVES WILL
BE BUILT. EACH P-TABLE IS A CORE-RESIDENT TABLE CONTAINING
ALL THE HARDWARE INFORMATION FOR ONE UNIT. THE OPERATOR
MUST SUPPLY N (NUMBER OF UNITS) VALUES FOR EACH QUESTION.
HE MAY DO THIS BY GIVING ONE ANSWER TO EACH QUESTION (IN
WHICH CASE THE SERIES OF QUESTIONS WILL BE POSED N TIMES) OR
BY GIVING N VALUES, SEPARATED BY COMMAS, TO EACH QUESTION
(SERIES WILL BE POSED ONCE). EACH QUESTION IS FOLLOWED BY
THE RESPONSE RADIX (D FOR DECIMAL, B FOR BINARY, O FOR
OCTAL, L FOR YES/NO) IN PARENTHESES AND THE DEFAULT VALUE
AFTER THE PARENTHESES.

FOLLOWING THE HARDWARE QUESTIONS ARE THE SOFTWARE QUESTIONS

CZDMQE M8207 STATIC DIAG. #2
CZDMQE.P11 30-SEP-82 15:35

MACV11 30A(1052) 18-OCT-82 15:30 PAGE 9
PROGRAM DOCUMENT

TO BUILD THE SOFTWARE TABLES, WHICH DEFINE THE MODE (QUICK VERIFY ETC.) THAT THE DIAGNOSTIC WILL EXECUTE IN.

WHEN THE QUESTION "'# UNITS?'" IS ANSWERED, MEMORY STORAGE IS ALLOCATED FOR THE P-TABLES, AND IF THERE IS NOT ENOUGH TO ACCOMMODATE THEM THE MESSAGE "TOO MANY UNITS" IS ISSUED. IN THIS CASE THE DIAGNOSTIC MUST BE EXECUTED MORE THAN ONCE TO TEST ALL UNITS.

EXAMPLE:

STA/TESTS:1:2-4:6:8-10/PASS:3/FLAGS:IER:HOE=1:UAM:LOE

THIS COMMAND WILL CAUSE THREE PASSES TO BE MADE, EACH PASS CONSISTING OF TESTS 1,2,3,4,6,8,9, AND 10 EXECUTED AGAINST ALL UNITS. THERE IS NO DIFFERENCE BETWEEN SAYING <FLAG> AND SAYING <FLAG=1>. THE NOTATION <FLAG=0> IS MEANINGFUL ONLY ON A COMMAND OTHER THAN START TO CLEAR A FLAG THAT WAS PREVIOUSLY SET. NOTE THAT ON ALL COMMANDS ONLY THE FIRST THREE LETTERS ARE SCANNED.

6.3.2 RESTART COMMAND

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*****
RES(TART)/TESTS:<TEST-LIST>/PASS:<PASS-CNT>/FLAGS:
<FLAG-LIST>/UNITS:<UNIT-LIST>
*****
```

6.3.2.1 TESTS, PASS, AND FLAGS SWITCHES

<TEST-LIST>, <PASS-CNT>, AND <FLAG-LIST> ARE AS IN THE START COMMAND.

6.3.2.2 UNITS SWITCH (/UNITS:<UNIT-LIST>)

<UNIT-LIST> IS A SEQUENCE OF DECIMAL NUMBERS (0,1 ETC.) OR RANGES OF DECIMAL NUMBERS (0-5, 8-10 ETC.) THAT SPECIFY THE UNITS TO BE TESTED. THE NUMBERS ARE SEPARATED BY COLONS. THE NUMBERS MAY RANGE FROM 0 THRU N-1 (N IS THE NUMBER OF UNITS SPECIFIED IN THE PREVIOUS START COMMAND). THE NUMBER INDICATES THE POSITION OF THE P-TABLE AS THE DATA WAS ENTERED DURING THE HARDWARE DIALOGUE. THE UNITS WHICH ARE SELECTED MUST NOT HAVE BEEN DROPPED BY THE DROP COMMAND. SEE THE DISCUSSION OF ADD AND DROP COMMANDS BELOW. DEFAULT IS TO TEST ALL UNITS WHICH HAVE NOT BEEN DROPPED BY A DROP COMMAND.

6.3.2.3 EFFECT OF RESTART COMMAND

THE RESTART COMMAND DIFFERS FROM THE START COMMAND IN THAT THE P-TABLES FROM THE PREVIOUS START COMMAND (THERE MUST HAVE BEEN ONE) ARE USED, INSTEAD OF NEW ONES BEING BUILT.

CZDMQE M8207 STATIC DIAG. #2
CZDMQE.P11 30-SEP-82 15:35

MACV11 30A(1052) 18-OCT-82 15:30 PAGE 10
PROGRAM DOCUMENT

THE UNITS SWITCH GIVES THE ABILITY TO SELECT A SUBSET OF THESE. THE SOFTWARE DIALOGUE MAY OPTIONALLY BE REEXECUTED (OPERATOR WILL BE ASKED). THE COMMAND CAN BE USED AFTER COMMAND MODE HAS BEEN REENTERED IN ANY OF THE THREE NORMAL WAYS: A) THE REQUESTED NUMBER OF PASSES HAVE BEEN MADE. B) AN ERROR WAS ENCOUNTERED WITH THE HALT ON ERROR FLAG SET. C) A CONTROL/C WAS ENTERED BY THE OPERATOR.

6.3.3 CONTINUE COMMAND

CON(TINUE)/PASS:<PASS-CNT/FLAGS:<FLAG-LIST>

6.3.3.1 PASS SWITCH (/PASS:<PASS-CNT>)

<PASS-CNT> IS SAME AS IN START COMMAND, BUT THE DEFAULT IS THE UNSATISFIED PASS-CNT FROM THE PREVIOUS START OR RESTART. IF NONE REMAINS, THE DEFAULT IS NON-ENDING EXECUTION.

6.3.3.2 FLAG SWITCH (/FLAGS:<FLAG-LIST>)

<FLAG-LIST> IS SAME AS IN START COMMAND, BUT UNSPECIFIED FLAGS RETAIN THEIR CURRENT VALUE.

6.3.3.3 EFFECT OF CONTINUE COMMAND

CONTINUE MUST FOLLOW A START OR RESTART, AND COMMAND MODE MUST HAVE BEEN ENTERED DUE TO A HALT ON ERROR OR A CONTROL/C. THE EFFECT OF THE COMMAND IS TO GO TO THE BEGINNING OF THE TEST THAT WAS BEING EXECUTED WHEN THE HALT OR CONTROL/C TOOK PLACE. SOFTWARE DIALOGUE MAY OPTIONALLY BE REEXECUTED. HARDWARE PARAMETERS MAY NOT BE CHANGED.

6.3.4 PROCEED COMMAND

PRO(CEED)/FLAGS:<FLAG-LIST>

6.3.4.1 FLAGS SWITCH (/FLAGS:<FLAG-LIST>)

<FLAG-LIST> IS AS IN THE START COMMAND, BUT UNSPECIFIED FLAGS RETAIN THEIR CURRENT VALUE.

6.3.4.2 EFFECT OF PROCEED COMMAND

PROCEED MUST FOLLOW A START, RESTART, OR CONTINUE. COMMAND MODE MUST HAVE BEEN ENTERED VIA A HALT ON ERROR. THE EFFECT OF THE COMMAND IS TO BEGIN EXECUTION AT THE LOCATION

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CZDMQE MB207 STATIC DIAG. #2
CZDMQE.P11 30-SEP-82 15:35

MACY11 30A(1052) 18-OCT-82 15:30 PAGE 11
PROGRAM DOCUMENT

FOLLOWING THE ERROR CALL. NEITHER HARDWARE NOR SOFTWARE
PARAMETERS MAY BE ALTERED.

6.3.5 ADD COMMAND

ADD/UNITS:<UNIT-LIST>

6.3.5.1 UNITS SWITCH (/UNITS:<UNIT-LIST>)

<UNIT-LIST> IS AS IN THE RESTART COMMAND.

6.3.5.2 EFFECT OF ADD COMMAND

THE UNITS SPECIFIED ARE ADDED TO THE TEST SEQUENCE. EACH
UNIT MUST HAVE A P-TABLE IN MEMORY DUE TO AN EARLIER
HARDWARE DIALOGUE. THIS COMMAND MUST BE FOLLOWED BY A
RESTART OR CONTINUE. THE UNITS SWITCH MUST BE SPECIFIED.
THE ADD COMMAND IS MEANINGFUL ONLY FOR UNITS THAT WERE
PREVIOUSLY DROPPED.

6.3.6 DROP COMMAND

DRO(P)/UNITS:<UNIT-LIST>

6.3.6.1 UNITS SWITCH (/UNITS:<UNIT-LIST>)

<UNIT-LIST> IS AS IN THE RESTART COMMAND.

6.3.6.2 EFFECT OF DROP COMMAND

THE UNITS SPECIFIED WILL BE DROPPED FROM TESTING. THE UNITS
WILL BE RESELECTED ONLY BY THE EXECUTION OF AN ADD OR START
COMMAND. THE UNITS SWITCH MUST BE ENTERED. THIS COMMAND
MUST BE FOLLOWED BY A RESTART OR A CONTINUE COMMAND.

6.3.7 PRINT COMMAND

PRI(NT)

6.3.7.1 EFFECT OF PRINT COMMAND

THE TOTAL NUMBER OF ERRORS FOR EACH UNIT SINCE THE LAST

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START OR RESTART COMMAND ARE PRINTED. THE ISR (INHIBIT
STATISTICAL REPORTING) FLAG IS CLEARED.

6.3.8 DISPLAY COMMAND

DIS(PLAY)/UNITS:<UNIT-LIST>

6.3.8.1 UNITS SWITCH (/UNITS:<UNIT-LIST>)

<UNIT-LIST> IS AS IN THE RESTART COMMAND.

6.3.8.2 EFFECT OF DISPLAY COMMAND

THE HARDWARE P-TABLES FOR ALL UNITS UNDER TEST ARE PRINTED
OUT IN THE FORMAT IN WHICH THEY WERE ENTERED. ANY UNITS
THAT WERE DROPPED BY THE OPERATOR "DROP" COMMAND ARE SO
DESIGNATED.

6.3.9 FLAGS COMMAND

FLA(GS)

6.3.9.1 EFFECT OF FLAGS COMMAND

THE CURRENT SETTINGS OF ALL FLAGS ARE PRINTED.

6.3.10 ZFLAGS COMMAND

ZFL(AGS)

6.3.10.1 EFFECT OF ZFLAGS COMMAND

ALL FLAGS ARE CLEARED.

6.3.11 CONTROL CHARACTERS

A CONTROL C (C) ENTERED DURING THE EXECUTION OF A DIAGNOSTIC
CAUSES A RETURN TO COMMAND MODE.

A CONTROL Z (Z) ENTERED DURING ONE OF THE THREE OPERATOR
DIALOGUES- INITIAL DIALOGUE (SEE 6.2), HARDWARE DIALOGUE (SEE
6.3.1.5), OR SOFTWARE DIALOGUE (SEE 6.3.1.5) CAUSES THE

CZDMQE MB207 STATIC DIAG. #2
CZDMQE.P11 30-SEP-82 15:35

MACY11 30A(1052) 18-OCT-82 15:30 PAGE 13
PROGRAM DOCUMENT

DEFAULTS TO BE TAKEN FOR THE REMAINDER OF THAT DIALOGUE.

A CONTROL O (O) ENTERED DURING THE EXECUTION OF A DIAGNOSTIC CAUSES ALL TELETYPE OUTPUT TO BE SUPPRESSED FOR THE REM' DER OF THE DIAGNOSTIC OR UNTIL ANOTHER O IS TYPED, WHICH RESTORES NORMAL TELETYPE OUTPUT.

6.3.12 HARDWARE PARAMETERS

THE FOLLOWING QUESTIONS WILL BE ASKED ON A START COMMAND. THE VALUE LOCATED TO THE LEFT OF THE QUESTION MARK IS THE DEFAULT VALUE THAT WILL BE TAKEN ON A CARRIAGE RETURN RESPONSE.

1. WHICH MICRO-CPU? (O= M8200, 4= M8204, 7= M8207) (O) 7?

2. MICRO-CPU CSR ADDRESS: (O) 160170?

THIS IS THE ADDRESS AT WHICH THE CSR REGISTERS (SEIO) RESIDE ON THE UNIBUS. THE ALLOWABLE RANGE IS 160000-177776 (OCTAL), AND THE DEFAULT IS 160170.

3. MICRO-PROCESSOR RUN SWITCH-TYPE 1 IF ON, IF OFF: (O) 0?

THE RUN SWITCH IS E28, SWITCH 7 ON THE M8207. MORE TESTS CAN BE PERFORMED IF THE RUN SWITCH IS OFF. YOU MAY GENERATE AN ERROR IF YOU ANSWER THIS QUESTION WRONG.

6.3.13 SOFTWARE PARAMETERS

NO SOFTWARE PARAMETER QUESTIONS ARE ASKED BY PART 2 OF THE STATIC LOGIC TESTS.

6.3.14 EXTENDED DISCUSSION OF P-TABLE DIALOGUE

THE FULL CAPABILITY OF THE HARDWARE DIALOGUE IS REVEALED BY THE FOLLOWING DISCUSSION OF WHAT HAPPENS INTERNALLY.

AS SOON AS THE QUESTION "N UNITS?" IS ANSWERED (WITH THE NUMBER N, SAY) SPACE IN CORE IS ALLOCATED FOR N P-TABLES. ALL OF THE P-TABLES ARE OF THE SAME FORMAT, AND THERE IS A ONE-TO ONE CORRESPONDENCE BETWEEN THE HARDWARE PARAMETER QUESTIONS AND THE SLOTS IN THE P-TABLE FORMAT.

ON THE FIRST TRIP THRU THE QUESTIONS, ALL OF THE SLOTS IN ALL OF THE P-TABLES ARE FILLED. IF THE OPERATOR TYPES IN LESS THAN N EXPLICIT VALUES IN RESPONSE TO A PARTICULAR QUESTION, THESE VALUES ARE PLACED IN THE P-TABLES (ONE VALUE GOING INTO THE PROPER SLOT OF EACH P-TABLE BEGINNING WITH THE FIRST P-TABLE) UNTIL THE STRING OF VALUES IS EXHAUSTED.

CZDMQE M8207 STATIC DIAG. #2
CZDMQE.P11 30-SEP-82 15:35

MACV11 30A(1052) 18-OCT-82 15:30 PAGE 14
PROGRAM DOCUMENT

THE LAST VALUE IN THE STRING BECOMES THE NEW DEFAULT AND IS USED TO FILL THAT SLOT IN THE REMAINING P-TABLES.

ON SUBSEQUENT TRIPS THRU THE QUESTIONS, THE SAME PROCESS IS CARRIED OUT, EXCEPT THAT THE EARLIEST P-TABLE NOT TO HAVE RECEIVED AN EXPLICIT VALUE IN ANY OF ITS SLOTS NOW ASSUMES THE ROLE THAT TABLE NUMBER ONE PLAYED IN THE FIRST TRIP.

THE SERIES OF QUESTIONS IS REISSUED UNTIL AT LEAST ONE QUESTION HAS RECEIVED N EXPLICIT VALUES FROM THE OPERATOR.

IN GIVING A STRING OF VALUES, COMMAS WITHOUT INTERVENING VALUES MAY BE USED TO INDICATE A REPETITION OF THE LAST NAMED VALUE.

A STRING OF VALUES MAY BE GIVEN AS A RANGE (6-10 FOR EXAMPLE). IF THE VALUES REPRESENT PURE NUMERICAL DATA, THIS SAMPLE RANGE TRANSLATES TO THE STRING 6,7,8,9,10 (AN INCREMENT OF 1). IF THE VALUES ARE ADDRESSES, THE SAMPLE RANGE TRANSLATES TO THE STRING 6,8,10 (AN INCREMENT OF 2).

NOW LET US SEE HOW WE COULD USE THESE CAPABILITIES TO CONSTRUCT A SET OF P-TABLES. ASSUME THAT WE HAVE 16 UNITS, AND THAT THERE ARE THREE HARDWARE PARAMETERS FOR EACH (THREE SLOTS IN THE P-TABLE, THREE HARDWARE QUESTIONS IN THE DIALOGUE). LET THE DESIRED VALUE FOR THE FIRST PARAMETER BE THE NUMBER 75 FOR ALL 16 TABLES. LET THE DESIRED VALUE FOR THE SECOND PARAMETER BE EQUAL TO THE UNIT NUMBER (0,1,2,...,15) EXCEPT FOR UNIT 12, WHICH SHOULD RECEIVE THE VALUE 11. LET THE DESIRED VALUE FOR THE THIRD PARAMETER BE THE NUMBER 76 FOR THE FIRST 7 UNITS AND THE NUMBER 77 FOR THE LAST 9 UNITS.

THE FOLLOWING DIALOGUE WOULD ACCOMPLISH THIS GOAL:

UNITS (D) ? 16

UNIT 1

<QUESTION 1> ? 75
<QUESTION 2> ? 0-6
<QUESTION 3> ? 76

UNIT 21

<QUESTION 1> ?
<QUESTION 2> ? 7-11,,13-15
<QUESTION 3> ? 77

THE FIRST TIME THE SERIES IS ASKED, SLOT ONE RECEIVES A 75 IN ALL 16 TABLES. SLOT TWO RECEIVES THE VALUES 0,1,2,...,6 IN TABLES 0 THRU 6 AND A CONSTANT 6 IN TABLES 7 THRU 15. SLOT THREE RECEIVES A CONSTANT 76 IN ALL 16 TABLES.

THE SECOND TIME THRU THE SERIES, TABLES 16 THRU THE END ARE GOING TO BE AFFECTED (NOTE THAT THIS PIECE OF INFORMATION IS PRINTED OUT FOR THE OPERATOR IN THE FORM "UNIT xx" AT THE BEGINNING OF EACH SERIES). QUESTION 1 IS RESPONDED TO

CZDMQE M8207 STATIC DIAG. #2
CZDMQE.P11 30-SEP-82 15:35

MACY11 30A(1052) 18-OCT-82 15:30 PAGE 15
PROGRAM DOCUMENT

BY A <CR>, SO SLOT ONE STAYS AT CONSTANT 75 IN TABLES 7 THRU 15, SINCE NO NEW EXPLICIT VALUES ARE TYPED IN. SLOT TWO GETS THE VALUES 7,8,9,10,11 IN TABLES 7 THRU 11, AND GETS A 11 IN SLOT 12, AND GETS THE VALUES 13,14,15 IN TABLES 13 THRU 15. SLOT THREE GETS THE VALUE 77 IN TABLES 7 THRU 15.

THE DIALOGUE IS TERMINATED WHEN THE SOFTWARE RECOGNIZES THAT 16 EXPLICIT VALUES HAVE BEEN GIVEN FOR AT LEAST ONE QUESTION (NAMELY QUESTION 2).

7.0 TEST DESCRIPTIONS

***** TEST 1 *****
*VERIFY THAT REFERENCING UNIBUS DEVICE REGISTERS
*DOES NOT CAUSE A TIME OUT TRAP

***** TEST 2 *****
*TEST OF BR RIGHT SHIFT
*VERIFY THAT A DEST OF BR RSH (011) OF A MICRO-INSTRUCTION
*SHIFTS THE RESULTING BR DATA RIGHT ONCE.

***** TEST 3 *****
*IOP CRAM WRITE/READ TEST
*FLOAT A 1 THROUGH EACH CRAM LOCATION

***** TEST 4 *****
*IOP CRAM WRITE/READ TEST
*FLOAT A 0 THROUGH EACH CRAM LOCATION

***** TEST 5 *****
*IOP CRAM DUAL ADDRESSING TEST
*WRITE EACH ADDRESS INTO ITSELF, READ EACH
*ADDRESS TO VERIFY CORRECT ADDRESSING

***** TEST 6 *****
*IOP MAIN MEMORY TEST
*FLOAT A 1 THROUGH ALL MAIN MEMORY LOCATIONS

***** TEST 7 *****
*IOP MAIN MEMORY TEST
*FLOAT A 0 THROUGH ALL MAIN MEMORY LOCATIONS

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CZDMQE M8207 STATIC DIAG. #2
CZDMQE.P11 30-SEP-82 15:35

MACY11 30A(1052) 18-OCT-82 15:30 PAGE 16
PROGRAM DOCUMENT

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***** TEST 8 *****

*IOP MAIN MEMORY DUAL ADDRESSING TEST
*LOAD EACH MEMORY LOCATION WITH ITS OWN ADDRESS
*READ BACK EACH LOCATION TO VERIFY CORRECT ADDRESSING

***** TEST 9 *****

*IOP MAR TEST
*PERFORM DUAL ADDRESSING TEST
*USING MAR AUTO-INC FEATURE

***** TEST 10 *****

*IOP (CRAM) ODT BITS TEST
*LOAD MAR WITH A 0 INC MAR UNTIL IT OVERFLOWS
VERIFY THAT IBUS 10 BITS IS SET ONLY WHEN MAR BIT 8 IS A ONE
AND THAT IBUS 10 BIT6 IS SET ON MAR OVERFLOW

***** TEST 11 *****

*CRAM TEST OF JUMP(1) NEVER MICRO-PROCESSOR INSTRUCTION.
*PERFORM THE JUMP INSTRUCTION
*VERIFY THE JUMP DID NOT OCCUR BY CLOCKING THE INSTRUCTION
*IN THE LOCATION IT IS AT. THIS INSTRUCTION LOADS THE
*BR WITH THE LOWEST 8 BITS OF THE CRAM PC. AT THIS POINT
*THE BR DATA IS MOVED TO PORT4. IF THIS DATA IS CORRECT
*THE CRAM PC IS CORRECT. IF THE CRAM PC IS NOT RIGHT,
*THEN PORT4 CONTAINS A 37

***** TEST 12 *****

*CRAM TEST OF JUMP(1) ALWAYS MICRO-PROCESSOR INSTRUCTION.
*PERFORM THE JUMP INSTRUCTION
*VERIFY THE JUMP DID OCCUR BY CLOCKING THE INSTRUCTION
*IN THE LOCATION IT IS AT. THIS INSTRUCTION LOADS THE
*BR WITH THE LOWEST 8 BITS OF THE CRAM PC. AT THIS POINT
*THE BR DATA IS MOVED TO PORT4. IF THIS DATA IS CORRECT
*THE JUMP WAS SUCCESSFUL, IF THE JUMP WAS UNSUCCESSFUL
*THEN PORT4 WILL CONTAIN A 37

***** TEST 13 *****

*CRAM TEST OF JUMP(1) ON C BIT SET MICRO-PROCESSOR INSTRUCTION.
*SET THE C BIT, PERFORM THE JUMP INSTRUCTION.
*VERIFY THE JUMP DID OCCUR BY CLOCKING THE INSTRUCTION
*IN THE LOCATION IT IS AT. THIS INSTRUCTION LOADS THE
*BR WITH THE LOWEST 8 BITS OF THE CRAM PC. AT THIS POINT
*THE BR DATA IS MOVED TO PORT4. IF THIS DATA IS CORRECT
*THE JUMP WAS SUCCESSFUL, IF THE JUMP WAS UNSUCCESSFUL

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*THEN PORT4 WILL CONTAIN A 37.

***** TEST 14 *****

*CRAM TEST OF JUMP(1) ON Z BIT SET MICRO-PROCESSOR INSTRUCTION.

*SET THE Z BIT, PERFORM THE JUMP INSTRUCTION.

*VERIFY THE JUMP DID OCCUR BY CLOCKING THE INSTRUCTION

*IN THE LOCATION IT IS AT. THIS INSTRUCTION LOADS THE

*BR WITH THE LOWEST 8 BITS OF THE CRAM PC. AT THIS POINT

*THE BR DATA IS MOVED TO PORT4. IF THIS DATA IS CORRECT

*THE JUMP WAS SUCCESSFUL, IF THE JUMP WAS UNSUCCESSFUL

*THEN PORT4 WILL CONTAIN A 37

***** TEST 15 *****

*CRAM TEST OF JUMP(1) ON BRO SET MICRO-PROCESSOR INSTRUCTION.

*SET THE BRO BIT, PERFORM THE JUMP INSTRUCTION.

*VERIFY THE JUMP DID OCCUR BY CLOCKING THE INSTRUCTION

*IN THE LOCATION IT IS AT. THIS INSTRUCTION LOADS THE

*BR WITH THE LOWEST 8 BITS OF THE CRAM PC. AT THIS POINT

*THE BR DATA IS MOVED TO PORT4. IF THIS DATA IS CORRECT

*THE JUMP WAS SUCCESSFUL, IF THE JUMP WAS UNSUCCESSFUL

*THEN THE PORT4 WILL CONTAIN A 37

***** TEST 16 *****

*CRAM TEST OF JUMP(1) ON BR1 SET MICRO-PROCESSOR INSTRUCTION.

*SET THE BR1 BIT, PERFORM THE JUMP INSTRUCTION.

*VERIFY THE JUMP DID OCCUR BY CLOCKING THE INSTRUCTION

*IN THE LOCATION IT IS AT. THIS INSTRUCTION LOADS THE

*BR WITH THE LOWEST 8 BITS OF THE CRAM PC. AT THIS POINT

*THE BR DATA IS MOVED TO PORT4. IF THIS DATA IS CORRECT

*THE JUMP WAS SUCCESSFUL, IF THE JUMP WAS UNSUCCESSFUL

*THEN PORT4 WILL CONTAIN A 37

***** TEST 17 *****

*CRAM TEST OF JUMP(1) ON BR4 SET MICRO-PROCESSOR INSTRUCTION.

*SET THE BR4 BIT, PERFORM THE JUMP INSTRUCTION.

*VERIFY THE JUMP DID OCCUR BY CLOCKING THE INSTRUCTION

*IN THE LOCATION IT IS AT. THIS INSTRUCTION LOADS THE

*BR WITH THE LOWEST 8 BITS OF THE CRAM PC. AT THIS POINT

*THE BR DATA IS MOVED TO PORT4. IF THIS DATA IS CORRECT

*THE JUMP WAS SUCCESSFUL, IF THE JUMP WAS UNSUCCESSFUL

*THEN PORT4 WILL CONTAIN A 37

***** TEST 18 *****

*CRAM TEST OF JUMP(1) ON BR7 SET MICRO-PROCESSOR INSTRUCTION.

*SET THE BR7 BIT, PERFORM THE JUMP INSTRUCTION

*VERIFY THE JUMP DID OCCUR BY CLOCKING THE INSTRUCTION

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*IN THE LOCATION IT IS AT. THIS INSTRUCTION LOADS THE
*BR WITH THE LOWEST 8 BITS OF THE CRAM PC. AT THIS POINT
*THE BR DATA IS MOVED TO PORT4. IF THIS DATA IS CORRECT
*THE JUMP WAS SUCCESSFUL, IF THE JUMP WAS UNSUCCESSFUL
*THEN PORT4 WILL CONTAIN A 37

***** TEST 19 *****
*CRAM TEST OF JUMP(1) ON C BIT CLEAR MICRO-PROCESSOR INSTRUCTION.
*SET THE C BIT, PERFORM THE JUMP INSTRUCTION.
*VERIFY THE JUMP DID OCCUR BY CLOCKING THE INSTRUCTION
*IN THE LOCATION IT IS AT. THIS INSTRUCTION LOADS THE
*BR WITH THE LOWEST 8 BITS OF THE CRAM PC. AT THIS POINT
*THE BR DATA IS MOVED TO PORT4. IF THIS DATA IS CORRECT
*THE JUMP WAS SUCCESSFUL, IF THE JUMP WAS UNSUCCESSFUL
*THEN PORT4 WILL CONTAIN A 37

***** TEST 20 *****
*CRAM TEST OF JUMP(1) ON Z BIT CLEAR MICRO-PROCESSOR INSTRUCTION.
*CLEAR THE Z BIT, PERFORM THE JUMP INSTRUCTION.
*VERIFY THE JUMP DID OCCUR BY CLOCKING THE INSTRUCTION
*IN THE LOCATION IT IS AT. THIS INSTRUCTION LOADS THE
*BR WITH THE LOWEST 8 BITS OF THE CRAM PC. AT THIS POINT
*THE BR DATA IS MOVED TO PORT4. IF THIS DATA IS CORRECT
*THE JUMP WAS SUCCESSFUL, IF THE JUMP WAS UNSUCCESSFUL
*THEN PORT4 WILL CONTAIN A 37

***** TEST 21 *****
*CRAM TEST OF JUMP(1) ON BRO CLEAR MICRO-PROCESSOR INSTRUCTION.
*CLEAR THE BRO BIT, PERFORM THE JUMP INSTRUCTION.
*VERIFY THE JUMP DID OCCUR BY CLOCKING THE INSTRUCTION
*IN THE LOCATION IT IS AT. THIS INSTRUCTION LOADS THE
*BR WITH THE LOWEST 8 BITS OF THE CRAM PC. AT THIS POINT
*THE BR DATA IS MOVED TO PORT4. IF THIS DATA IS CORRECT
*THE JUMP WAS SUCCESSFUL, IF THE JUMP WAS UNSUCCESSFUL
*THEN PORT4 WILL CONTAIN A 37

***** TEST 22 *****
*CRAM TEST OF JUMP(1) ON BR1 CLEAR MICRO-PROCESSOR INSTRUCTION.
*CLEAR THE BR1 BIT, PERFORM THE JUMP INSTRUCTION.
*VERIFY THE JUMP DID OCCUR BY CLOCKING THE INSTRUCTION
*IN THE LOCATION IT IS AT. THIS INSTRUCTION LOADS THE
*BR WITH THE LOWEST 8 BITS OF THE CRAM PC. AT THIS POINT
*THE BR DATA IS MOVED TO PORT4. IF THIS DATA IS CORRECT
*THE JUMP WAS SUCCESSFUL, IF THE JUMP WAS UNSUCCESSFUL
*THEN PORT4 WILL CONTAIN A 37

CZDMQE M8207 STATIC DIAG. #2
CZDMQE.P11 30-SEP-82 15:35

MACY11 30A(1052) 18-OCT-82 15:30 PAGE 19
PROGRAM DOCUMENT

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929 ***** TEST 23 *****
930 *CRAM TEST OF JUMP(1) ON BR4 CLEAR MICRO-PROCESSOR INSTRUCTION.
931 *CLEAR THE BR4 BIT, PERFORM THE JUMP INSTRUCTION.
932 *VERIFY THE JUMP DID NOT OCCUR BY CLOCKING THE INSTRUCTION
933 *IN THE LOCATION IT IS AT. THIS INSTRUCTION LOADS THE
934 *BR WITH THE LOWEST 8 BITS OF THE CRAM PC. AT THIS POINT
935 *THE BR DATA IS MOVED TO PORT4. IF THIS DATA IS CORRECT
936 *THE CRAM PC IS CORRECT, IF THE CRAM PC IS NOT RIGHT
937 *THEN PORT4 CONTAINS A 37
938 *****
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940 ***** TEST 24 *****
941 *CRAM TEST OF JUMP(1) ON BR7 CLEAR MICRO-PROCESSOR INSTRUCTION.
942 *CLEAR THE BR7 BIT, PERFORM THE JUMP INSTRUCTION.
943 *VERIFY THE JUMP DID NOT OCCUR BY CLOCKING THE INSTRUCTION
944 *IN THE LOCATION IT IS AT. THIS INSTRUCTION LOADS THE
945 *BR WITH THE LOWEST 8 BITS OF THE CRAM PC. AT THIS POINT
946 *THE BR DATA IS MOVED TO PORT4. IF THIS DATA IS CORRECT
947 *THE CRAM PC IS CORRECT, IF THE CRAM PC IS NOT RIGHT
948 *THEN PORT4 CONTAINS A 37
949 *****
950
951 ***** TEST 25 *****
952 *
953 *MAIN MEMORY PAGE DUAL ADDRESS TEST.
954 *IN THIS TEST WE WILL VERIFY THAT PAGES DO
955 *NOT DUAL ADDRESS. THIS TEST IS DIFFERENT FROM THE
956 *PREVIOUS DUAL ADDRESS TESTS IN THAT THE OTHER
957 *TEST REALLY DIDN'T CHECK PAGE DUAL ADDRESSING
958 *****
959
960 ***** TEST 26 *****
961 *
962 *JUMP FIELD,PAGE TEST
963 *
964 *IN THIS TEST WE WILL MAKE SURE A JUMP FIELD INSTRUCTION
965 *WORKS. TO DO THIS, WE'LL PUT THE DESIRED PAGE, FIELD
966 *INFORMATION IN IBUS<13> THEN ISSUE A JUMP FIELD
967 *THEN WE'LL READ PC REG. AND VERIFY.
968 * REV. E - CHANGE TO TEST BITS 4 & 5 (PC BITS 12 & 13)
969 *****
970
971 ***** TEST 27 *****
972 *
973 *JUMP TEST, JUMP ALWAYS, JUMP CHANGE FIELD
974 *
975 *IN THIS TEST, WE WILL CHECK THE ABILITY OF THE
976 *MICRO-PROCESSOR TO JUMP (BRANCH AND ALWAYS INSTRUCTION)
977 *TO LOCATIONS, FIELDS FROM OTHER LOCATIONS FIELDS.
978 *WE ALREADY KNOW THAT THE BRANCH INSTR WORKS FROM
979 *OTHER TEST.
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PROCEDURE:

CZDMQE M8207 STATIC DIAG. #2
CZDMQE.P11 30-SEP-82 15:35

MACY11 30A(1052) 18-OCT-82 15:30 PAGE 20
PROGRAM DOCUMENT

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*      1.  START ADDR 0, FIELD 0
*      2.  **CALCULATE NEW ADDRS, FIELD VIA INC.
*      3.  CAUSE JUMP (BRANCH) TO NEW ADDRESS
*      4.  READ PC FROM IBUS*12 AND IBUS*13
*      5.  REPEAT STEP 2-4 256.TIMES
*
*      TO CALCULATE NEW ADDRESS:
*      1.  INC LOW BYTE OF ADDRESS FOR PC ADDRESS 0-7
*      2.  INC LOW BYTE OF N ADDRESS FOR PC ADDRESS 8-11
*          BITS REPRESENTED AS BITS 0-3.  WHEN 0-3 OVERFLOWS,
*          RESTARTS AT ZERO.
*          NET RESULT IS JUMPS FROM:
*          FIELD,PAGE                                LOC
*              0                                    0
*              1                                    1
*              2                                    2
*              3                                    3
*             10                                    7
*             11                                    11
*            :10                                    :
*            17                                    377
*****

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***** TEST 28 *****

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*
*JUMP TEST, JUMP ALWAYS, JUMP CHANGE FIELD
*
*IN THIS TEST, WE WILL CHECK THE ABILITY OF THE
*MICRO-PROCESSOR TO JUMP (BRANCH AND ALWAYS INSTRUCTION)
*TO LOCATIONS, FIELDS FROM OTHER LOCATIONS FIELDS.
*WE ALREADY KNOW THAT THE BRANCH INSTR WORKS FROM
*OTHER TESTS.
*      1.  START ADDR 0, FIELD 0
*      2.  **CALCULATE NEW ADDRS, FIELD VIA DEC.
*      3.  CAUSE JUMP (BRANCH) TO NEW ADDRESS
*      4.  READ PC FROM IBUS*12 AND IBUS*13
*      5.  REPEAT STEP 2-4 256.TIMES
*
*      TO CALCULATE NEW ADDRESS:
*      1.  DEC LOW BYTE OF ADDRESS FOR PC ADDRESS 0-7
*      2.  DEC LOW BYTE OF N ADDRESS FOR PC ADDRESS 8-11
*          BITS REPRESENTED AS BITS 0-3.  WHEN 0-3 OVERFLOWS,
*          RESTARTS AT ZERO
*          NET RESULT IS JUMPS FROM:
*          FIELD,PAGE                                LOC:
*              0                                    0
*              17                                    377
*              16                                    376
*              15                                    375
*             :10                                    :
*             00                                    000
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***** TEST 29 *****

CZDMQE M8207 STATIC DIAG. #2
CZDMQE.P11 30-SEP-82 15:35

MACY11 30A(1052) 18-OCT-82 15:30 PAGE 21
PROGRAM DOCUMENT

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*
*IN THIS TEST WE'LL VERIFY THAT THE Z BIT CAN BE READ FROM
IBUS <13>. WE ALREADY KNOW THAT THE Z BIT WORKS PROPERLY,
*ALL WE WANT TO KNOW HERE IS THAT IT CAN BE READ.

***** TEST 30 *****

*
*IN THIS TEST WE'LL VERIFY THAT THE C BIT CAN BE READ FROM
IBUS <13>. WE ALREADY KNOW THAT THE C BIT WORKS PROPERLY
*ALL WE WANT TO KNOW HERE IS THAT IT BE READ.

***** TEST 31 *****

*TEST OF PROGRAM CLOCK BIT
*DO A MASTER CLEAR, VERIFY THAT PROGRAM CLOCK IS SET
*WRITE PROGRAM CLOCK BIT TO A ONE, VERIFY THAT IT CLEARS,
*AND THEN SETS SOME TIME LATER

***** TEST 32 *****

*FORCE POWER FAIL TEST
*SET FORCE POWER FAIL BIT VERIFY THAT PROCESSOR TRAPS TO 24
*GOING DOWN AND COMING UP. VERIFY ALSO THAT BUS INIT WAS
*BLOCKED FROM GETTING TO THE M8200.4,7 DURING THE POWER FAIL

***** TEST 33 *****

*MICRO-PROCESSOR NOISE TEST
*WRITE ALL ZERO'S THEN ALL ONE'S THEN A DATA PATTERN
TO THE IBUS AND IBUS REGISTERS AND TO THE SP AND MAIN MEM
*THEN GO BACK AND READ THE DATA PATTERNS TO VERIFY THAT
*READING AND WRITING OF OTHER LOCATIONS AND REGISTERS
*DID NOT CHANGE THE DATA.

***** TEST 34 *****

*THIS TEST IS DESIGNED TO MAKE SURE THAT A NODST INSTRUCTION
*DOES NOT WRITE INTO PORT B OF THE MULTI-PORT RAM.
*TO DO THIS, WE'LL PUT A 125 INTO INDATA2, THEN WE'LL PUT A
*125 INTO BOTH SP1 AND BR. LAST WE'LL DO A NODST BR, SUBOC, SP1
*IF THERE IS A WRITE INTO PORTB, INDATA2 WILL CONTAIN A 377

***** TEST 35 *****

*
*EXTENDED CRAM TEST FOR M8206. IN THIS TEST WE WILL LOAD DATA
*THROUGHOUT THE CRAM (TEST DATA IS JUST 4K OF DIAG. CODE) AND

CZDMQE M8207 STATIC DIAG. #2
CZDMQE.P11 30-SEP-82 15:35

MACV11 30A(1052) 18-OCT-82 15:30 PAGE 22
PROGRAM DOCUMENT

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*THEN READ IT BACK AND VERIFY THAT IT IS CORRECT

***** TEST 36 *****

*

*THIS TEST LOADS MICRO-CODE INTO A M8206 MCPU THEN EXECUTES IT.
*THE MICRO-CODE IS DESIGNED TO WRITE ALL ONES INTO THE SEL REGS.

*

***** TEST 37 *****

*

*NEGATIVE ADDRESS TEST.

* IN THIS TEST, WE'LL MAKE SURE THAT THE M8207
* DOES NOT RESPOND TO AN ADDRESS THAT ISN'T ASSIGNED
* TO IT

*

***** TEST 38 *****

*

*BYTE ADDRESSING TEST

* HERE, WE'RE GOING TO MAKE SURE THAT WE CAN
* WRITE INTO ONLY A HIGH OR LOW BYTE OF THE MCPU.

*

***** TEST 39 *****

*

*IN THIS TEST WE'RE GOING TO MAKE SURE THAT THE PC
*REG COUNTS UP PROPERLY. THE PC REG SHOULD INCREMENT
*ONCE AFTER EACH INSTRUCTION.

*

***** TEST 40 *****

*

*IN THIS TEST WE'LL MAKE SURE THAT 'BRANCH FIELD H' DOESN'T
*GET STUCK HIGH.

*FIRST WE'LL CLEAR THE PC HIGH REG. THEN WE'LL DO A BRANCH INSTR
*WITH BAB BITS 11+12 SET. IF PCR BITS 8+9 SET THEN WE'LL KNOW
*WE WERE SUCCESSFUL IF PCR BITS 8+9 FAIL TO SET, WE'LL KNOW
*THAT THE MAX SELECTED THE WRONG INPUT TO BE CLOCKED INTO THE PCR.

***** TEST 41 *****

*

*IN THIS TEST WE'RE GOING TO MAKE SURE THAT ONLY SPO
*IS SELECTED FOR SOURCE WHEN THE DESTINATION
*IS THE OUBUS

CZDMQE M8207 STATIC DIAG. #2
CZDMQE.P11 30-SEP-82 15:35

MACY:1 30A(1052) 18-OCT-82 15:30 PAGE 23
PROGRAM DOCUMENT

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*FIRST WE'LL WRITE EACH SP ADDR INTO ITSELF THEN WE'LL
*MOV SP TO OBUS4. THAT SHOULD SELECT
*SP ADDRESS 0. IF ANY OTHER DATA SHOWS UP, WE'LL
*BLAME IT ON THE SELECTION OF A DIFFERENT SCRATCH PAD.

***** TEST 42 *****

*
*IN THIS TEST WE ARE GOING TO MAKE SURE THAT THE
*SIGNAL 'MOV INST H' (AND ITS ASSOC. TRBS) DOESN'T GET
*STUCK HIGH. IN ORDER TO DO THIS WE'LL CLEAR THE PC HIGH REG
*PUT KNOWN DATA IN THE BREG AND SP1 THEN WE'LL BRANCH
*WITH CROM BITS 0-3 SET AS WELL AS CROM BIT 9 WITH CROM BITS 8 AND 11 CLEAR.
*IF 'MOV INST H' GETS STUCK HIGH, THE PC REG HIGH WILL GET LOADED
*WITH THE CONTENTS OF THE ALU

***** TEST 43 *****

*TEST THAT MASTER CLEAR, CLEARS BITS IN THE NPR CONTROL REGISTER AND
*MICROPROCESSOR MISCELLANEOUS REGISTER-FIRST WE'LL SET THE
*PRIORITY UP SO THAT WHEN WE SET THE BUS REQUEST BIT THAT IT WON'T BUG US
*THEN WE'LL SET ALL THE BITS IN BOTH REGS EXCEPT THE
*NPR REQUEST. WE'LL LOOK TO SEE THAT ALL GOT SET, NEXT
*WE'LL DO A MASTER CLEAR AND BE SURE THAT THEY ALL CLEAR.

8.0 ERROR INFORMATION

8.1 ERROR REPORTING

ERRORS ARE REPORTED BY THE PROGRAM AS THEY OCCUR (IF NOT INHIBITED). THE REPORT CONFORMS TO THE DIAGNOSTIC SUPERVISOR ERROR REPORT FORMAT, AND CONSISTS OF A DESCRIPTION OF THE ERROR, THE TEST NUMBER, SUBTEST NUMBER, PC OF THE ERROR CALL, DEVICE ADDRESS, AND BASIC AND EXTENDED ERROR INFORMATION.

THE FOLLOWING EXAMPLES PROVIDE TYPICAL ERROR REPORTS:

CZDMQ DVC FTL ERR 00045 TST 027 SUB 000 PC:022572

MASTER CLEAR FAILED TO CLEAR PC REG, CONTENTS=000624
CZDMQ DVC FTL ERR 00015 TST 042 SUB 000 PC:027234

UNIT=00, FAILING UNIT ADDRESS=16017C
JUMP TEST ERROR
FROM ADDR TO ADDR BAD ADDR
000402 000000 000114

CZDMQE M8207 STATIC DIAG. #2
CZDMQE.P11 30-SEP-82 15:35

MACY11 30A(1052) 18-OCT-82 15:30 PAGE 24
PROGRAM DOCUMENT

FOR ALL OTHER ERRORS, THE REPORT MAY BE MORE EXTENSIVE AND
REQUIRE ADDITIONAL DATA TO BE REPORTED.

9.0 HISTORY

- MODIFIED AUGUST 1980 FOR THE FOLLOWING REASONS:

- 1) CANCEL DEPO CZDMAA1
- 2) CANCEL DEPO CZDMAA2
- 3) DETECT BAD TIMING ON INTERNAL CLOCK.

- MODIFIED JULY 1981 TO FIX TEST 43 MAR BITS IN IBUS* 10.

- MODIFIED JANUARY 1982

- 1) ERRONEOUS DATA WAS NOT CLEARED IN HIGH BYTE OF REGISTER 5
IN TEST 40.
FIX: CHANGE BIC #374,R5 TO BIC #177774,R5.

a

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CZDMQE M8207 STATIC DIAG. #2
CZDMQE.P11 30-SEP-82 15:35

MACY11 30A(1052) 18-OCT-82 15:30 PAGE 25
PROGRAM DOCUMENT

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CZDMQEO M8207 STATIC DIAG #2
CZDMQE.P11 30-SEP-82 15:35

MACY11 30A(1052) 18-OCT-82 15:30 PAGE 26
PROGRAM DOCUMENT

.TITLE CZDMQEO M8207 STATIC DIAG #2
.=2000

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002000

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000000

.MCALL SVC
SVC

; INITIALIZE SUPERVISOR MACROS

BGNMOD CZDMQ

\$LSTIN= 0
\$LSTTAG= 0
SVCINS= 0 ; LIST INSTRUCTIONS, SHIFTED RIGHT
SVCTST= 0 ; LIST TEST TAGS, SHIFTED RIGHT
SVCSUB= 0 ; LIST SUBTEST TAGS, SHIFTED RIGHT
SVCGBL= 0 ; LIST GLOBAL TAGS, SHIFTED RIGHT
SVCTAG= 0 ; LIST OTHER TAGS, SHIFTED RIGHT

: CHANGE THE VALUES OF THE SVC... SYMBOLS TO BE ZERO IF YOU WISH
: TO ALIGN THE MACRO CALLS AND THEIR EXPANSIONS. CHANGE THE
: SYMBOLS TO BE MINUS-ONE TO NOT LIST THE EXPANSIONS. YOU MAY
: CHANGE THE SYMBOLS AT ANY POINT IN YOUR PROGRAM.

CZDMQEO M8207 STATIC DIAG #2
CZDMQE.P11 30-SEP-82 15:35

MACY11 30A(1052) 18-OCT-82 15:30 PAGE 27
PROGRAM HEADER

1272			.SBTTL	PROGRAM HEADER	
1273			---		
1274			++		
1275			:	THE PROGRAM HEADER IS THE INTERFACE BETWEEN	
1276			:	THE DIAGNOSTIC PROGRAM AND THE SUPERVISOR.	
1277			---		
1278	002000			POINTER BGNAU,BGNDU	
1279					
1280					
1281	002000			HEADER CZDMQ,D,0,240,0	
1282	002000		LSNAME::	:DIAGNOSTIC NAME	
1283	002000	103		.ASCII /C/	
1284	002001	132		.ASCII /Z/	
1285	002002	104		.ASCII /D/	
1286	002003	115		.ASCII /M/	
1287	002004	121		.ASCII /Q/	
1288	002005	000		.BYTE 0	
1289	002006	000		.BYTE 0	
1290	002007	000		.BYTE 0	
1291	002010		LSREV::	:REVISION LEVEL	
1292	002010	104		.ASCII /D/	
1293	002011		LSDEPO::	:0	
1294	002011	060		.ASCII /O/	
1295	002012		LSUNIT::	:NUMBER OF UNITS	
1296	002012	000000		.WORD 0	
1297	002014		LSTIML::	:LONGEST TEST TIME	
1298	002014	000360		.WORD 240.	
1299	002016		LSHPCP::	:POINTER TO H.W. QUES.	
1300	002016	027344		.WORD LSHARD	
1301	002020		LSSPCP::	:POINTER TO S.W. QUES.	
1302	002020	000000		.WORD 0	
1303	002022		LSHPTP::	:PTR. TO DEF. H.W. PTABLE	
1304	002022	002262		.WORD LSHW	
1305	002024		LSSTPT::	:PTR. TO S.W. PTABLE	
1306	002024	000000		.WORD 0	
1307	002026		LSLADP::	:DIAG. END ADDRESS	
1308	002026	030144		.WORD LSLAST	
1309	002030		LSSTA::	:RESERVED FOR APT STATS	
1310	002030	000000		.WORD 0	
1311	002032		LSCO::		
1312	002032	000000		.WORD 0	
1313	002034		LSDTYP::	:DIAGNOSTIC TYPE	
1314	002034	000000		.WORD 0	
1315	002036		LSAPT::	:APT EXPANSION	
1316	002036	000000		.WORD 0	
1317	002040		LSDTP::	:PTR. TO DISPATCH TABLE	
1318	002040	002132		.WORD LDISPATCH	
1319	002042		LSPRIO::	:DIAGNOSTIC RUN PRIORITY	
1320	002042	000000		.WORD 0	
1321	002044		LSENVI::	:FLAGS DESCRIBE HOW IT WAS SETUP	
1322	002044	000000		.WORD 0	
1323	002046		LSEXP1::	:EXPANSION WORD	
1324	002046	000000		.WORD 0	
1325	002050		LSMREV::	:SVC REV AND EDIT #	
1326	002050	003		.BYTE CSREVISION	
1327	002051	003		.BYTE CREDIT	

CZDMQEO MB207 STATIC DIAG #2
CZDMQE.P11 30-SEP-82 15:35

MACY11 30A(1052) 18-OCT-82 15:30 PAGE 28
PROGRAM HEADER

1328	002052		L\$EF::		;DIAG. EVENT FLAGS
1329	002052	000000		.WORD 0	
1330	002054	000000		.WORD 0	
1331	002056		L\$SPC::		
1332	002056	000000		.WORD 0	
1333	002060		L\$DEVP::		; POINTER TO DEVICE TYPE LIST
1334	002060	002730		.WORD L\$DVTYP	
1335	002062		L\$REPP::		;PTR. TO REPORT CODE
1336	002062	000000		.WORD 0	
1337	002064		L\$EXP4::		
1338	002064	000000		.WORD 0	
1339	002066		L\$EXP5::		
1340	002066	000000		.WORD 0	
1341	002070		L\$AUT::		;PTR. TO ADD UNIT CODE
1342	002070	012144		.WORD L\$AU	
1343	002072		L\$DUT::		;PTR. TO DROP UNIT CODE
1344	002072	012140		.WORD L\$DU	
1345	002074		L\$LUN::		;LUN FOR EXERCISERS TO FILL
1346	002074	000000		.WORD 0	
1347	002076		L\$DESP::		;POINTER TO DIAG. DESCRIPTION
1348	002076	002312		.WORD L\$DESC	
1349	002100		L\$LOAD::		;GENERATE SPECIAL AUTOLOAD EMT
1350	002100	104035		EMT E\$LOAD	
1351	002102		L\$ETP::		;POINTER TO ERRTABL
1352	002102	000000		.WORD 0	
1353	002104		L\$ICP::		;PTR. TO INIT CODE
1354	002104	011340		.WORD L\$INIT	
1355	002106		L\$CCP::		;PTR. TO CLEAN-UP CODE
1356	002106	012134		.WORD L\$CLEAN	
1357	002110		L\$ACP::		;PTR. TO AUTO CODE
1358	002110	012042		.WORD L\$AUTO	
1359	002112		L\$PRT::		;PTR. TO PROTECT TABLE
1360	002112	002122		.WORD L\$PROT	
1361	002114		L\$TEST::		;TEST NUMBER
1362	002114	000000		.WORD 0	
1363	002116		L\$DLY::		;DELAY COUNT
1364	002116	000000		.WORD 0	
1365	002120		L\$HIME::		;PTR. TO HIGH MEM
1366	002120	000000		.WORD 0	
1367					
1368					
1369	002122		L\$PROT::	BGNPROT	
1370	002122			.WORD -1	
1371	002122	177777		.WORD -1	
1372	002124	177777		.WORD -1	
1373	002126	177777		.WORD -1	
1374	002130			ENDPROT	
1375					

CZDMQEO M8207 STATIC DIAG #2
CZDMQE.P11 30-SEP-82 15:35

MACY11 30A(1052) 18-OCT-82 15:30 PAGE 29
DISPATCH TABLE

.SBTTL DISPATCH TABLE

////////////////////////////////////
:/ THE DISPATCH TABLE CONTAINS THE STARTING ADDRESS OF EACH TEST.
:/ IT IS USED BY THE SUPERVISOR TO DISPATCH TO EACH TEST.
////////////////////////////////////

DISPATCH 43
.WORD 43
LSDISPATCH::

.WORD T1
.WORD T2
.WORD T3
.WORD T4
.WORD T5
.WORD T6
.WORD T7
.WORD T8
.WORD T9
.WORD T10
.WORD T11
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.WORD T39
.WORD T40
.WORD T41
.WORD T42
.WORD T43

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1382
1383 002130
1384 002130 000053
1385 002132
1386 002132 012146
1387 002134 012256
1388 002136 012422
1389 002140 012552
1390 002142 012712
1391 002144 013154
1392 002146 013356
1393 002150 013570
1394 002152 014112
1395 002154 014470
1396 002156 014736
1397 002160 015202
1398 002162 015432
1399 002164 015676
1400 002166 016142
1401 002170 016406
1402 002172 016652
1403 002174 017116
1404 002176 017362
1405 002200 017642
1406 002202 020122
1407 002204 020376
1408 002206 020654
1409 002210 021130
1410 002212 021404
1411 002214 021576
1412 002216 021744
1413 002220 022322
1414 002222 022560
1415 002224 022774
1416 002226 023210
1417 002230 023452
1418 002232 024044
1419 002234 025116
1420 002236 025216
1421 002240 025364
1422 002242 026042
1423 002244 026202
1424 002246 026310
1425 002250 026446
1426 002252 026544
1427 002254 026644
1428 002256 026770
1429
1430
1431

D 3

SEQ 29

CZDMQEO M8207 STATIC DIAG #2
CZDMQE.P11 30-SEP-82 15:35 MACV11 30A(1052) 18-OCT-82 15:30 PAGE 30
DISPATCH TABLE

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1434

CZDMQEO M8207 STATIC DIAG #2
CZDMQE.P11 30-SEP-82 15:35

MACY11 30A(1052) 18-OCT-82 15:30 PAGE 31
DEFAULT HARDWARE P-TABLE

1435
1436
1437
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1440
1441
1442
1443
1444 002260
1445 002260 C00013
1446 002262
1447 002262
1448 002262 000007
1449 002264 160170
1450 002266 000300
1451 002270 005000
1452 002272 000003
1453 002274 000056
1454 002276 000000
1455 002300 000000
1456 002302 000000
1457 002304 000004
1458
1459
1460 002306 000000
1461
1462 002310
1463 002310

.SBTTL DEFAULT HARDWARE P-TABLE

////////////////////////////////////
:/ THE DEFAULT HARDWARE P-TABLE CONTAINS DEFAULT VALUES OF
:/ THE TEST-DEVICE PARAMETERS. THE STRUCTURE OF THIS TABLE
:/ IS IDENTICAL TO THE STRUCTURE OF THE RUN-TIME P-TABLE.
////////////////////////////////////

.ENABL AMA
BGNHW DFPTBL
.WORD L10001-L\$HW/2
L\$HW::
DFPTBL::
.WORD 7 : MICRO-CPU TYPE.
.WORD 160170 : M8200,4,7 CRS ADDRESS
.WORD 300 : M8200,4,7 VECTOR ADDRESS
.WORD 5000 : INTERRUPT PRIORITY LEVEL
.WORD 3 : LINE UNIT TYPE
.WORD 56 : SWITCH PACK #1 (DDCMP LINE #)
.WORD 0 : SWITCH PACK #2 (BM873 BOOT ADDRESS)
.WORD 0 : SWITCH PACK #3
.WORD 0 : TEST CONNECTOR INSTALLED FLAG
.WORD 4 : CONTAINS BAUD RATE 4=56K BAUD DEFAULT
: 0=2.4K , 1=4.8K , 2=9.6K , 3=19.2K , 4 56K
: 5=250K , 6=500K , 7=1 MEG BAUD
.WORD 0 : 0=RUN SW OFF, 1=SW ON

ENDHW
L10001:

CZDMQEO MB207 STATIC DIAG #2 MACV11 30A(1052) 18-OCT-82 15:30 PAGE 32
CZDMQE.P11 30-SEP-82 15:35 SOFTWARE P-TABLE

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1466
1467
1468
1469
1470
1471 002310
1472 002310 000000
1473 002312
1474 002312
1475
1476
1477 002312
1478 002312
1479
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1481
1482
1483
1484

.SBTTL SOFTWARE P-TABLE
:////////////////////
:// THE SOFTWARE P-TABLE CONTAINS THE VALUES OF THE PROGRAM
:// PARAMETERS THAT CAN BE CHANGED BY THE OPERATOR.
:////////////////////
 BGNSW SFPTBL
 .WORD L10002-L\$SW/2
L\$SW::
SFPTBL::

 ENDSW
L10002:

CZDMQEO M8207 STATIC DIAG #2
CZDMQE.P11 30-SEP-82 15:35

MACY11 30A(1052) 18-OCT-82 15:30 PAGE 33
SOFTWARE P-TABLE

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002312

100000
040000
020000
010000
004000
002000
001000
000400
000200
000100
000040
000020
000010
000004
000002
000001

001000
000400
000200
000100
000040
000020
000010
000004
000002
000001

.SBITL GLOBAL EQUATES SECTION

:/
:/ THE GLOBAL EQUATES SECTION CONTAINS PROGRAM EQUATES THAT
:/ ARE USED IN MORE THAN ONE TEST.
:/

EQUALS

: BIT DEFINITIONS

BIT15== 100000
BIT14== 40000
BIT13== 20000
BIT12== 10000
BIT11== 4000
BIT10== 2000
BIT09== 1000
BIT08== 400
BIT07== 200
BIT06== 100
BIT05== 40
BIT04== 20
BIT03== 10
BIT02== 4
BIT01== 2
BIT00== 1

BIT9== BIT09
BIT8== BIT08
BIT7== BIT07
BIT6== BIT06
BIT5== BIT05
BIT4== BIT04
BIT3== BIT03
BIT2== BIT02
BIT1== BIT01
BIT0== BIT00

: EVENT FLAG DEFINITIONS

: EF32:EF17 RESERVED FOR SUPERVISOR TO PROGRAM COMMUNICATION

EF.START== 32.
EF.RESTART== 31.

: START COMMAND WAS ISSUED
: RESTART COMMAND WAS ISSUED

CZDMQEO M8207 STATIC DIAG #2
 CZDMQE.P11 30-SEP-82 15:35 MACV11 30A(1052) 18-OCT-82 15:30 PAGE 34
 GLOBAL EQUATES SECTION

: CONTINUE COMMAND WAS ISSUED
 : A NEW PASS HAS BEEN STARTED
 : A POWER-FAIL/POWER-UP OCCURRED

1541	000036	EF.CONTINUE==	30.
1542	000035	EF.NEW==	29.
1543	000034	EF.PWR==	28.
1544		:	
1545		:	
1546		: PRIORITY LEVEL DEFINITIONS	
1547		:	
1548	000340	PRI07==	340
1549	000300	PRI06==	300
1550	000240	PRI05==	240
1551	000200	PRI04==	200
1552	000140	PRI03==	140
1553	000100	PRI02==	100
1554	000040	PRI01==	40
1555	000000	PRI00==	0
1556		:	
1557		: OPERATOR FLAG BITS	
1558		:	
1559	000004	EVL==	4
1560	000010	LOT==	10
1561	000020	ADR==	20
1562	000040	IDU==	40
1563	000100	ISR==	100
1564	000200	UAM==	200
1565	000400	BOE==	400
1566	001000	PNT==	1000
1567	002000	PRJ==	2000
1568	004000	IXE==	4000
1569	010000	IBE==	10000
1570	020000	IER==	20000
1571	040000	LOE==	40000
1572	100000	MOE==	100000

::*****
 ::* PROGRAM EVENT FLAG DEFINITIONS
 ::*****

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 1581
 1582

CZDMQEO M8207 STATIC DIAG #2
CZDMQEP11 30-SEP-82 15:35

MACY11 30A(1052) 18-OCT-82 15:30 PAGE 35
GLOBAL DATA SECTION

```

1583      .SBTTL  GLOBAL DATA SECTION
1584
1585      ;;;;;;;;;;;;;;
1586      ;/          THE GLOBAL DATA SECTION CONTAINS DATA THAT ARE USED
1587      ;/          IN MORE THAN ONE TEST.
1588      ;;;;;;;;;;;;;;
1589
1590      ;*****
1591      ;* STORAGE FOR DEVICE REGISTERS
1592      ;*****
1593      DESCRIPT      <M8207 DIAG. #2 OF 2>
1594      L$DESC::
1595      .ASCIZ  /M8207 DIAG. #2 OF 2/
1596
1597      .EVEN
1598
1599      ;*****
1600      ;* PROGRAM CONTROL PARAMETERS
1601      ;*****
1602      NEXT:  .WORD  0          ;ADDRESS OF NEXT TEST TO BE EXECUTED
1603      LOCK:  .WORD  0          ;ADDRESS FOR LOCK CURRENT DATA
1604
1605      ;*****
1606      ;* MISCELLANEOUS STORAGE
1607      ;*****
1608      LOGDEV: .WORD  0          ;LOGICAL DEVICE NUMBER
1609      PSTACK: .WORD  0          ;BASE LEVEL PROGRAM STACK POINTER
1610      SUBRPC: .WORD  0          ;PC OF SUBR CALL FOR ERROR REPORTS
1611      ERRFLG: .WORD  0          ;SUBROUTINE ERROR FLAG
1612      RETADR: .WORD  0          ;SUBR ERROR RETURN ADDRESS
1613      STRTSW: .WORD  0          ;SWITCHES AT START OF PROGRAM
1614      STAT:  .WORD  0          ;KM STATUS WORD STORAGE
1615      CLKX:  .WORD  0
1616      MASKX: .WORD  0
1617      SAVSP: .WORD  0          ;STACK POINTER STORAGE
1618      SAVPC: .WORD  0          ;PROGRAM COUNTER STORAGE
1619      ZERO:  .WORD  0
1620      ONE:   .WORD  1
1621      MEMLIM: .WORD  0          ;HIGHEST LOCATION FOR NPR'S
1622      KMACTV: .BLKW  1          ;M8200,4,7 SELECTED ACTIVE
1623      KMNUM:  .BLKW  1          ;OCTAL NUMBER OF M8200,4,7'S
1624      SAVACT: .BLKW  1          ;ORIGINAL ACTIVE DEVICES
1625      SAVNUM: .BLKW  1          ;WORKABLE NUMBER
1626      FLAG:   .WORD  0          ;SCRATCH STORAGE
1627      RUN:    .WORD  0          ;POINTER TO RUNNING DEVICES
1628      FADR:   .WORD  0
1629      WTYPE:  .WORD  0          ;M82XX NUMBER FOR TYPE OF MICO-CPU
1630      $REG5:  .WORD  0          ;STORAGE USED FOR ERROR MSG DATA
1631      $REG4:  .WORD  0
1632      $REG3:  .WORD  0
1633      $REG2:  .WORD  0
1634      $REG1:  .WORD  0
1635      $REG0:  .WORD  0
1636      TYPE:   .WORD  0          ;=0 FOR DMP,=1 FOR M8206
1637
1638      002312 034115 030062 020067
1639      002312 044504 043501 020056
1640      002320 031043 047440 020106
1641      002334 000062
1642      002336 000000
1643      002340 000000
1644      002342 000000
1645      002344 000000
1646      002346 000000
1647      002350 000000
1648      002352 000000
1649      002354 000000
1650      002356 000000
1651      002360 000000
1652      002362 000000
1653      002364 000000
1654      002366 000000
1655      002370 000000
1656      002372 000001
1657      002374 000000
1658      002376 000001
1659      002400 000001
1660      002402 000001
1661      002404 000001
1662      002406 000000
1663      002410 000000
1664      002412 000000
1665      002414 000000
1666      002416 000000
1667      002420 000000
1668      002422 000000
1669      002424 000000
1670      002426 000000
1671      002430 000000
1672      002432 000000

```

CZDMQEO M8207 STATIC DIAG #2
CZDMQE.P11 30-SEP-82 15:35

MACY11 30A(1052) 18-OCT-82 15:30 PAGE 36
GLCBAL DATA SECTION

```

1639 002434 000000      MRO:      .WORD      0      :MEMLOC USED INSTEAD OF RO.
1640 002436 003777      MEMS2:    .WORD      3777    :INDICATES MEMORIE SIZE, LAST ADDR.
1641 002440 000000      TEMP:     .WORD      0
1642 002442 000000      $TEMPO:   .WORD      0
1643 002444 000000      $TMPO:    .WORD      0
1644 002446 000000      $GDADR:    .WORD      0      :CONTAINS ADDRESS OF 'GOOD' DATA
1645 002450 000000      $BDADR:    .WORD      0      :CONTAINS ADDRESS OF 'BAD' DATA
1646 002452 000000      $GDDAT:    .WORD      0      :CONTAINS 'GOOD' DATA
1647 002454 000000      $BDDAT:    .WORD      0      :CONTAINS 'BAD' DATA
1648 002456 000000      .WORD      0      :RESERVED--NOT TO BE USED
1649 002460 000000      .WORD      0
1650 002462 000000      FTIME:     .WORD      0
1651 002464 000000      SAVE4:     .WORD      0
1652 002466 000000      SAVE6:     .WORD      0
1653 002470 000000      RUNB:      .WORD      0      :0= RUN OFF, 1= RUN SW ON
1654 002472 000000      RUNINH:   .WORD      0      :0=RUN SW OFF, 1=RUN SW ON
1655
1656 :*****
1657 :* PROGRAM CONTROL FLAGS
1658 :*****
1659 002474 000      INIFLG: .BYTE 0      :PROGRAM INITIALIZING FLAG
1660      002476      .EVEN
1661 002476 000      LOKFLG: .BYTE 0      :LOCK ON CURRENT TEST FLAG
1662 002477 000      QV.FLG: .BYTE 0      :QUICK VERIFY FLAG
1663      .EVEN
1664
1665 :*****
1666 :* DEFINITION OF M8200,4,7 STATUS WORDS - STAT1,STAT2,STAT3
1667 :*****
1668 :
1669 :      STAT1 - BITS 00-08 IS M8200,4,7 VECTOR ADDRESS
1670 :              BIT15=1 LINE UNIT IS AN M8203
1671 :              BIT14=0 NO TEST CONNECTOR(S) USED
1672 :              BIT14=1 H-XXX TEST CONNECTOR WILL BE USED
1673 :              BIT13=0 LINE UNIT IS AN M8201
1674 :              BIT13=1 LINE UNIT IS AN M8202
1675 :              BIT12=1 NO LINE UNIT
1676 :              BITS 09-11 IS M8200,4,7 PRIORITY LEVEL
1677 :
1678 :      STAT2 - LOW BYTE IS SWITCH PACK #1 (DDCMP LINE NUMBER)
1679 :              HIGH BYTE IS SWITCH PACK #2 (BM873 BOOT ADDRESS)
1680 :
1681 :      STAT3 - BIT0=1 DO FREE RUNNING TESTS ON M8200,4,7
1682 :*****
1683
1684 002500 000000      STAT1:  .WORD  0
1685 002502 000000      STAT2:  .WORD  0
1686 002504 000000      STAT3:  .WORD  0
1687
1688 :*****
1689 :* POINTERS TO M8200,4,7 VECTORS AND REGISTERS
1690 :*****
1691 002506 000000      KMRVEC: 0      :POINTER TO M8200,4,7 RCV INTRPT VECTOR
1692 002510 000000      KMRLVL: 0      :POINTER TO M8200,4,7 RCV INTRPT SERVICE PS
1693 002512 000000      KMTVEC: 0      :POINTER TO M8200,4,7 TX INTRPT VECTOR
1694 002514 000000      KMTLVL: 0      :POINTER TO M8200,4,7 TX INTRPT SERVICE PS

```

CZDMQEO M8207 STATIC DIAG #2
CZDMQE.P11 30-SEP-82 15:35

MACY11 30A(1052) 18-OCT-82 15:30 PAGE 37
GLOBAL DATA SECTION

1695	002516	000000	KMCSR:	0	:POINTER TO M8200,4,7 CONTROL STATUS REGISTER
1696	002520	000000	KMCSRH:	0	:POINTER TO M8200,4,7 CONTROL STATUS REGISTER HIGH BYTE
1697	002522	000000	KMCTL:	0	:POINTER TO M8200,4,7 CONTROL OUT REGISTER
1698	002524	000000	KMP04:	0	:POINTER TO M8200,4,7 PORT REGISTER - SEL4
1699	002526	000000	KMP06:	0	:POINTER TO M8200,4,7 PORT REGISTER - SEL6
1700					
1701					
1702					
1703	002530				
1704					
1705					
1706	002530	000100			
1707	002730				
1708					
1709					
1710					
1711					
1712					
1713					
1714					

***** PRIMARY REG ADRS STORAGE FOR THIS UNIT *****
 :THESE LOCATIONS WILL BE LOADED FOR THE CURRENT UNIT, IN INIT CODE
 REGADR:

***** STACK USED FOR SUBROUTINE LINKAGE *****
 .BLKW 100
 SSTACK:

CZDMQEO M8207 STATIC DIAG #2
CZDMQE.P11 30-SEP-82 15:35

MACY11 30A(1052) 18-OCT-82 15:30 PAGE 38
GLCBAL TEXT SECTION

```

1715 .SBTTL GLOBAL TEXT SECTION
1716
1717 :XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX
1718 :X THE GLOBAL TEXT SECTION CONTAINS FORMAT STATEMENTS,
1719 :X MESSAGES, AND ASCII INFORMATION THAT ARE USED IN
1720 :X MORE THAN ONE TEST.
1721 :XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX
1722
1723 :*****
1724 :* NAMES OF DEVICES SUPPORTED BY PROGRAM
1725 :*****
1726 002730 DEVTYP <M8200,M8204,OR M8207>
1727 002730 LSDVTYP::
1728 002730 034115 030062 026060 .ASCII /M8200,M8204,OR M8207/
1729 002736 034115 030062 026064
1730 002744 051117 046440 031070
1731 002752 033460 000
1732 002756
1733 .EVEN
1734
1735 :
1736 :* FORMAT STATEMENTS USED IN PRINT CALLS
1737 :
1738
1739
1740
1741
1742
1743

```

CZDMQEO M8207 STATIC DIAG #2
CZDMQE.P11 30-SEP-82 15:35

MACY11 30A(1052) 18-OCT-82 15:30 PAGE 39
GLCBAL SUBROUTINES

1744
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.SBTTL GLOBAL SUBROUTINES

:/

:/ THE GLOBAL SUBROUTINES ARE CALLED BY MORE THAN ONE TEST

:/

:-

:- MACRO'S NEEDED TO CALL SUBROUTINES

:-

.MACRO POPSP2
22626
.ENDM

N 3

SEQ 39

CZDMQEO M8207 STATIC DIAG #2 MACV11 30A(1052) 18-OCT-82 15:30 PAGE 40
CZDMQE.P11 30-SEP-82 15:35 GLCBAL SUBROUTINES

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1763

CZDMQEO M8207 STATIC DIAG #2
CZDMQE.P11 30-SEP-82 15:35

MACY11 30A(1052) 18-OCT-82 15:30 PAGE 41
GLCBAL SUBROUTINES

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1788
1789

```

:////////////////////
:/ THE GLOBAL SUBROUTINES ARE CALLED BY MORE THAN ONE TEST
:////////////////////

```

```

:-----
: MACRO'S NEEDED TO CALL SUBROUTINES
:-----

```

```

.MACRO K4ONLY ?N2
      CMP     MEMSZ,#2000
      BNE     N2
      EXIT    TST
      .ENDM
.MACRO ED$CALL XY
      .LIST
      :***** TEST 'XY' *****
      .NLIST
      .ENDM
      .MACRO BADHEAD
      .RADIX 10
      ED$CALL \T$TESTNUM+1
      .RADIX 8
      .ENDM

```

CZDMQEO M8207 STATIC DIAG #2
CZDMQE.P11 30-SEP-82 15:35

MACV11 30A(1052) 18-OCT-82 15:30 PAGE 42
GLOBAL SUBROUTINES

```

1790      .MACRO MYINT
1791      .LIST
1792      MOV      KMCSR,R1          ;RECORD DEVICE ADDR.
1793      .NLIST
1794      .ENDM
1795
1796      .MACRO MACEX ?N2
1797      .LIST
1798      ;DO NOT DO TEST IF M8200
1799      .NLIST
1800      TST      TYPE
1801      BNE      N2
1802      EXIT     TST
1803      N2:
1804      .ENDM MACEX
1805      .MACRO MACEX2 ?N2
1806      .LIST
1807      ;DO NOT DO TEST IF M8200
1808      .NLIST
1809      CMP      WTYPE,#0
1810      BNE      N2
1811      EXIT     TST
1812      N2:
1813      .ENDM MACEX2
1814      .MACRO K4ONLY ?N2
1815      .LIST
1816      ;DO NOT DO TEST IF M8200, OR M8204
1817      .NLIST
1818      CMP      MEMSZ,#2000
1819      BNE      N2
1820      EXIT     TST
1821      N2:
1822      ;NOTE THIS TEST IS ONLY DESIGNED FOR 4K MODULE.
1823      .ENDM
1824
1825      .MACRO CLRMAR
1826      ROMCLK
1827      004000
1828      .ENDM CLRMAR
1829      .MACRO ROMCLK
1830      .LIST
1831      JSR      R5,.ROMCLK      ;CLOCK INSTRUCTION
1832      .NLIST
1833      .ENDM
1834
1835      .MACRO SROMCLK
1836      .LIST
1837      JSR      R5,.SROMCLK
1838      .NLIST
1839      .ENDM
1840      .MACRO SKIP06 NNN
1841      .LIST
1842      ;GOTO 'NNN' IF M8206
1843      .NLIST
1844      CMP      WTYPE,#6      ;SEE IF M8206
1845      BEQ      NNN

```

CZDMQEO M8207 STATIC DIAG #2
CZDMQE.P11 30-SEP-82 15:35

MACV11 30A(1052) 18-OCT-82 15:30 PAGE 43
GLOBAL SUBROUTINES

```

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1861
1862
1863
1864
1865 002756
1866 002756 112777 000100 177534
1867 002764 142777 000300 177526
1868 002772 000205
1869
1870 002774 000024
1871
1872
1873
1874 003044
1875
1876 003044
1877 003044 000240
1878 003046 000240
1879 003050 152777 000002 177442
1880 003056 012577 177444
1881 003062 152777 000003 177430
1882 003070 142777 000007 177422
1883 003076 000205
1884
1885 003100
1886 003100 000240
1887 003102 022737 000006 002414
1888 003110 001357
1889 003112 152777 000002 177400
1890 003120 012577 177402
1891 003124 000240
1892 003126 000240
1893 003130 142777 000007 177362
1894 003136
1895 003136 152777 000001 177354
1896 003144 142777 000007 177346
1897 003152 000240
1898 003154 000240
1899 003156 152777 000002 177334
1900 003164
1901 003164 000205

.ENDM
.MACRO SKIP07 NNN
.LIST
:GOTO 'NNN' IF M8207
.NLIST
CMP WTYPE,#7 ;SEE IF M8200,4,7
BEQ NNN
.ENDM
.MACRO SKIP04 NNN
.LIST
:GOTO 'NNN' IF M8204
.NLIST
CMP WTYPE,#4 ;SEE IF M8204
BEQ NNN
.ENDM
.MACRO MSTCLR
JSR R5,.MSTCLR ;CLEAR M8200,4,7
.ENDM
.MSTCLR:
MOVB #BIT6,@KMCSRH ;SET INST.
BICB #BIT6!BIT7,@KMCSRH
RTS R5
PATCH: .BLKW 20. ;PATCH AREA.

ENDBUG:
: UNSAFE TO PATCH ANY OTHER AREA.
.ROMCLK:
NOP
NOP
.REGT: BISB #BIT1,@KMCSRH
MOV (R5)+,@KMP06
BISB #BIT1!BIT0,@KMCSRH
BICB #BIT2!BIT1!BIT0,@KMCSRH
RTS R5
.SROMCLK:
NOP
CMP #6,WTYPE
BNE .REGT
BISB #BIT1,@KMCSRH
MOV (R5)+,@KMP06
NOP
NOP
BICB #7,@KMCSRH
1$: BISB #BIT0,@KMCSRH ;STEP INSTR.
BICB #BIT2!BIT1!BIT0,@KMCSRH
NOP
NOP
BISB #2,@KMCSRH
2$: RTS R5

```

CZDMQEO M8207 STATIC DIAG #2
CZDMQE.P11 30-SEP-82 15:35

MACV11 30A(1052) 18-OCT-82 15:30 PAGE 44
GLCBAL SUBROUTINES

1902	003166			CLRALL:		
1903					:CLEARS C & Z BITS AND BR	
1904	003166			ROMCLK		
1905	003166	004537	003044	JSR	R5,ROMCLK	:CLOCK INSTRUCTION
1906	003172	000400		400		:0 TO BR
1907	003174			ROMCLK		
1908	003174	004537	003044	JSR	R5,ROMCLK	:CLOCK INSTRUCTION
1909	003200	063220		63220		:SP(0) TO BR
1910	003202			ROMCLK		
1911	003202	004537	003044	JSR	R5,ROMCLK	:CLOCK INSTRUCTION
1912	003206	060400		60400		:BR,SP(0) + BR
1913	003210			SROMCLK		
1914	003210	004537	003100	JSR	R5,SROMCLK	
1915	003214	000000		0		
1916	003216	000207		RTS	PC	
1917						
1918	003220			SETBR0:		
1919					:SETS BR0 BIT	
1920	003220			ROMCLK		
1921	003220	004537	003044	JSR	R5,ROMCLK	:CLOCK INSTRUCTION
1922	003224	000401		401		:1 TO BR
1923	003226	000207		RTS	PC	
1924						
1925	003230			SETBR1:		
1926					:THIS SUBROUTINE SETS BR1 BIT	
1927						
1928	003230			ROMCLK		:NEXT WORD IS INSTRUCTION
1929	003230	004537	003044	JSR	R5,ROMCLK	:CLOCK INSTRUCTION
1930	003234	000402		000402		:BR_002
1931	003236	000207		RTS	PC	
1932						
1933	003240			SETBR4:		
1934					:THIS SUBROUTINE SETS BR4 BIT	
1935						
1936	003240			ROMCLK		:NEXT WORD IS INSTRUCTION
1937	003240	004537	003044	JSR	R5,ROMCLK	:CLOCK INSTRUCTION
1938	003244	000420		420		
1939	003246	000207		RTS	PC	
1940						
1941	003250			SETBR7:		
1942					:THIS SUBROUTINE SETS BR7 BIT	
1943						
1944	003250			ROMCLK		:NEXT WORD IS INSTRUCTION
1945	003250	004537	003044	JSR	R5,ROMCLK	:CLOCK INSTRUCTION
1946	003254	000600		600		
1947	003256	000207		RTS	PC	
1948						
1949	003260			SETC:		
1950					:THIS SUBROUTINE SETS THE C BIT	
1951						
1952	003260			ROMCLK		:NEXT WORD IS INSTRUCTION
1953	003260	004537	003044	JSR	R5,ROMCLK	:CLOCK INSTRUCTION
1954	003264	000777		000777		:BR 377
1955	003266			ROMCLK		:NEXT WORD IS INSTRUCTION
1956	003266	004537	003044	JSR	R5,ROMCLK	:CLOCK INSTRUCTION
1957	003272	063220		063220		:SP(0)_BR

CZDMQEO M8207 STATIC DIAG #2
CZDMQE.P11 30-SEP-82 15:35

MACY11 30A(1052) 18-OCT-82 15:30 PAGE 45
GLCBAL SUBROUTINES

```

1958 003274          ROMCLK          ;NEXT WORD IS INSTRUCTION
1959 003274 004537 003044 JSR      R5,ROMCLK      ;CLOCK INSTRUCTION
1960 003300 060400      060400      ;BR SP(0)+BR
1961 003302          SROMCLK         ;NOW WE MUST CLOCK THE BITS INTO IBUS <13>
1962 003302 004537 003100 JSR      R5,SROMCLK
1963 003306 000000      0
1964 003310 000207      RTS      PC
1965
1966 003312          SETZ:           ;THIS SUBROUTINE SETS THE Z BIT
1967
1968
1969 003312          ROMCLK          ;NEXT WORD IS INSTRUCTION
1970 003312 004537 003044 JSR      R5,ROMCLK      ;CLOCK INSTRUCTION
1971 003316 000777      000777      ;BR 377
1972 003320          SROMCLK         ;NOW CLOCK THE BITS INTO IBUS<13>
1973 003320 004537 003100 JSR      R5,SROMCLK
1974 003324 000777      0777
1975 003326 000207      RTS      PC
1976
1977 003330          RAMDAT:          ;THIS SUBROUTINE LOADS R4 WITH THE LOWEST
1978                                     ;8 BITS OF THE CRAM PC.
1979
1980
1981 003330 005004          CLR      R4
1982 003332 017605 000000 MOV      @SP,R5          ;GOOD DATA
1983 003336 062716 000002 ADD      #2,(SP)          ;ADJUST STACK
1984 003342          SKIP06 1$          ;IF M8206,WE'LL GET PC A DIFFERENT WAY.
1985                                     ;GOTO 1$ IF M8206
1986 003352          SKIP07 1$          ;IF M8200,4,7 WE'LL GET PC A DIFFERENT WAY.
1987                                     ;GOTO 1$ IF M8207
1988 003362 005011          CLR      (R1)          ;CLEAR BIT10
1989 003364 052711 000400 BIS      #BIT8,(R1)      ;CLOCK INSTRUCTION IN CRAM THAT
1990                                     ;JUMPED TO, IT LOADS BR WITH IT
1991 003370 005011          CLR      (R1)          ;CLR BIT8
1992 003372          ROMCLK          ;NEXT WORD IS INSTRUCTION
1993 003372 004537 003044 JSR      R5,ROMCLK      ;CLOCK INSTRUCTION
1994 003376 061225      061225      ;MOV BR TO PORT 5
1995 003400 116104 000005 MOVB     5(R1),R4      ;PUT 'FOUND' IN R4
1996 003404 000207      RTS      PC          ;RETURN
1997
1998 003406          1$:             ;READ PC LOW REG DIRECTLY.
1999 003406 004537 003044 JSR      R5,ROMCLK      ;CLOCK INSTRUCTION
2000 003412 121244      121244      ;IBUS<12> TO PORT 4
2001 003414 116104 000004 MOVB     4(R1),R4      ;PUT INTO R4
2002 003420 000207      RTS      PC          ;EXIT
2003
2004 003422          WROM:           ;THIS SUBROUTINE WRITES THE ROMMAP INTO THE CRAM
2005
2006
2007          BIT      #BIT15,STAT1      ;BE SURE M8200,4,7 HAS CRAM
2008          BEQ      2$              ;SKIP IF NO CRAM
2009 003422          SKIP07 2$
2010                                     ;GOTO 2$ IF M8207
2011 003432 005000          CLR      R0          ;R0=CRAM ADDRESS
2012 003434 012702 012146 MOV      #ROMMAP,R2      ;R2 POINTS TO ROMMAP
2013 003440 012711 002000 MOV      #BIT10,(R1)      ;SET ROM0

```

CZDMQEO M8207 STATIC DIAG #2
CZDMQE.P11 30-SEP-82 15:35

MACV11 20A(1052) 18-OCT-82 15:30 PAGE 46
GLOBAL SUBROUTINES

```

2014 003444 010061 000004      MOV      R0,4(R1)      ;LOAD CRAM ADDRESS
2015 003450 012261 000006      MOV      (R2)+,6(R1)    ;LOAD WORD TO BE WRITTEN
2016 003454 052711 020000      BIS      #BIT13,(R1)    ;WRITE IT!
2017 003460 005200              INC      R0      ;NEXT ADDRESS
2018 003462 023700 002436      CMP      MEMSZ,R0      ;DONE YET?
2019 003466 001364              BNE      1$      ;BR IF NO
2020 003470 005011              CLR      (R1)      ;CLEAR SELO
2021 003472 000207              RTS      PC      ;RETURN
2022
2023 003474      MEMSET:
2024      ;THIS SUBROUTINE LOADS CRAM WITH SPECIAL INSTRUCTIONS
2025      ;FOR THE CRAM JUMP TEST. ALL CRAM LOCATIONS ARE LOADED
2026      ;WITH INSTRUCTIONS THAT MOVE A 37 TO THE BR, EXCEPT THE
2027      ;FOLLOWING CRAM ADDRESSES: 0,1,4,7,525,1777. THESE LOCATIONS
2028      ;CONTAIN INSTRUCTIONS WHICH LOAD THE BR WITH THE LOWEST
2029      ;8 BITS OF THAT CRAM ADDRESS.
2030
2031 003474      SKIP07 3$      ;IF M8200,4,7 CAN'T WRITE CRAM!
2032      ;GOTO 3$ IF M8207
2033 003504 005000              CLR      R0      ;R0 = CRAM ADDRESS
2034 003506 012711 002000      MOV      #BIT10,(R1)    ;SET ROMO
2035 003512 010061 000004      MOV      R0,4(R1)      ;LOAD CRAM ADDRESS
2036 003516 012761 000437 000006      MOV      #437,6(R1)    ;LOAD INSTRUCTION
2037 003524 052711 020000      BIS      #BIT13,(R1)    ;WRITE INSTRUCTION IN CRAM
2038 003530 005200              INC      R0      ;NEXT ADDRESS
2039 003532 023700 002436      CMP      MEMSZ,R0      ;DONE YET?
2040 003536 001363              BNE      1$      ;BR IF NO
2041 003540 005000              CLR      R0      ;INDEX REGISTER
2042 003542 012711 002000      MOV      #BIT10,(R1)    ;SET ROMO
2043 003546 016061 003602 000004      MOV      CRAMA(R0),4(R1) ;LOAD CRAM ADDRESS IN SEL4
2044 003554 016061 003616 000006      MOV      INSTU(R0),6(R1) ;LOAD INSTRUCTION TO BE WRITTEN
2045 003562 052711 020000      BIS      #BIT13,(R1)    ;WRITE CRAM!
2046 003566 005720              TST      (R0)+      ;NEXT
2047 003570 022700 000014      CMP      #14,R0      ;DONE YET?
2048 003574 001362              BNE      2$      ;BR IF NO
2049 003576 005011              CLR      (R1)      ;CLEAR ALL BITS
2050 003600 000207              RTS      PC      ;RETURN
2051
2052 003602 000000 000001 000004      CRAMA: .WORD 0,1,4,7,1777,525
2053 003610 000007 001777 000525
2054
2055 003616 000400      INSTU: 000400      ;BR_0
2056 003620 000401      ;BR_1
2057 003622 000404      ;BR_4
2058 003624 000407      ;BR_7
2059 003626 000777      ;BR_377
2060 003630 000525      ;BR_125
2061
2062
2063      ;ROUTINE TO SAVE GENERAL REGISTERS FOR ERROR ROUTINE.
2064      ;CALL = JSR PC,SV05
2065 003632 010537 002416      SV05: MOV      R5,$REG5
2066 003636 010437 002420      MOV      R4,$REG4
2067 003642 010337 002422      MOV      R3,$REG3
2068 003646 010237 002424      MOV      R2,$REG2
2069 003652 010137 002426      MOV      R1,$REG1

```

CZDMQEO M8207 STATIC DIAG #2 MACV11 30A(1052, 18-OCT-82 15:30 PAGE 47
CZDMQE.P11 30-SEP-82 15:35 GLCBAL SUBROUTINES

2070	003656	013737	002434	002430	MOV	MRO,\$REGO
2071	003664	000207			RTS	PC
2072						
2073						

CZDMQEO M8207 STATIC DIAG #2
CZDMQE.P11 30-SEP-82 15:35

MACV11 30A(1052) 18-OCT-82 15:30 PAGE 48
GLCBAL ERROR REPORT SECTION

```

2074 .SBTTL GLOBAL ERROR REPORT SECTION
2075
2076 :////////////////////
2077 :// THE GLOBAL ERROR REPORT SECTION CONTAINS ERROR MESSAGES
2078 :// THAT ARE USED IN MORE THAN ONE TEST.
2079 :////////////////////
2080
2081
2082
2083
2084
2085 003666 047045 047445 022466 TFM1: .ASCII /%N%06%54%06%54%04%N/
2086 003674 032123 047445 022466
2087 003702 032123 047445 022464
2088 003710 000116
2089 003712 047045 047445 022463 TFM2: .ASCII /%N%03%57%03%N/
2090 003720 033523 047445 022463
2091 003726 000116
2092 003730 047045 047445 022463 TFM3: .ASCII /%N%03%510%03%54%04%N/
2093 003736 030523 022460 031517
2094 003744 051445 022464 032117
2095 003752 047045 000
2096 003755 045 022516 031517 TFM4: .ASCII /%N%03%57%03%N/
2097 003762 051445 022467 031517
2098 003770 047045 000
2099 003773 045 022516 033117 TFM5: .ASCII /%N%06%55%06%53%06%N/
2100 004000 051445 022465 033117
2101 004006 051445 022463 033117
2102 004014 047045 000
2103 004017 045 022516 051101 TFM36: .ASCII /%N%AREGISTER ADDRESS ERROR,ADDRESS = %06%A,UNIT = %02/
2104 004024 043505 051511 042524
2105 004032 020122 042101 051104
2106 004040 051505 020123 051105
2107 004046 047522 026122 042101
2108 004054 051104 051505 020123
2109 004062 020075 047445 022466
2110 004070 026101 047125 052111
2111 004076 036440 022440 031117
2112 004104 000
2113 004105 045 022516 020101 TFM41: .ASCII /%N%A CSR HIGH BYTE GOT WRITTEN INTO ON A LOW BYTE XFER/
2114 004112 051503 020122 044510
2115 004120 044107 041040 052131
2116 004126 020105 047507 020124
2117 004134 051127 052111 042524
2118 004142 020116 047111 047524
2119 004150 047440 020116 020101
2120 004156 047514 020127 054502
2121 004164 042524 054040 042506
2122 004172 000122
2123 004174 047045 040445 041440 TFM42: .ASCII /%N%A CSR LOW BYTE GOT WRITTEN INTO ON A HIGH BYTE XFER/
2124 004202 051123 046040 053517
2125 004210 041040 052131 020105
2126 004216 047507 020124 051127
2127 004224 052111 042524 020116
2128 004232 047111 047524 047440
2129 004240 020116 020101 044510

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CZDMU LU M8207 STATIC DIAG #2 MACV11 30M(1052) 18-OCT-82 15:30 PAGE 49
 CZDMQE.P11 30-SEP-82 15:35 GLOBAL ERROR REPORT SECTION

2130	004246	044107	041040	052131	
2131	004254	020105	043130	051105	
2132	004262	000			
2133	004263	045	022516	047101	TFM40: .ASCII /X%ANEG ADDR TEST DUAL ADDR ERROR-BAD ADDR = %06/
2134	004270	043505	040440	042104	
2135	004276	020122	042524	052123	
2136	004304	042040	040525	020114	
2137	004312	042101	051104	042440	
2138	004320	051122	051117	041055	
2139	004326	042101	040440	042104	
2140	004334	020122	020075	047445	
2141	004342	000066			
2142	004344	040445	051440	051103	TFM43: .ASCII /%A SCRATCH PAD %03%A DUAL ADDRESS ERROR WITH SP%02/
2143	004352	052101	044103	050040	
2144	004360	042101	022440	03'517	
2145	004366	040445	042040	040525	
2146	004374	020114	042101	051104	
2147	004402	051505	020123	051105	
2148	004410	047522	020122	044527	
2149	004416	044124	051440	022520	
2150	004424	031117	000		
2151	004427	045	022524	052101	TFM44: .ASCII /%T%THE MAR REG, CONTENTS= %06/
2152	004434	042510	046440	051101	
2153	004442	051040	043505	020054	
2154	004450	047503	052116	047105	
2155	004456	051524	020075	047445	
2156	004464	000066			
2157	004466	052045	040445	044124	TFM45: .ASCII /%T%THE PC REG, CONTENTS= %06/
2158	004474	020105	041520	051040	
2159	004502	043505	020054	047503	
2160	004510	052116	047105	051524	
2161	004516	020075	047445	000066	
2162	004524	047045	040445	047516	TFM45A: .ASCII /X%ANOTE: THIS ERROR MAY BE FALSELY GENERATED IF THE/
2163	004532	042524	020072	044124	
2164	004540	051511	042440	051122	
2165	004546	051117	046440	054501	
2166	004554	041040	020105	040506	
2167	004562	051514	046105	020131	
2168	004570	042507	042516	040522	
2169	004576	042524	020104	043111	
2170	004604	052040	042510		
2171	004610	047045	040445	052522	.ASCII /X%ARUN BIT (SW7 OF E28) IS ON/
2172	004616	020116	044502	020124	
2173	004624	051450	033527	047440	
2174	004632	020106	031105	024470	
2175	004640	044440	020123	047117	
2176	004646	000			
2177	004647	045	047101	051120	TFM46: .ASCII '%ANPR/MISC REGS DATA FAILURE, GOOD =%06%A, BAD -%06''
2178	004654	046457	051511	020103	
2179	004662	042522	051507	042040	
2180	004670	052101	020101	040506	
2181	004676	046111	051125	026105	
2182	004704	043440	047517	020104	
2183	004712	022475	033117	040445	
2184	004720	020054	040502	020104	
2185	004726	022475	033117	000	

CZDMQEO M8207 STATIC DIAG #2
CZDMQE.P11 30-SEP-82 15:35

MACV11 30A(1052) 18-OCT-82 15:30 PAGE 50
GLCBAL ERROR REPORT SECTION

2186	004733	045	050101	020103	TFM47:	.ASCIIZ	''%APC INCR. INCORRECT: S/B= %C6%A ; WAS = %06''
2187	004740	047111	051103	020056			
2188	004746	047111	047503	051122			
2189	004754	041505	035124	051440			
2190	004762	041057	020075	047445			
2191	004770	022466	020101	020073			
2192	004776	040527	020123	020075			
2193	005004	047445	000066				
2194	005010	040515	052123	051105	TMMC:	.ASCIIZ	/MASTER CLEAR FAILED TO CLEAR /
2195	005016	041440	042514	051101			
2196	005024	043040	044501	042514			
2197	005032	020104	047524	041440			
2198	005040	042514	051101	000040			
2199	005046	047045	052045	047045	FM1:	.ASCIIZ	/XN%TXN/
2200	005054	000					
2201							
2202							
2203							
2204	005055	000			EM0:	.ASCIIZ	//
2205	005056	051103	046501	042040	EM1:	.ASCIIZ	/CRAM DATA ERROR/
2206	005064	052101	020101	051105			
2207	005072	047522	000122				
2208	005076	051103	046501	042040	EM2:	.ASCIIZ	/CRAM DUAL ADDRESSING ERROR/
2209	005104	040525	020114	042101			
2210	005112	051104	051505	044523			
2211	005120	043516	042440	051122			
2212	005126	051117	000				
2213	005131	112	046525	020120	EM3:	.ASCIIZ	/JUMP ERROR/
2214	005136	051105	047522	000122			
2215	005144	051103	046501	045040	EM4:	.ASCIIZ	/CRAM JUMP TEST FAULT/
2216	005152	046525	020120	042524			
2217	005160	052123	043040	052501			
2218	005166	052114	000				
2219	005171	111	050117	046440	EM5:	.ASCIIZ	/IOP MAIN MEMORY TEST/
2220	005176	044501	020116	042515			
2221	005204	047515	054522	052040			
2222	005212	051505	000124				
2223	005216	047511	020120	040515	EM6:	.ASCIIZ	/IOP MAR TEST/
2224	005224	020122	042524	052123			
2225	005232	000					
2226	005233	102	020122	044522	EM7:	.ASCIIZ	/BR RIGHT SHIFT ERROR/
2227	005240	044107	020124	044123			
2228	005246	043111	020124	051105			
2229	005254	047522	000122				
2230	005260	040515	020122	052504	EM10:	.ASCIIZ	/MAR DUAL ADDRESSING ERROR/
2231	005266	046101	040440	042104			
2232	005274	042522	051523	047111			
2233	005302	020107	051105	047522			
2234	005310	000122					
2235	005312	052512	050115	043040	EM11:	.ASCIIZ	/JUMP FIELD ERROR/
2236	005320	042511	042114	042440			
2237	005326	051122	051117	000			
2238	005333	112	046525	020120	EM12:	.ASCIIZ	/JUMP TEST ERROR/
2239	005340	042524	052123	042440			
2240	005346	051122	051117	000			
2241	005353	103	047117	044504	EM16:	.ASCIIZ	/CONDITION CODE TESTING, Z & C/

CZDMQEO M8207 STATIC DIAG #2 MACY11 30A(1052) 18-OCT-82 15:30 PAGE 51
 CZDMQE.P11 30-SEP-82 15:35 GLOBAL ERROR REPORT SECTION

2242	005360	044524	047117	041440	
2243	005366	042117	020105	042524	
2244	005374	052123	047111	026107	
2245	005402	020132	020046	000103	
2246	005410	046103	041517	020113	EMB1: .ASCIIZ /CLOCK TIME TOO FAST/
2247	005416	044524	042515	052040	
2248	005424	047517	043040	051501	
2249	005432	000124			
2250	005434				EM35:
2251	005434	047506	041522	020105	EM17: .ASCIIZ /FORCE POWER FAIL ERROR/
2252	005442	047520	042527	020122	
2253	005450	040506	046111	042440	
2254	005456	051122	051117	000	
2255	005463	111	052502	025123	EM27: .ASCIIZ 'IBUS* WRITE/READ ERROR'
2256	005470	053440	044522	042524	
2257	005476	051057	040505	020104	
2258	005504	051105	047522	000122	
2259					
2260	005512	041111	051525	047457	EM29: .ASCIIZ 'IBUS/OBUS WRITE/READ ERROR'
2261	005520	052502	020123	051127	
2262	005526	052111	027505	042522	
2263	005534	042101	042440	051122	
2264	005542	051117	000		
2265					
2266	005545	120	046507	041440	EMB50: .ASCIIZ 'PGM CLOCK WOULD NOT CLEAR'
2267	005552	047514	045503	053440	
2268	005560	052517	042114	047040	
2269	005566	052117	041440	042514	
2270	005574	051101	000		
2271	005577	120	046507	041440	EMB51: .ASCIIZ 'PGM CLOCK WOULD NOT SET'
2272	005604	047514	045503	053440	
2273	005612	052517	042114	047040	
2274	005620	052117	051440	052105	
2275	005626	000			
2276	005627	045	022516	025101	STM: .ASCIIZ '%NZA*****'
2277	005634	025052	025052	025052	
2278	005642	025052	025052	025052	
2279	005650	025052	025052	025052	
2280	005656	025052	025052	025052	
2281	005664	025052	025052	025052	
2282	005672	025052	025052	025052	
2283	005700	025052	025052	025052	
2284	005706	025052	025052	025052	
2285	005714	025052	025052	025052	
2286	005722	000			
2287	005723	000			DH0: .ASCIIZ //
2288					
2289					
2290	005724	054105	042520	052103	DH1: .ASCIIZ /EXPECTED FOUND ADDRESS/
2291	005732	042105	020040	047506	
2292	005740	047125	020104	040440	
2293	005746	042104	042522	051523	
2294	005754	000			
2295	005755	105	050130	041505	DH2: .ASCIIZ /EXPECTED FOUND/
2296	005762	042524	020104	043040	
2297	005770	052517	042116	000	

CZDMQEO M8207 STATIC DIAG #2 MACY11 30A(1052) 18-OCT-82 15:30 PAGE 52
 CZDMQE.P11 30-SEP-82 15:35 GLCBAL ERROR REPORT SECTION

2298 005775 106 047522 020115 DH3: .ASCII /FROM ADDR TO ADDR BAD ADDR/
 2299 006002 042101 051104 020040
 2300 006010 047524 040440 042104
 2301 006016 020122 041040 042101
 2302 006024 040440 042104 000122

2303
 2304
 2305 .EVEN
 2306
 2307
 2308

2309
 2310 :-----
 2311 : MACRO'S NEEDED TO REPORT ERRORS
 2312 :-----

2313 .MACRO MDT1
 2314 PRINTB #TFM1,\$REG2,\$REG4,\$REG0
 2315 .ENDM

2316 .MACRO MDT2
 2317 PRINTB #TFM1,\$REG5,\$REG4,\$REG2
 2318 .ENDM

2319 .MACRO MDT3
 2320 PRINTB #TFM2,\$REG5,\$REG4
 2321 .ENDM

2322 .MACRO MDT4
 2323 PRINTB #TFM3,\$REG5,\$REG4,FLAG
 2324 .ENDM

2325 .MACRO MDT5
 2326 PRINTB #TFM3,\$REG5,\$REG4,\$REG2
 2327 .ENDM

2328 .MACRO MDT0
 2329 .ENDM
 2330 .MACRO MDT6
 2331 PRINTB #TFM4,\$REG2,\$REG4
 2332 .ENDM

2333 .MACRO MDT7
 2334 PRINTB #TFM4,\$REG5,\$REG4
 2335
 2336
 2337
 2338
 2339
 2340

C7DMQFN MR207 STATIC DIAG #2
CZDMQE.P11 30-SEP-82 15:35

MACY11 30A(1052) 18-OCT-82 15:30 PAGE 53
GLCBAL ERROR REPORT SECTION

2341
2342
2343
2344

ENDM
.MACRO MDT8
PRINTB #TFM5,FADR,\$REG5,\$REG4
.ENDM

CZDMQEO M8207 STATIC DIAG #2
CZDMQE.P11 30-SEP-82 15:35

MACY11 SOA(1052) 18-OCT-82 15:30 PAGE 54
GLOBAL ERROR REPORT SECTION

2345
2346
2347

.MACRO SMD ERRNN ERNB ERHM ERFM
BCNMSG ERR'ERRNN

CZDMQEO M8207 STATIC DIAG #2
CZDMQE.P11 30-SEP-82 15:35

MACY11 30A(1052) 18-OCT-82 15:30 PAGE 55
GLCBAL ERROR REPORT SECTION

2348				PRINTB	#FM1,#EM'ERNB
2349				PRINTB	#FM1,#DH'ERHM
2350				MDT'ERFM	
2351				PRINTB	#STM
2352				ENDMSG	
2353				.ENDM	
2354				.MACRO	ERROR ECB
2355				JSR	PC,SV05
2356				ERRDF	'ECB',EMO,ERR'ECB'
2357				.ENDM	
2358					
2359					
2360					
2361					
2362	006032			\$MD	1,1,1,1
2363	006032			ERR1::	
2364	006032	012746	005056	MOV	#EM1,-(SP)
2365	006036	012746	005046	MOV	#FM1,-(SP)
2366	006042	012746	000002	MOV	#2,-(SP)
2367	006046	010600		MOV	SP,R0
2368	006050	104414		TRAP	C\$PNTB
2369	006052	062706	000006	ADD	#6,SP
2370	006056	012746	005724	MOV	#DH1,-(SP)
2371	006062	012746	005046	MOV	#FM1,-(SP)
2372	006066	012746	000002	MOV	#2,-(SP)
2373	006072	010600		MOV	SP,R0
2374	006074	104414		TRAP	C\$PNTB
2375	006076	062706	000006	ADD	#6,SP
2376	006102	013746	002430	MOV	\$REG0,-(SP)
2377	006106	013746	002420	MOV	\$REG4,-(SP)
2378	006112	013746	002424	MOV	\$REG2,-(SP)
2379	006116	012746	003666	MOV	#TFM1,-(SP)
2380	006122	012746	000004	MOV	#4,-(SP)
2381	006126	010600		MOV	SP,R0
2382	006130	104414		TRAP	C\$PNTB
2383	006132	062706	000012	ADD	#12,SP
2384	006136	012746	005627	MOV	#STM,-(SP)
2385	006142	012746	000001	MOV	#1,-(SP)
2386	006146	010600		MOV	SP,R0
2387	006150	104414		TRAP	C\$PNTB
2388	006152	062706	000004	ADD	#4,SP
2389	006156			L10003:	
2390	006156	104423		TRAP	C\$MSG
2391	006160			\$MD	2,2,1,1
2392	006160			ERR2::	
2393	006160	012746	005076	MOV	#EM2,-(SP)
2394	006164	012746	005046	MOV	#FM1,-(SP)
2395	006170	012746	000002	MOV	#2,-(SP)
2396	006174	010600		MOV	SP,R0
2397	006176	104414		TRAP	C\$PNTB
2398	006200	062706	000006	ADD	#6,SP
2399	006204	012746	005724	MOV	#DH1,-(SP)
2400	006210	012746	005046	MOV	#FM1,-(SP)
2401	006214	012746	000002	MOV	#2,-(SP)
2402	006220	010600		MOV	SP,R0
2403	006222	104414		TRAP	C\$PNTB

CZDMQEO M8207 STATIC DIAG #2
CZDMQE.P11 30-SEP-82 15:35

MACV11 30A(1052) 18-OCT-82 15:30 PAGE 56
GLCBAL ERROR REPORT SECTION

2404	006224	062706	000006	ADD	#6,SP
2405	006230	013746	002430	MOV	\$REG0,-(SP)
2406	006234	013746	002420	MOV	\$REG4,-(SP)
2407	006240	013746	002424	MOV	\$REG2,-(SP)
2408	006244	012746	003666	MOV	#TFM1,-(SP)
2409	006250	012746	000004	MOV	#4,-(SP)
2410	006254	010600		MOV	SP,R0
2411	006256	104414		TRAP	C\$PNTB
2412	006260	062706	000012	ADD	#12,SP
2413	006264	012746	005627	MOV	#STM,-(SP)
2414	006270	012746	000001	MOV	#1,-(SP)
2415	006274	010600		MOV	SP,R0
2416	006276	104414		TRAP	C\$PNTB
2417	006300	062706	000004	ADD	#4,SP
2418	006304				
2419	006304	104423		L10004: TRAP	C\$MSG
2420	006306			\$MD	3,1,1,2
2421	006306			ERR3::	
2422	006306	012746	005056	MOV	#EM1,-(SP)
2423	006312	012746	005046	MOV	#FM1,-(SP)
2424	006316	012746	000002	MOV	#2,-(SP)
2425	006322	010600		MOV	SP,R0
2426	006324	104414		TRAP	C\$PNTB
2427	006326	062706	000006	ADD	#6,SP
2428	006332	012746	005724	MOV	#DH1,-(SP)
2429	006336	012746	005046	MOV	#FM1,-(SP)
2430	006342	012746	000002	MOV	#2,-(SP)
2431	006346	010600		MOV	SP,R0
2432	006350	104414		TRAP	C\$PNTB
2433	006352	062706	000006	ADD	#6,SP
2434	006356	013746	002424	MOV	\$REG2,-(SP)
2435	006362	013746	002420	MOV	\$REG4,-(SP)
2436	006366	013746	002416	MOV	\$REG5,-(SP)
2437	006372	012746	003666	MOV	#TFM1,-(SP)
2438	006376	012746	000004	MOV	#4,-(SP)
2439	006402	010600		MOV	SP,R0
2440	006404	104414		TRAP	C\$PNTB
2441	006406	062706	000012	ADD	#12,SP
2442	006412	012746	005627	MOV	#STM,-(SP)
2443	006416	012746	000001	MOV	#1,-(SP)
2444	006422	010600		MOV	SP,R0
2445	006424	104414		TRAP	C\$PNTB
2446	006426	062706	000004	ADD	#4,SP
2447	006432			L10005:	
2448	006432	104423		TRAP	C\$MSG
2449	006434			\$MD	4,3,2,3
2450	006434			ERR4::	
2451	006434	012746	005131	MOV	#EM3,-(SP)
2452	006440	012746	005046	MOV	#FM1,-(SP)
2453	006444	012746	000002	MOV	#2,-(SP)
2454	006450	010600		MOV	SP,R0
2455	006452	104414		TRAP	C\$PNTB
2456	006454	062706	000006	ADD	#6,SP
2457	006460	012746	005755	MOV	#DH2,-(SP)
2458	006464	012746	005046	MOV	#FM1,-(SP)
2459	006470	012746	000002	MOV	#2,-(SP)

CZDMQEO M8207 STATIC DIAG #2
CZDMQE.P11 30-SEP-82 15:35

MACV11 30A(1052) 18-OCT-82 15:30 PAGE 57
GLCBAL ERROR REPORT SECTION

SEQ 56

2460	006474	010600		MOV	SP,R0
2461	006476	104414		TRAP	C\$PNTB
2462	006500	062706	000006	ADD	#6,SP
2463	006504	013746	002420	MOV	\$REG4,-(SP)
2464	006510	013746	002416	MOV	\$REG5,-(SP)
2465	006514	012746	003712	MOV	#TFM2,-(SP)
2466	006520	012746	000003	MOV	#3,-(SP)
2467	006524	010600		MOV	SP,R0
2468	006526	104414		TRAP	C\$PNTB
2469	006530	062706	000010	ADD	#10,SP
2470	006534	012746	005627	MOV	#STM,-(SP)
2471	006540	012746	000001	MOV	#1,-(SP)
2472	006544	010600		MOV	SP,R0
2473	006546	104414		TRAP	C\$PNTB
2474	006550	062706	000004	ADD	#4,SP
2475	006554				
2476	006554	104423		L10006:	TRAP C\$MSG

CZDMQEO M8207 STATIC DIAG #2
CZDMQE.P11 30-SEP-82 15:35

MACY11 30A(1052) 18-OCT-82 15:30 PAGE 58
GLCBAL ERROR REPORT SECTION

2477	006556			\$MD	5,4,2,3
2478	006556			ERR5::	
2479	006556	012746	005144	MOV	#EM4,-(SP)
2480	006562	012746	005046	MOV	#FM1,-(SP)
2481	006566	012746	000002	MOV	#2,-(SP)
2482	006572	010600		MOV	SP,R0
2483	006574	104414		TRAP	C\$PNTB
2484	006576	062706	000006	ADD	#6,SP
2485	006602	012746	005755	MOV	#DH2,-(SP)
2486	006606	012746	005046	MOV	#FM1,-(SP)
2487	006612	012746	000002	MOV	#2,-(SP)
2488	006616	010600		MOV	SP,R0
2489	006620	104414		TRAP	C\$PNTB
2490	006622	062706	000006	ADD	#6,SP
2491	006626	013746	002420	MOV	\$REG4,-(SP)
2492	006632	013746	002416	MOV	\$REG5,-(SP)
2493	006636	012746	003712	MOV	#TFM2,-(SP)
2494	006642	012746	000003	MOV	#3,-(SP)
2495	006646	010600		MOV	SP,R0
2496	006650	104414		TRAP	C\$PNTB
2497	006652	062706	000010	ADD	#10,SP
2498	006656	012746	005627	MOV	#STM,-(SP)
2499	006662	012746	000001	MOV	#1,-(SP)
2500	006666	010600		MOV	SP,R0
2501	006670	104414		TRAP	C\$PNTB
2502	006672	062706	000004	ADD	#4,SP
2503	006676			L10007:	
2504	006676	104423		TRAP	C\$MSG

CZDMQEO M8207 STATIC DIAG #2
CZDMQE.P11 30-SEP-82 15:35

MACY11 30A(1052) 18-OCT-82 15:30 PAGE 59
GLCBAL ERROR REPORT SECTION

2505	006700		
2506	006700		
2507	006700	012746	005171
2508	006704	012746	005046
2509	006710	012746	000002
2510	006714	010600	
2511	006716	104414	
2512	006720	062706	000006
2513	006724	012746	005724
2514	006730	012746	005046
2515	006734	012746	000002
2516	006740	010600	
2517	006742	104414	
2518	006744	062706	000006
2519	006750	013746	002406
2520	006754	013746	002420
2521	006760	013746	002416
2522	006764	012746	003730
2523	006770	012746	000004
2524	006774	010600	
2525	006776	104414	
2526	007000	062706	000012
2527	007004	012746	005627
2528	007010	012746	000001
2529	007014	010600	
2530	007016	104414	
2531	007020	062706	000004
2532	007024		
2533	007024	104423	
2534	007026		
2535	007026		
2536	007026	012746	005216
2537	007032	012746	005046
2538	007036	012746	000002
2539	007042	010600	
2540	007044	104414	
2541	007046	062706	000006
2542	007052	012746	005724
2543	007056	012746	005046
2544	007062	012746	000002
2545	007066	010600	
2546	007070	104414	
2547	007072	062706	000006
2548	007076	013746	002424
2549	007102	013746	002420
2550	007106	013746	002416
2551	007112	012746	003730
2552	007116	012746	000004
2553	007122	010600	
2554	007124	104414	
2555	007126	062706	000012
2556	007132	012746	005627
2557	007136	012746	000001
2558	007142	010600	
2559	007144	104414	
2560	007146	062706	000004

ERR6::	\$MD	6,5,1,4
	MOV	#EM5,-(SP)
	MOV	#FM1,-(SP)
	MOV	#2,-(SP)
	MOV	SP,R0
	TRAP	C\$PNTB
	ADD	#6,SP
	MOV	#DH1,-(SP)
	MOV	#FM1,-(SP)
	MOV	#2,-(SP)
	MOV	SP,R0
	TRAP	C\$PNTB
	ADD	#6,SP
	MOV	FLAG,-(SP)
	MOV	\$REG4,-(SP)
	MOV	\$REG5,-(SP)
	MOV	#TFM3,-(SP)
	MOV	#4,-(SP)
	MOV	SP,R0
	TRAP	C\$PNTB
	ADD	#12,SP
	MOV	#STM,-(SP)
	MOV	#1,-(SP)
	MOV	SP,R0
	TRAP	C\$PNTB
	ADD	#4,SP
L10010:	TRAP	C\$MSG
ERR7::	\$MD	7,6,1,5
	MOV	#EM6,-(SP)
	MOV	#FM1,-(SP)
	MOV	#2,-(SP)
	MOV	SP,R0
	TRAP	C\$PNTB
	ADD	#6,SP
	MOV	#DH1,-(SP)
	MOV	#FM1,-(SP)
	MOV	#2,-(SP)
	MOV	SP,R0
	TRAP	C\$PNTB
	ADD	#6,SP
	MOV	\$REG2,-(SP)
	MOV	\$REG4,-(SP)
	MOV	\$REG5,-(SP)
	MOV	#TFM3,-(SP)
	MOV	#4,-(SP)
	MOV	SP,R0
	TRAP	C\$PNTB
	ADD	#12,SP
	MOV	#STM,-(SP)
	MOV	#1,-(SP)
	MOV	SP,R0
	TRAP	C\$PNTB
	ADD	#4,SP

CZDMQEO M8207 STATIC DIAG #2
CZDMQE.P11 30-SEP-82 15:35

MACY11 30A(1052) 18-OCT-82 15:30 PAGE 60
GLCBAL ERROR REPORT SECTION

2561	007152			L10011:	TRAP	C\$MSG
2562	007152	104423			\$MD	10,7,2,3
2563	007154			ERR10::	MOV	#EM7,-(SP)
2564	007154				MOV	#FM1,-(SP)
2565	007154	012746	005233		MOV	#2,-(SP)
2566	007160	012746	005046		MOV	SP,R0
2567	007164	012746	000002		TRAP	C\$PNTB
2568	007170	010600			ADD	#6,SP
2569	007172	104414			MOV	#DH2,-(SP)
2570	007174	062706	000006		MOV	#FM1,-(SP)
2571	007200	012746	005755		MOV	#2,-(SP)
2572	007204	012746	005046		MOV	SP,R0
2573	007210	012746	000002		TRAP	C\$PNTB
2574	007214	010600			ADD	#6,SP
2575	007216	104414			MOV	\$REG4,-(SP)
2576	007220	062706	000006		MOV	\$REG5,-(SP)
2577	007224	013746	002420		MOV	#TFM2,-(SP)
2578	007230	013746	002416		MOV	#3,-(SP)
2579	007234	012746	003712		MOV	SP,R0
2580	007240	012746	000003		TRAP	C\$PNTB
2581	007244	010600			ADD	#10,SP
2582	007246	104414			MOV	#STM,-(SP)
2583	007250	062706	000010		MOV	#1,-(SP)
2584	007254	012746	005627		MOV	SP,R0
2585	007260	012746	000001		TRAP	C\$PNTB
2586	007264	010600			ADD	#4,SP
2587	007266	104414		L10012:	TRAP	C\$MSG
2588	007270	062706	000004		\$MD	11,10,2,6
2589	007274			ERR11::	MOV	#EM10,-(SP)
2590	007274	104423			MOV	#FM1,-(SP)
2591	007276				MOV	#2,-(SP)
2592	007276				MOV	SP,R0
2593	007276	012746	005260		TRAP	C\$PNTB
2594	007302	012746	005046		ADD	#6,SP
2595	007306	012746	000002		MOV	#DH2,-(SP)
2596	007312	010600			MOV	#FM1,-(SP)
2597	007314	104414			MOV	#2,-(SP)
2598	007316	062706	000006		MOV	SP,R0
2599	007322	012746	005755		TRAP	C\$PNTB
2600	007326	012746	002 6		ADD	#6,SP
2601	007332	012746	000002		MOV	\$REG4,-(SP)
2602	007336	010600			MOV	\$REG2,-(SP)
2603	007340	104414			MOV	#TFM4,-(SP)
2604	007342	062706	000006		MOV	#3,-(SP)
2605	007346	013746	002420		MOV	SP,R0
2606	007352	013746	002424		TRAP	C\$PNTB
2607	007356	012746	003755		ADD	#6,SP
2608	007362	012746	000003		MOV	\$REG4,-(SP)
2609	007366	010600			MOV	\$REG2,-(SP)
2610	007370	104414			MOV	#TFM4,-(SP)
2611	007372	062706	000010		MOV	#3,-(SP)
2612	007376	012746	005627		MOV	SP,R0
2613	007402	012746	000001		TRAP	C\$PNTB
2614	007406	010600			ADD	#4,SP
2615	007410	104414				
2616	007412	062706	000004			

CZDMQEO MB207 STATIC DIAG #2
CZDMQE.P11 30-SEP-82 15:35

MACV11 30A(1052) 18-OCT-82 15:30 PAGE 61
GLCBAL ERROR REPORT SECTION

2617	007416		
2618	007416	104423	
2619	007420		
2620	007420		
2621	007420	012746	005233
2622	007424	012746	005046
2623	007430	012746	000002
2624	007434	010600	
2625	007436	104414	
2626	007440	062706	000006
2627	007444	012746	005755
2628	007450	012746	005046
2629	007454	012746	000002
2630	007460	010600	
2631	007462	104414	
2632	007464	062706	000006
2633	007470	013746	002420
2634	007474	013746	002416
2635	007500	012746	003755
2636	007504	012746	000003
2637	007510	010600	
2638	007512	104414	
2639	007514	062706	000010
2640	007520	012746	005627
2641	007524	012746	000001
2642	007530	010600	
2643	007532	104414	
2644	007534	062706	000004
2645	007540		
2646	007540	104423	
2647	007542		
2648	007542		
2649	007542	012746	005260
2650	007546	012746	005046
2651	007552	012746	000002
2652	007556	010600	
2653	007560	104414	
2654	007562	062706	000006
2655	007566	012746	005755
2656	007572	012746	005046
2657	007576	012746	000002
2658	007602	010600	
2659	007604	104414	
2660	007606	062706	000006
2661	007612	013746	002420
2662	007616	013746	002416
2663	007622	012746	003712
2664	007626	012746	000003
2665	007632	010600	
2666	007634	104414	
2667	007636	062706	000010
2668	007642	012746	005627
2669	007646	012746	000001
2670	007652	010600	
2671	007654	104414	
2672	007656	062706	000004

L10013:

ERR12::

TRAP	C\$MSG
\$MD	12,7,2,7
MOV	#EM7,-(SP)
MOV	#FM1,-(SP)
MOV	#2,-(SP)
MOV	SP,R0
TRAP	C\$PNTB
ADD	#6,SP
MOV	#DH2,-(SP)
MOV	#FM1,-(SP)
MOV	#2,-(SP)
MOV	SP,R0
TRAP	C\$PNTB
ADD	#6,SP
MOV	\$REG4,-(SP)
MOV	\$REG5,-(SP)
MOV	#TFM4,-(SP)
MOV	#3,-(SP)
MOV	SP,R0
TRAP	C\$PNTB
ADD	#10,SP
MOV	#STM,-(SP)
MOV	#1,-(SP)
MOV	SP,R0
TRAP	C\$PNTB
ADD	#4,SP

L10014:

ERR13::

TRAP	C\$MSG
\$MD	13,10,2,3
MOV	#EM10,-(SP)
MOV	#FM1,-(SP)
MOV	#2,-(SP)
MOV	SP,R0
TRAP	C\$PNTB
ADD	#6,SP
MOV	#DH2,-(SP)
MOV	#FM1,-(SP)
MOV	#2,-(SP)
MOV	SP,R0
TRAP	C\$PNTB
ADD	#6,SP
MOV	\$REG4,-(SP)
MOV	\$REG5,-(SP)
MOV	#TFM2,-(SP)
MOV	#3,-(SP)
MOV	SP,R0
TRAP	C\$PNTB
ADD	#10,SP
MOV	#STM,-(SP)
MOV	#1,-(SP)
MOV	SP,R0
TRAP	C\$PNTB
ADD	#4,SP

CZDMQEO M8207 STATIC DIAG #2
CZDMQE.P11 30-SEP-82 15:35

MACV11 30A(1052) 18-OCT-82 15:30 PAGE 62
GLCBAL ERROR REPORT SECTION

2673 007662
2674 007662 104423
2675 007664
2676 007664
2677 007664 012746 005312
2678 007670 012746 005046
2679 007674 012746 000002
2680 007700 010600
2681 007702 104414
2682 007704 062706 000006
2683 007710 012746 005755
2684 007714 012746 005046
2685 007720 012746 000002
2686 007724 010600
2687 007726 104414
2688 007730 062706 000006
2689 007734 013746 002420
2690 007740 013746 002424
2691 007744 012746 003755
2692 007750 012746 00C003
2693 007754 010600
2694 007756 104414
2695 007760 062706 000010
2696 007764 012746 005627
2697 007770 012746 000001
2698 007774 010600
2699 007776 104414
2700 010000 062706 000004
2701 010004
2702 010004 104423

L10015: TRAP C\$MSG
SMD 14,11,2,6
ERR14:: MOV #EM11,-(SP)
MOV #FM1,-(SP)
MOV #2,-(SP)
MOV SP,R0
TRAP C\$PNTB
ADD #6,SP
MOV #DH2,-(SP)
MOV #FM1,-(SP)
MOV #2,-(SP)
MOV SP,R0
TRAP C\$PNTB
ADD #6,SP
MOV \$REG4,-(SP)
MOV \$REG2,-(SP)
MOV #TFM4,-(SP)
MOV #3,-(SP)
MOV SP,R0
TRAP C\$PNTB
ADD #10,SP
MOV #STM,-(SP)
MOV #1,-(SP)
MOV SP,R0
TRAP C\$PNTB
ADD #4,SP
L10016: TRAP C\$MSG

CZDMQEO M8207 STATIC DIAG #2
CZDMQE.P11 30-SEP-82 15:35

MACV11 30A(1052) 18-OCT-82 15:30 PAGE 63
GLOBAL ERROR REPORT SECTION

2703 010006
2704 010006
2705 010006 012746 005333
2706 010012 012746 005046
2707 010016 012746 000002
2708 010022 010600
2709 010024 104414
2710 010026 062706 000006
2711 010032 012746 005775
2712 010036 012746 005046
2713 010042 012746 000002
2714 010046 010600
2715 010050 104414
2716 010052 062706 000006
2717 010056 013746 002420
2718 010062 013746 002416
2719 010066 013746 002412
2720 010072 012746 003773
2721 010076 012746 000004
2722 010102 010600
2723 010104 104414
2724 010106 062706 000012
2725 010112 012746 005627
2726 010116 012746 000001
2727 010122 010600
2728 010124 104414
2729 010126 062706 000004
2730 010132
2731 010132 104423
2732 010134
2733 010134
2734 010134 012746 005353
2735 010140 012746 005046
2736 010144 012746 000002
2737 010150 010600
2738 010152 104414
2739 010154 062706 000006
2740 010160 012746 005755
2741 010164 012746 005046
2742 010170 012746 000002
2743 010174 010600
2744 010176 104414
2745 010200 062706 000006
2746 010204 013746 002420
2747 010210 013746 002416
2748 010214 012746 003755
2749 010220 012746 000003
2750 010224 010600
2751 010226 104414
2752 010230 062706 000010
2753 010234 012746 005627
2754 010240 012746 000001
2755 010244 010600
2756 010246 104414
2757 010250 062706 000004
2758 010254

ERR15:: \$MD 15,12,3,8
MOV #EM12,-(SP)
MOV #FM1,-(SP)
MOV #2,-(SP)
MOV SP,R0
TRAP C\$PNTB
ADD #6,SP
MOV #DH3,-(SP)
MOV #FM1,-(SP)
MOV #2,-(SP)
MOV SP,R0
TRAP C\$PNTB
ADD #6,SP
MOV \$REG4,-(SP)
MOV \$REG5,-(SP)
MOV FADR,-(SP)
MOV #TFM5,-(SP)
MOV #4,-(SP)
MOV SP,R0
TRAP C\$PNTB
ADD #12,SP
MOV #STM,-(SP)
MOV #1,-(SP)
MOV SP,R0
TRAP C\$PNTB
ADD #4,SP
L10017: TRAP C\$MSG
\$MD 16,16,2,7
ERR16:: MOV #EM16,-(SP)
MOV #FM1,-(SP)
MOV #2,-(SP)
MOV SP,R0
TRAP C\$PNTB
ADD #6,SP
MOV #DH2,-(SP)
MOV #FM1,-(SP)
MOV #2,-(SP)
MOV SP,R0
TRAP C\$PNTB
ADD #6,SP
MOV \$REG4,-(SP)
MOV \$REG5,-(SP)
MOV #TFM4,-(SP)
MOV #3,-(SP)
MOV SP,R0
TRAP C\$PNTB
ADD #10,SP
MOV #STM,-(SP)
MOV #1,-(SP)
MOV SP,R0
TRAP C\$PNTB
ADD #4,SP
L10020:

L 5

CZDMQEO M8207 STATIC DIAG #2
CZDMQE.P11 30-SEP-82 15:35

M4CV11 30A(1052) 18-OCT-82 15:30 PAGE 64
GLCBAL ERROR REPORT SECTION

SEQ 63

2759 010254 104423
2760

TRAP C\$MSG

CZDMQEO M8207 STATIC DIAG #2
CZDMQE.P11 30-SEP-82 15:35

MACV11 30A(1052) 18-OCT-82 15:30 PAGE 65
GLCBAL ERROR REPORT SECTION

SEQ 64

2761					
2762	010256				
2763	010256				
2764	010256	012746	005434		
2765	010262	012746	005046		
2766	010266	012746	000002		
2767	010272	010600			
2768	010274	104414			
2769	010276	062706	000006		
2770	010302	012746	005723		
2771	010306	012746	005046		
2772	010312	012746	000002		
2773	010316	010600			
2774	010320	104414			
2775	010322	062706	000006		
2776	010326	012746	005627		
2777	010332	012746	000001		
2778	010336	010600			
2779	010340	104414			
2780	010342	062706	000004		
2781	010346				
2782	010346	104423			
2783	010350				
2784	010350				
2785	010350	012746	005512		
2786	010354	012746	005046		
2787	010360	012746	000002		
2788	010364	010600			
2789	010366	104414			
2790	010370	062706	000006		
2791	010374	012746	005755		
2792	010400	012746	005046		
2793	010404	012746	000002		
2794	010410	010600			
2795	010412	104414			
2796	010414	062706	000006		
2797	010420	013746	002420		
2798	010424	013746	002416		
2799	010430	012746	003712		
2800	010434	012746	000003		
2801	010440	010600			
2802	010442	104414			
2803	010444	062706	000010		
2804	010450	012746	005627		
2805	010454	012746	000001		
2806	010460	010600			
2807	010462	104414			
2808	010464	062706	000004		
2809	010470				
2810	010470	104423			
2811	010472				
2812	010472				
2813	010472	012746	005434		
2814	010476	012746	005046		
2815	010502	012746	000002		
2816	010506	010600			

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ERR17:: $MD      17,17,0,0
          MOV      #EM17,-(SP)
          MOV      #FM1,-(SP)
          MOV      #2,-(SP)
          MOV      SP,R0
          TRAP     C$PNTB
          ADD      #6,SP
          MOV      #DH0,-(SP)
          MOV      #FM1,-(SP)
          MOV      #2,-(SP)
          MOV      SP,R0
          TRAP     C$PNTB
          ADD      #6,SP
          MOV      #STM,-(SP)
          MOV      #1,-(SP)
          MOV      SP,R0
          TRAP     C$PNTB
          ADD      #4,SP

L10021:  TRAP     C$MSG
          $MD      29,29,2,3
ERR29::  MOV      #EM29,-(SP)
          MOV      #FM1,-(SP)
          MOV      #2,-(SP)
          MOV      SP,R0
          TRAP     C$PNTB
          ADD      #6,SP
          MOV      #DH2,-(SP)
          MOV      #FM1,-(SP)
          MOV      #2,-(SP)
          MOV      SP,R0
          TRAP     C$PNTB
          ADD      #6,SP
          MOV      $REG4,-(SP)
          MOV      $REG5,-(SP)
          MOV      #TFM2,-(SP)
          MOV      #3,-(SP)
          MOV      SP,R0
          TRAP     C$PNTB
          ADD      #10,SP
          MOV      #STM,-(SP)
          MOV      #1,-(SP)
          MOV      SP,R0
          TRAP     C$PNTB
          ADD      #4,SP

L10022:  TRAP     C$MSG
          $MD      35,35,2,3
ERR35::  MOV      #EM35,-(SP)
          MOV      #FM1,-(SP)
          MOV      #2,-(SP)
          MOV      SP,R0

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CZDMQEO M8207 STATIC DIAG #2
CZDMQEL.F11 30 SEP-82 15:35

MACY11 30A(1052) 18-OCT-82 15:30 PAGE 66
GLOBAL ERROR REPORT SECTION

2817	010510	104414		TRAP	C\$PNTB
2818	010512	062706	000006	ADD	#6,SP
2819	010516	012746	005755	MOV	#DH2,-(SP)
2820	010522	012746	005046	MOV	#FM1,-(SP)
2821	010526	012746	000002	MOV	#2,-(SP)
2822	010532	010600		MOV	SP,R0
2823	010534	104414		TRAP	C\$PNTB
2824	010536	062706	000006	ADD	#6,SP
2825	010542	013746	002420	MOV	\$REG4,-(SP)
2826	010546	013746	002416	MOV	\$REG5,-(SP)
2827	010552	012746	003712	MOV	#TFM2,-(SP)
2828	010556	012746	000003	MOV	#3,-(SP)
2829	010562	010600		MOV	SP,R0
2830	010564	104414		TRAP	C\$PNTB
2831	010566	062706	000010	ADD	#10,SP
2832	010572	012746	005627	MOV	#STM,-(SP)
2833	010576	012746	000001	MOV	#1,-(SP)
2834	010602	010600		MOV	SP,R0
2835	010604	104414		TRAP	C\$PNTB
2836	010606	062706	000004	ADD	#4,SP
2837	010612			L10023:	
2838	010612	104423		TRAP	C\$MSG
2839					
2840	010614			BGNMSG	ERR36
2841	010614			ERR36::	
2842	010614			PRINTB	#STM
2843	010614	012746	005627	MOV	#STM,-(SP)
2844	010620	012746	000001	MOV	#1,-(SP)
2845	010624	010600		MOV	SP,R0
2846	010626	104414		TRAP	C\$PNTB
2847	010630	062706	000004	ADD	#4,SP
2848	010634			ENDMSG	
2849	010634			L10024:	
2850	010634	104423		TRAP	C\$MSG
2851					
2852	010636			BGNMSG	ERR40
2853	010636			ERR40::	
2854	010636			PRINTF	#TFM40,R2
2855	010636	010246		MOV	R2,-(SP)
2856	010640	012746	004263	MOV	#TFM40,-(SP)
2857	010644	012746	000002	MOV	#2,-(SP)
2858	010650	010600		MOV	SP,R0
2859	010652	104417		TRAP	C\$PNTF
2860	010654	062706	000006	ADD	#6,SP
2861	010660			PRINTB	#STM
2862	010660	012746	005627	MOV	#STM,-(SP)
2863	010664	012746	000001	MOV	#1,-(SP)
2864	010670	010600		MOV	SP,R0
2865	010672	104414		TRAP	C\$PNTB
2866	010674	062706	000004	ADD	#4,SP
2867	010700			ENDMSG	
2868	010700			L10025:	
2869	010700	104423		TRAP	C\$MSG
2870	010702			BGNMSG	ERR41
2871	010702			ERR41::	
2872	010702			PRINTF	#TFM41

CZDMQEO M8207 STATIC DIAG #2
CZDMQE.P11 30-SEP-82 15:35

MACV11 30A(1052) 18-OCT-82 15:30 PAGE 67
GLOBAL ERROR REPORT SECTION

2873	010702	012746	004105		MOV	#TFM41,-(SP)
2874	010706	012746	000001		MOV	#1,-(SP)
2875	010712	010600			MOV	SP,R0
2876	010714	104417			TRAP	C\$PNTF
2877	010716	062706	000004		ADD	#4,SP
2878	010722			PRINTB	#STM	
2879	010722	012746	005627		MOV	#STM,-(SP)
2880	010726	012746	000001		MOV	#1,-(SP)
2881	010732	010600			MOV	SP,R0
2882	010734	104414			TRAP	C\$PNTB
2883	010736	062706	000004		ADD	#4,SP
2884	010742			ENDMSG		
2885	010742			L10026:		
2886	010742	104423			TRAP	C\$MSG
2887	010744			BGNMSG	ERR42	
2888	010744			ERR42::		
2889	010744			PRINTF	#TFM42	
2890	010744	012746	004174		MOV	#TFM42,-(SP)
2891	010750	012746	000001		MOV	#1,-(SP)
2892	010754	010600			MOV	SP,R0
2893	010756	104417			TRAP	C\$PNTF
2894	010760	062706	000004		ADD	#4,SP
2895	010764			PRINTB	#STM	
2896	010764	012746	005627		MOV	#STM,-(SP)
2897	010770	012746	000001		MOV	#1,-(SP)
2898	010774	010600			MOV	SP,R0
2899	010776	104414			TRAP	C\$PNTB
2900	011000	062706	000004		ADD	#4,SP
2901	011004			ENDMSG		
2902	011004			L10027:		
2903	011004	104423			TRAP	C\$MSG
2904						
2905	011006			BGNMSG	ERR43	
2906	011006			ERR43::		
2907	011006			PRINTF	#TFM43,R5,R4	
2908	011006	010446			MOV	R4,-(SP)
2909	011010	010546			MOV	R5,-(SP)
2910	011012	012746	004344		MOV	#TFM43,-(SP)
2911	011016	012746	000003		MOV	#3,-(SP)
2912	011022	010600			MOV	SP,R0
2913	011024	104417			TRAP	C\$PNTF
2914	011026	062706	000010		ADD	#10,SP
2915	011032			PRINTB	#STM	
2916	011032	012746	005627		MOV	#STM,-(SP)
2917	011036	012746	000001		MOV	#1,-(SP)
2918	011042	010600			MOV	SP,R0
2919	011044	104414			TRAP	C\$PNTB
2920	011046	062706	000004		ADD	#4,SP
2921	011052			ENDMSG		
2922	011052			L10030:		
2923	011052	104423			TRAP	C\$MSG
2924	011054			BGNMSG	ERR44	
2925	011054			ERR44::		
2926	011054			PRINTF	#TFM44,#TMMC,R4	
2927	011054	010446			MOV	R4,-(SP)
2928	011056	012746	005010		MOV	#TMMC,-(SP)

CZDMQEO M8207 STATIC DIAG #2
CZDMQE.P11 30-SEP-82 15:35

MACY11 30A(1052) 18-OCT-82 15:30 PAGE 68
GLOBAL ERROR REPORT SECTION

2929	011062	012746	004427		MOV	#TFM44,-(SP)
2930	011066	012746	000003		MOV	#3,-(SP)
2931	011072	010600			MOV	SP,R0
2932	011074	104417			TRAP	C\$PNTF
2933	011076	062706	000010		ADD	#10,SP
2934	011102			PRINTB	#STM	
2935	011102	012746	005627		MOV	#STM,-(SP)
2936	011106	012746	000001		MOV	#1,-(SP)
2937	011112	010600			MOV	SP,R0
2938	011114	104414			TRAP	C\$PNTB
2939	011116	062706	000004		ADD	#4,SP
2940	011122			ENDMSG		
2941	011122			L10031:		
2942	011122	104423			TRAP	C\$MSG
2943	011124			BGNMSG	ERR45	
2944	011124			ERR45::		
2945	011124			PRINTF	#TFM45,#TMMC,R4	
2946	011124	010446			MOV	R4,-(SP)
2947	011126	012746	005010		MOV	#TMMC,-(SP)
2948	011132	012746	004466		MOV	#TFM45,-(SP)
2949	011136	012746	000003		MOV	#3,-(SP)
2950	011142	010600			MOV	SP,R0
2951	011144	104417			TRAP	C\$PNTF
2952	011146	062706	000010		ADD	#10,SP
2953	011152			PRINTB	#TFM45A	
2954	011152	012746	004524		MOV	#TFM45A,-(SP)
2955	011156	012746	000001		MOV	#1,-(SP)
2956	011162	010600			MOV	SP,R0
2957	011164	104414			TRAP	C\$PNTB
2958	011166	062706	000004		ADD	#4,SP
2959	011172			PRINTB	#STM	
2960	011172	012746	005627		MOV	#STM,-(SP)
2961	011176	012746	000001		MOV	#1,-(SP)
2962	011202	010600			MOV	SP,R0
2963	011204	104414			TRAP	C\$PNTB
2964	011206	062706	000004		ADD	#4,SP
2965	011212			ENDMSG		
2966	011212			L10032:		
2967	011212	104423			TRAP	C\$MSG
2968	011214			BGNMSG	ERR46	
2969	011214			ERR46::		
2970	011214			PRINTF	#TFM46,\$GDDAT,R4	
2971	011214	010446			MOV	R4,-(SP)
2972	011216	013746	002452		MOV	\$GDDAT,-(SP)
2973	011222	012746	004647		MOV	#TFM46,-(SP)
2974	011226	012746	000003		MOV	#3,-(SP)
2975	011232	010600			MOV	SP,R0
2976	011234	104417			TRAP	C\$PNTF
2977	011236	062706	000010		ADD	#10,SP
2978	011242			PRINTB	#STM	
2979	011242	012746	005627		MOV	#STM,-(SP)
2980	011246	012746	000001		MOV	#1,-(SP)
2981	011252	010600			MOV	SP,R0
2982	011254	104414			TRAP	C\$PNTB
2983	011256	062706	000004		ADD	#4,SP
2984	011262			ENDMSG		

CZDMQEO M8207 STATIC DIAG #2 MACV11 30A(1052) 18-OCT-82 15:30 PAGE 69
 CZDMQE.P11 30-SEP-82 15:35 GLOBAL ERROR REPORT SECTION

2985	011262			L10033:	
2986	011262	104423		TRAP	C\$MSG
2987					
2988	011264			BGNMSG	ERR47
2989	011264			ERR47::	
2990	011264			PRINTF	#TFM47,R5,R4
2991	011264	010446		MOV	R4,-(SP)
2992	011266	010546		MOV	R5,-(SP)
2993	011270	012746	004733	MOV	#TFM47,-(SP)
2994	011274	012746	000003	MOV	#3,-(SP)
2995	011300	010600		MOV	SP,R0
2996	011302	104417		TRAP	C\$PNTF
2997	011304	062706	000010	ADD	#10,SP
2998	011310			PRINTB	#STM
2999	011310	012746	005627	MOV	#STM,-(SP)
3000	011314	012746	000001	MOV	#1,-(SP)
3001	011320	010600		MOV	SP,R0
3002	011322	104414		TRAP	C\$PNTB
3003	011324	062706	000004	ADD	#4,SP
3004	011330			ENDMSG	
3005	011330			L10034:	
3006	011330	104423		TRAP	C\$MSG
3007					

CZDMQEO M8207 STATIC DIAG #2 MACV11 30A(1052) 18-OCT-82 15:30 PAGE 70
CZDMQE.P11 30-SEP-82 15:35 REPORT CODING SECTION

3008 .SBTTL REPORT CODING SECTION
3009
3010

CZDMQEO M8207 STATIC DIAG #2 MACV11 30A(1052) 18-OCT-82 15:30 PAGE 71
CZDMQE.P11 30-SEP-82 15:35 REPORT CODING SECTION

3011

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CZDMQEO MB207 STATIC DIAG #2
CZDMQE.P11 30-SEP-82 15:35

MACV11 30A(1052) 18-OCT-82 15:30 PAGE 72
REPORT CODING SECTION

```
3012      ; THE REPORT CODING SECTION CONTAINS THE
3013      ; 'PRINTS' CALLS THAT GENERATE STATISTICAL REPORTS.
3014      ;--
3015
3016      011332      BGNRPT
3017      011332
3018
3019
3020      011332      EXIT      RPT
3021      011332      000167    .WORD    JSJMP
3022      011334      000000    .WORD    L10035-2-.
3023
```

CZDMQEO MB207 STATIC DIAG #2 MACV11 30A(105?) 18-OCT-82 15:30 PAGE 73
CZDMQE.P11 30-SEP-82 15:35 REPORT CODING SECTION

3024
3025 011336
3026 011336
3027 011336 104425
3028

L10035: ENDRPT
TRAP C\$RPT

CZDMQEO M8207 STATIC DIAG #2 MACV11 30A(1052) 18-OCT-82 15:30 PAGE 74
CZDMQE.P11 30-SEP-82 15:35 REPORT CODING SECTION

3029
3030

CZDMQEO MB207 STATIC DIAG #2 MACV11 30A(1052) 18-OCT-82 15:30 PAGE 75
CZDMQE.P11 30-SEP-82 15:35 REPORT CODING SECTION

3031
3032

CZLMQEO MB207 STATIC DIAG #2
CZDMQE.P11 30-SEP-82 15:35

MACV11 30A(1052) 18-OCT-82 15:30 PAGE 76
INITIALIZE SECTION

3033

.SBTTL INITIALIZE SECTION

CZDMQEO M8207 STATIC DIAG #2
CZDMQE.P11 30-SEP-82 15:35

MACY11 30A(1052) 18-OCT-82 15:30 PAGE 77
INITIALIZE SECTION

```

3034
3035
3036
3037
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3039
3040 011340
3041 011340
3042
3043
3044 011340 012705 002730
3045
3046 011344 010637 002344
3047 011350 005737 002462
3048 011354 001011
3049 011356 013737 000004 002464
3050 011364 013737 000006 002466
3051 011372 012737 000001 002462
3052 011400 013737 002464 000004
3053 011406 013737 002466 000006
3054
3055
3056 011414
3057 011414 012700 000040
3058 011420 104447
3059 011422
3060 011422 103414
3061
3062 011424
3063 011424 012700 000035
3064 011430 104447
3065 011432
3066 011432 103410
3067
3068 011434
3069 011434 012700 000036
3070 011440 104447
3071 011442
3072 011442 103576
3073
3074 011444
3075 011444 012700 000037
3076 011450 104447
3077 011452
3078 011452 103003
3079
3080 011454
3081
3082 011454 012737 177777 002342
3083
3084
3085
3086
3087 011462
3088 011462 005237 002342
3089 011466 023737 002342 002012

;////////////////////////////////////
; THE INITIALIZE SECTION CONTAINS THE CODING THAT IS PERFORMED
; AT THE BEGINNING OF EACH PASS.
;////////////////////////////////////

      BGNINIT
LSINIT:
;INITIALIZE SUBROUTINE STACK
      MOV     #SSTACK,R5
;STORE BASE LEVEL PROGRAM STACK POINTER
      MOV     SP,PSTACK
      TST     FTIME
      BNE     1$
      MOV     @#4,SAVE4
      MOV     @#6,SAVE6
      MOV     #1,FTIME
1$:    MOV     SAVE4,@#4
      MOV     SAVE6,@#6

;SEE IF PROGRAM JUST STARTED, BR IF YES
      READEF  #EF.START
      MOV     #EF.START,R0
      TRAP    C$REFG
      BCOMPLETE NEWST
      BCS     NEWST
;SEE IF THIS IS A NEW PASS, BR IF YES
      READEF  #EF.NEW
      MOV     #EF.NEW,R0
      TRAP    C$REFG
      BCOMPLETE NEWST
      BCS     NEWST
;SEE IF PROGRAM WAS JUST CONTINUED
      READEF  #EF.CONTINUE
      MOV     #EF.CONTINUE,R0
      TRAP    C$REFG
      BCOMPLETE ENDIT
      BCS     ENDIT
;SEE IF PROGRAM JUST RESTARTED, BR IF NOT
      READEF  #EF.RESTART
      MOV     #EF.RESTART,R0
      TRAP    C$REFG
      BNCOMPLETE GETPRM
      BCC     GETPRM

NEWST:
;RESET LOGICAL DEVICE TO -1
      MOV     #-1,LOGDEV

;GET UNIBUS ADRS, VECTOR, PRIORITY LEVEL, LINE UNIT, SWITCH
;PACKS, TEST CONNECTOR INFO. FOR THIS M8200,4,7 (CURRENT LOGICAL
;DEVICE).
GETPRM:
      INC     LOGDEV
      CMP     LOGDEV,LSUNIT

```

CZDMQEO M8207 STATIC DIAG #2
CZDMQE.P11 30-SEP-82 15:35

MACY11 30A(1052) 18-OCT-82 15:30 PAGE 78
INITIALIZE SECTION

3090	011474	002367		BGE	NEWST
3091	011476			GPHARD	LOGDEV,R1
3092	011476	013700	002342	MOV	LOGDEV,R0
3093	011502	104442		TRAP	C\$GPHRD
3094	011504	010001		MOV	R0,R1
3095	011506			BNCOMPLETE	GETPRM
3096	011506	103365		BCC	GETPRM
3097	011510	012137	002414	MOV	(R1)+,WTYPE
3098				;GET ADDRESS OF	M8200,4,7
3099	011514	011137	002516	MOV	(R1),KMCSR
3100				;GET POINTER TO	M8200,4,7 CSR HI BYTE
3101	011520	011137	002520	MOV	(R1),KMCSRH
3102	011524	005237	002520	INC	KMCSRH
3103				;GET POINTER TO	M8200,4,7 CTL OUT REG
3104	011530	011137	002522	MOV	(R1),KMCTL
3105	011534	062737	000002 002522	ADD	#2,KMCTL
3106				;GET POINTER TO	M8200,4,7 PORT REG - SEL 4
3107	011542	011137	002524	MOV	(R1),KMPO4
3108	011546	062737	000004 002524	ADD	#4,KMPO4
3109				;GET POINTER TO	M8200,4,7 PORT REG - SEL 6
3110	011554	012137	002526	MOV	(R1)+,KMPO6
3111	011560	062737	000006 002526	ADD	#6,KMPO6
3112				;GET POINTER TO	RCV VECTOR
3113	011566	011137	002506	MOV	(R1),KMRVEC
3114				;GET POINTER TO	RCV PRIORITY LEVEL
3115	011572	011137	002510	MOV	(R1),KMRLVL
3116	011576	062737	000002 002510	ADD	#2,KMRLVL
3117				;GET POINTER TO	TX VECTOR
3118	011604	011137	002512	MOV	(R1),KMTVEC
3119	011610	062737	000004 002512	ADD	#4,KMTVEC
3120				;GET POINTER TO	TX PRIORITY LEVEL
3121	011616	011137	002514	MOV	(R1),KMTLVL
3122	011622	062737	000006 002514	ADD	#6,KMTLVL
3123				;PUT VECTOR INTO	STAT1
3124	011630	016137	000020 002472	MOV	20(R1),RUNINH
3125	011636	012137	002500	MOV	(R1)+,STAT1
3126				;PUT PRIORITY INTO	STAT1
3127	011642	052137	002500	BIS	(R1)+,STAT1
3128				;SEE IF NO LINE UNIT, SET BIT IF YES	
3129	011646	005711		TST	(R1)
3130	011650	001004		BNE	50000\$
3131	011652	052737	010000 002500	BIS	#BIT12,STAT1
3132	011660	000416		BR	4\$
3133	011662			50000\$:	
3134				;SEE IF M8201 LINE UNIT, SET BIT IF YES	
3135	011662	021127	000001	CMP	(R1),#1
3136	011666	001001		BNE	50001\$
3137	011670	000412		BR	4\$
3138	011672			50001\$:	
3139				;SEE IF M8202 LINE UNIT, SET BIT IF YES	
3140	011672	021127	000002	CMP	(R1),#2
3141	011676	001004		BNE	50002\$
3142	011700	052737	020000 002500	BIS	#BIT13,STAT1
3143	011706	000403		BR	4\$
3144	011710			50002\$:	
3145				;SET BIT FOR M8203 LINE UNIT	

CZDMQEO M8207 STATIC DIAG #2 MACY11 30A(1052) 18-OCT-82 15:30 PAGE 79
 CZDMQE.P11 30-SEP-82 15:35 INITIALIZE SECTION

3146	011710	052737	100000	002500	BIS	#BIT15,STAT1	
3147	011716				4\$:		
3148					:SET BIT IN STAT1 FOR TEST CONNECTOR		
3149	011716	056137	000006	002500	BIS	6(R1),STAT1	
3150	011724	062701	000002		ADD	#2,R1	
3151					:SET SWITCH PACK #1 IN STAT2 LOW BYTE		
3152	011730	012137	002502		MOV	(R1)+,STAT2	
3153					:SET SWITCH PACK #2 IN STAT2 HIGH BYTE		
3154	011734	111137	002503		MOVB	(R1),STAT2+1	
3155							
3156					:INCREMENT LOGICAL UNIT (DEVICE) NUMBER		
3157					: INC	LOGDEV	
3158	011740	000240			NOP		
3159	011742	000240			NOP		
3160							
3161	011744	012737	002000	002436	MOV	#2000,MEMSZ	
3162	011752	005037	002432		CLR	TYPE	
3163	011756	123727	002414	000000	CMPB	WTYPE,#0	
3164	011764	001425			BEQ	ENDIT	
3165	011766	123727	002414	000004	CMPB	WTYPE,#4	*MC?
3166	011774	001004			BNE	5\$	
3167	011776	012737	000001	002432	MOV	#1,TYPE	
3168	012004	000415			BR	ENDIT	
3169	012006	012737	007777	002436	5\$: MOV	#7777,MEMSZ	
3170	012014	123727	002414	000006	CMPB	WTYPE,#6	
3171	012022	001003			BNE	7\$	
3172	012024	012737	000001	002432	MOV	#1,TYPE	
3173	012032	013737	002472	002470	7\$: MOV	RUNINH,RUNB	
3174	012040				6\$:		
3175	012040				ENDIT:		
3176	012040				ENDINIT		
3177	012040				L10036:		
3178	012040	104411			TRAP	C\$INIT	
3179							
3180					.EVEN		
3181	012042				BGNAUTO		
3182	012042				L\$AUTO::		
3183					:DEVICE DOES NOT HAVE A "READY"		
3184	012042	013701	002516		MOV	KMCSR,R1	:R1 CONTAINS BASE M8200,4,7 ADDRESS
3185	012046	012705	000004		MOV	#4,R5	:4 REGISTERS TO BE TESTED
3186	012052	012737	012104	000004	MOV	#2\$,4	:SET OUT TIMEOUT TRAP
3187	012060	012737	000240	000006	MOV	#240,6	:LEVEL 7
3188	012066	005711			1\$: TST	(R1)	:REFERENCE DEVICE REGISTERS
3189	012070	000240			NOP		
3190	012072	062701	000002		ADD	#2,R1	:NEXT REGISTER
3191	012076	005305			DEC	R5	:DEC REGISTER COUNT
3192	012100	001372			BNE	1\$	:BR IF NOT LAST REGISTER
3193	012102	000405			BR	3\$	
3194							
3195	012104	062706	000004		2\$: ADD	#4,SP	
3196	012110				DODU	LOGDEV	
3197	012110	013700	002342		MOV	LOGDEV,R0	
3198	012114	104451			TRAP	C\$DODU	
3199							
3200	012116	013737	002464	000004	3\$: MOV	SAVE4,4	
3201	012124	013737	002466	000006	MOV	SAVE6,6	

CZDMQEO M8207 STATIC DIAG #2 MACV11 30A(1052) 18-OCT-82 15:30 PAGE 80
CZDMQE.P11 30-SEP-82 15:35 INITIALIZE SECTION

3202 012132
3203 012132
3204 012132 104461 .
3205

L10037: ENDAUTO
TRAP CSAUTO

CZDMQEO M8207 STATIC DIAG #2
CZDMQE.P11 30-SEP-82 15:35

MACY11 30A(1052) 18-OCT-82 15:30 PAGE 81
CLEANUP CODING SECTION

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3222
3223
3224
3225

012134
012134
012134
012134 104433

012136
012136
012136 104412

.SBTTL CLEANUP CODING SECTION

////////////////////////////////////
// THE CLEANUP CODING SECTION CONTAINS THE CODING THAT IS PERFORMED
// AT THE END OF EACH PASS.
////////////////////////////////////

BGNCLN
L\$CLEAN: :
BRESET
TRAP C\$RESET

ENDCLN
L10040: :
TRAP C\$CLEAN

CZDMQEO M8207 STATIC DIAG #2
CZDMQE.P11 30-SEP-82 15:35

MACY11 30A(1052) 18-OCT-82 15:30 PAGE 82
DROP UNIT SECTION

```
3226 .SBTTL DROP UNIT SECTION
3227
3228 :////////////////////
3229 :// THE DROP-UNIT SECTION CONTAINS THE CODING THAT CAUSES A DEVICE
3230 :// TO NO LONGER BE TESTED.
3231 :////////////////////
3232
3233 012140 BGNDU
3234 012140 L$DU::
3235 :ISSUE UNIBUS RESET TO CLEAN UP
3236 012140 BRESET
3237 012140 104433 TRAP C$RESET
3238 012142 ENDDU
3239 012142 L10041:
3240 012142 104453 TRAP C$DU
3241
3242
3243
3244
3245
```

CZDMQEO M8207 STATIC DIAG #2
CZDMQE.P11 30-SEP-82 15:35

MACV11 30A(1052) 18-OCT-82 15:30 PAGE 83
ADD UNIT SECTION

3246
3247
3248
3249
3250
3251
3252
3253
3254
3255
3256
3257
3258
3259
3260
3261
3262
3263
3264

012144
012144
012144
012144
012144 104452

.SBTTL ADD UNIT SECTION

:/
:/ THE ADD-UNIT SECTION CONTAINS THE CODING THAT CAUSES A DEVICE
:/ TO BE (A) TESTED FOR THE FIRST TIME, OR (B) RESUMED IN TESTING. IF
:/ 'EF.AUN!T' IS SET, THE UNIT WILL BE TESTED AS A NEW UNIT.
:/
:/

 BGNAU
L\$AU::
 ENDAU
L10042: TRAP C\$AU

CZDMQEO M8207 STATIC DIAG #2
CZDMQE.P11 30-SEP-82 15:35

MACY11 30A(1052) 18-OCT-82 15:30 PAGE 84
HARDWARE TESTS

.SBTTL HARDWARE TESTS

;START OF CODE BLOCK WHICH IS USED AS DATA
ROMMAP:

BADHEAD

;***** TEST 1 *****

;*VERIFY THAT REFERENCING UNIBUS DEVICE REGISTERS

;*DOES NOT CAUSE A TIME OUT TRAP

BADHEAD

;***** TEST 1 *****

BGNTST
T1::

MOV KMCSR,R1

;R1 CONTAINS BASE M8200,4,7 ADDRESS

MOV #4,R5

;4 REGISTERS TO BE TESTED

MOV #2,R4

;SET OUT TIMEOUT TRAP

MOV #240,6

;LEVEL 7

1\$:

TST (R1)

;REFERENCE DEVICE REGISTERS

NOP

ESCAPE

TRAP

.WORD L10043-

ADD #2,R1

;NEXT REGISTER

DEC R5

;DEC REGISTER COUNT

BNE 1\$

;BR IF NOT LAST REGISTER

BR 3\$

2\$:

ADD #4,SP

ERROR

;TIME OUT ERROR

TRAP C\$ERDF

.WORD

.WORD

.WORD

.WORD ERR36

3\$:

MOV SAVE4,4

MOV SAVE6,6

ESCAPE

TRAP

.WORD L10043-

ENDTST
L10043:

TRAP C\$ETST

.EVEN

BADHEAD

;***** TEST 2 *****

;*TEST OF BR RIGHT SHIFT

;*VERIFY THAT A DEST OF BR RSH (011) OF A MICRO-INSTRUCTION

;*SHIFTS THE RESULTING BR DATA RIGHT ONCE.

BADHEAD

;***** TEST 2 *****

CZDMQEO M8207 STATIC DIAG #2
CZDMQE.P11 30-SEP-82 15:35

MACV11 30A(1052) 18-OCT-82 15:30 PAGE 85
HARDWARE TESTS

```

3321
3322 012256
3323 012256
3324
3325 012256
3326 012262 013701 002516
3327 012266 005011
3328 012270 012705 052525
3329 012274 010561 000004
3330 012300
3331 012300 004537 003044
3332 012304 120500
3333 012306
3334 012306 004537 003044
3335 012312 061620
3336 012314
3337 012314 004537 003044
3338 012320 061225
3339 012322 006005
3340 012324 005004
3341 012326 116104 000005
3342 012332 120504
3343 012334 001410
3344 012336
3345 012342 104455
3346 012344 000014
3347 012346 005055
3348 012350 007420
3349
3350 012352
3351 012352 104410
3352 012354 000044
3353 012356
3354 012356
3355 012356 004537 003044
3356 012362 061620
3357 012364
3358 012364 004537 003044
3359 012370 061225
3360 012372 006005
3361 012374 116104 000005
3362 012400 120504
3363 012402 001406
3364 012404
3365 012410 104455
3366 012412 000014
3367 012414 005055
3368 012416 007420
3369
3370 012420
3371 012420
3372 012420
3373 012420 104401
3374
3375 012422
3376

      BGNTST
      12::

      MSTCLR
      MOV      KMCSR,R1
      CLR      (R1)
      MOV      #52525,R5
      MOV      R5,4(R1)
      ROMCLK
      JSR      R5,,ROMCLK
      120500
      ROMCLK
      JSR      R5,,ROMCLK
      061620
      ROMCLK
      JSR      R5,,ROMCLK
      061225
      ROR      R5
      CLR      R4
      MOVB     5(R1),R4
      CMPB     R5,R4
      BEQ      1$
      ERROR    12
      TRAP     C$ERDF
      .WORD    12
      .WORD    EMC
      .WORD    ERR12

      ;R1 CONTAINS BASE M8200,4,7 ADDRESS
      ;MASTER CLEAR M8200,4,7
      ;R1 = M8200,4,7 BASE ADDRESS
      ;CLEAR SELO
      ;START WITH 125
      ;PORT4 125
      ;NEXT WORD IS INSTRUCTION
      ;CLOCK INSTRUCTION
      ;PORT4 TO BR-REG
      ;NEXT WORD IS INSTRUCTION
      ;CLOCK INSTRUCTION
      ;BR RSH BR, SHIFT BR RIGHT
      ;NEXT WORD IS INSTRUCTION
      ;CLOCK INSTRUCTION
      ;PORT5 BR
      ;R5 = "EXPECTED"

      ;R4 = "FOUND"
      ;DID BR SHIFT RIGHT ONCE?
      ;BR IF YES
      ;BR RIGHT SHIFT ERROR

      ;SHOULD BE 52

      1$:
      ESCAPE TST
      TRAP     C$ESCAPE
      .WORD    L10044-

      ROMCLK
      JSR      R5,,ROMCLK
      061620
      ROMCLK
      JSR      R5,,ROMCLK
      061225
      ROR      R5
      MOVB     5(R1),R4
      CMPB     R5,R4
      BEQ      2$
      ERROR    12
      TRAP     C$ERDF
      .WORD    12
      .WORD    EMC
      .WORD    ERR12

      ;NEXT WORD IS INSTRUCTION
      ;CLOCK INSTRUCTION
      ;BR RSH BR, SHFT BR RIGHT AGAIN
      ;NEXT WORD IS INSTRUCTION
      ;CLOCK INSTRUCTION
      ;PORT5 BR
      ;R5 = "EXPECTED"
      ;R4 = "FOUND"
      ;DID BR SHIFT RIGHT?
      ;BR IF YES
      ;BR RIGHT SHIFT ERROR

      ;S/B 25

      2$:
      ENDTST
      L10044:
      TRAP     C$E1ST

      BADHEAD
      ;***** TEST 3 *****

```

CZDMQEO M8207 STATIC DIAG #2
CZDMQE.P11 30-SEP-82 15:35

MACV11 30A(1052) 18-OCT-82 15:30 PAGE 86
HARDWARE TESTS

```

3377      ;*IOP CRAM WRITE/READ TEST
3378      ;*FLOAT A 1 THROUGH EACH CRAM LOCATION
3379 012422 BADHEAD
3380      ;***** TEST 3 *****
3381
3382 012422 BGNTEST
3383 012422 T3::
3384 012422
3385      MACEX
3386 012430 104432 ;DO NOT DO TEST IF M8200
3387 012432 000116 TRAP CSEXIT
3388 012434 .WORD L10045-.
3389 012434 013701 002516 MYINT
3390      MOV KMCSR,R1 ;RECORD DEVICE ADDR.
3391 012440 005037 002434 ;R1 CONTAINS BASE M3200,4,7 ADDRESS
3392 012444 012702 000001 ADR4: MOV MRO ;MRO = CRAM ADDRESS
3393 012450 ADR5: #1,R2 ;R2 = WRITE DATA
3394 012450
3395 012450 104404 BGNSEG
3396 012452 012711 002000 TRAP C$BSEG
3397 012456 013761 002434 000004 3$: MOV #BIT10,(R1) ;SET ROMO
3398 012464 010261 000006 MOV MRO,4(R1) ;WRITE ADDRESS TO SEL4
3399 012470 052711 020000 MOV R2,6(R1) ;LOAD SEL6 WITH WRITE DATA
3400 012474 016104 000006 BIS #BIT13,(R1) ;WRITE SEL6 INTO CRAM
3401 012500 020204 MOV 6(R1),R4 ;READ CRAM INTO "FOUND"
3402 012502 001410 CMP R2,R4 ;IS DATA CORRECT?
3403 012504 BEQ 4$ ;BR IF OK
3404 012510 104455 ERROR 1 ;ERROR
3405 012512 000001 TRAP C$ERDF
3406 012514 005055 .WORD 1
3407 012516 006032 .WORD EMO
3408 012520 .WORD ERR1
3409 012520 104410 ESCAPE SEG
3410 012522 000002 TRAP C$ESCAPE
3411 012524 4$: .WORD 10000$-.
3412 012524 10000$: ENDSEG
3413 012524 104405 TRAP C$ESEG
3414 012526 000241 CLC ;CLEAR CARRY
3415 012530 006102 ROL R2 ;SHIFT WRITE DATA
3416 012532 001346 BNE ADR5 ;BSR IF NOT DONE THIS ADDRESS
3417 012534 005237 002434 INC MRO ;BUMP TO NEXT CRAM ADDRESS
3418 012540 023737 002436 002434 CMP MEMSZ,MRO ;DONE YET?
3419 012546 001336 BNE ADR4 ;BR IF NO
3420 012550
3421 012550 5$:
3422 012550 ENDTST
3423 012550 L10045: TRAP C$ETST
3424 012552
3425 012552 BADHEAD
3426      ;***** IF J1 4 *****
3427      ;*IOP CRAM WRITE/READ TEST
3428      ;*FLOAT A 0 THROUGH EACH CRAM LOCATION
3429 012552 BADHEAD
3430      ;***** TEST 4 *****
3431
3432      BGNTEST

```

CZDMQEO M8207 STATIC DIAG #2
CZDMQE.P11 30-SEP-82 15:35

MACV11 30A(1052) 18-OCT-82 15:30 PAGE 87
HARDWARE TESTS

```

3433 012552
3434 012552
3435
3436 012560 104432
3437 012562 000126
3438 012564
3439 012564 013701 002516
3440 012570
3441 012574 005037 002434
3442 012600 012702 000001
3443 012604
3444 012604
3445 012604 104404
3446 012606 005102
3447 012610 012711 002000
3448 012614 013761 002434 000004
3449 012622 010261 000006
3450 012626 052711 020000
3451 012632 016104 000006
3452 012636 020204
3453 012640 001410
3454 012642
3455 012646 104455
3456 012650 000001
3457 012652 005055
3458 012654 006032
3459 012656
3460 012656 104410
3461 012660 000002
3462 012662
3463 012662
3464 012662 104405
3465 012664 005102
3466 012666 000241
3467 012670 006102
3468 012672 001344
3469 012674 005237 002434
3470 012700 023737 002436 002434
3471 012706 001334
3472 012710
3473 012710
3474 012710
3475 012710 104401
3476
3477 012712
3478
3479
3480
3481
3482 012712
3483
3484
3485 012712
3486 012712
3487 012712
3488

T4::
MACEX
;DO NOT DO TEST IF M8200
TRAP C$EXIT
;WORD L10046-.
MYINT
MOV KMCSR,R1
MSTCLR
CLR MRO
MOV #1,R2
;RECORD DEVICE ADDR.
;MASTER CLEAR M8200,4,7
;MRO = CRAM ADDRESS
;R2 = WRITE DATA

ADR1:
ADR2:
BGNSEG
TRAP C$BSEG
COM R2
;MAKE IT A FLOATING ZERO
;SET ROMO
MOV #BIT10,(R1)
;WRITE ADDRESS TO SEL4
MOV MRO,4(R1)
;LOAD SEL6 WITH WRITE DATA
MOV R2,6(R1)
;WRITE SEL6 INTO CRAM
BIS #BIT13,(R1)
;READ CRAM INTO "FOUND"
MOV 6(R1),R4
;IS DATA CORRECT?
CMP R2,R4
;BR IF OK
BEQ 4$
ERROR 1
;ERROR
TRAP C$ERDF
;WORD 1
;WORD EMO
;WORD ERR1
ESCAPE SEG
TRAP C$ESCAPE
;WORD 10000$-.
4$:
10000$:
ENDSEG
TRAP C$ESEG
COM R2
;BACK TO FLOATING ONE
;CLEAR CARRY
CLC
ROL R2
;SHIFT WRITE DATA
BNE ADR2
;BR IF NOT DONE THIS ADDRESS
INC MRO
;BUMP TO NEXT CRAM ADDRESS
CMP MEMSZ,MRO
;DONE YET?
BNE ADR1
;BR IF NO

5$:
ENDTST
L10046:
TRAP C$ETST

BADHEAD
;***** TEST 5 *****
;•IOP CRAM DUAL ADDRESSING TEST
;•WRITE EACH ADDRESS INTO ITSELF, READ EACH
;•ADDRESS TO VERIFY CORRECT ADDRESSING
BADHEAD
;***** TEST 5 *****

BGNTEST
T5::
MACEX
;DO NOT DO TEST IF M8200

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CZDMQEO M8207 STATIC DIAG #2
CZDMQE.P11 30-SEP-82 15:35

MACV11 30A(1052) 18-OCT-82 15:30 PAGE 88
HARDWARE TESTS

3489	012720	104432			TRAP	C\$EXIT	
3490	012722	000230			.WORD	L10047-	
3491	012724				MYINT		
3492	012724	013701	002516		MOV	KMCSR,R1	:RECORD DEVICE ADDR.
3493							:R1 CONTAINS BASE M8200,4,7 ADDRESS
3494	012730				MSTCLR		:MASTER CLEAR M8200,4,7
3495	012734	005037	002434		CLR	MRO	:MRO =CRAM ADDRESS
3496	012740				BGNSEG		
3497	012740	104404			TRAP	C\$BSEG	
3498	012742	013702	002434	1\$:	MOV	MRO,R2	:SAVE R2 FOR TYPEOUT
3499	012746	012711	002000		MOV	#BIT10,(R1)	:SET ROMO
3500	012752	013761	002434	000004	MOV	MRO,4(R1)	:WRITE ADDRESS TO SEL4
3501	012760	013761	002434	000006	MOV	MRO,6(R1)	:LOAD SEL6 WITH WRITE DATA
3502	012766	052711	020000		BIS	#BIT13,(R1)	:WRITE CRAM
3503	012772				SKIP06	1\$	:IF M8206,SKIP NEXT INSTR.
3504					:GOTO 15\$ IF M8206		
3505	013002	005061	000006		CLR	6(R1)	:CLEAR SEL 6
3506	013006			15\$:			
3507	013006	016104	000006		MOV	6(R1),R4	:SHOULD READ BACK OWN ADDRESS
3508	013012	023704	002434		CMR	MRO,R4	:IS DATA CORRECT?
3509	013016	001410			BEQ	2\$	:BR IF YES
3510	013020				ERROR	1	:DATA ERROR
3511	013024	104455			TRAP	C\$ERDF	
3512	013026	000001			.WORD	1	
3513	013030	005055			.WORD	EMO	
3514	013032	006032			.WORD	ERR1	
3515	013034				ESCAPE	SEG	
3516	013034	104410			TRAP	C\$ESCAPE	
3517	013036	000002			.WORD	10000\$-	
3518	013040			2\$:	ENDSEG		
3519	013040			10000\$:			
3520	013040	104405			TRAP	C\$ESEG	
3521	013042				BGNSEG		
3522	013042	104404			TRAP	C\$BSEG	
3523	013044	005237	002434		INC	MRO	:BUMP TO NEXT ADDRESS
3524	013050	023737	002436	002434	CMR	MEMSZ,MRO	:DONE WRITING YET?
3525	013056	001331			BNE	1\$	:BR IF NO
3526	013060	005037	002434		CLR	MRO	:RESTART AT ADDRESS 0
3527	013064	013702	002434	3\$:	MOV	MRO,R2	:SAVE R2 FOR TYPEOUT
3528	013070	012711	002000		MOV	#BIT10,(R1)	:SET ROMO
3529	013074	013761	002434	000004	MOV	MRO,4(R1)	:SEL4 = CRAM ADDRESS
3530	013102	016104	000006		MOV	6(R1),R4	:READ CRAM INTO "FOUND"
3531	013106	023704	002434		CMR	MRO,R4	:IS DATA CORRECT?
3532	013112	001411			BEQ	4\$	:BR IF YES
3533	013114				ERROR	2	:DUAL ADDRESSING ERROR
3534	013120	104455			TRAP	C\$ERDF	
3535	013122	000002			.WORD	2	
3536	013124	005055			.WORD	EMO	
3537	013126	006160			.WORD	ERR2	
3538	013130				ESCAPE	SEG	
3539	013130	104410			TRAP	C\$ESCAPE	
3540	013132	000002			.WORD	10001\$-	
3541	013134				ENDSEG		
3542	013134			10001\$:			
3543	013134	104405			TRAP	C\$ESEG	
3544	013136			4\$:			:LOOP TO 3\$ IF SW09=1

CZDMQEO M8207 STATIC DIAG #2 MACY11 30A(1052) 18-OCT-82 15:30 PAGE 89
 CZDMQE.P11 30-SEP-82 15:35 HARDWARE TESTS

3545	013136	005237	002434		INC	MRO	:BUMP TO NEXT ADDRESS
3546	013142	023737	002436	002434	CMP	MEMSZ,MRO	:DONE WRITING YET?
3547	013150	001345			BNE	3\$	:BR IF NO
3548	013152						
3549	013152				5\$:		
3550	013152				ENDTST		
3551	013152	104401			L10047:		
3552					TRAP	C\$ETST	
3553							
3554	013154				BADHEAD		
3555					:***** TEST 6 *****		
3556					:*IOP MAIN MEMORY TEST		
3557					:*FLOAT A 1 THROUGH ALL MAIN MEMORY LOCATIONS		
3558	013154				BADHEAD		
3559					:***** TEST 6 *****		
3560							

CZDMQEO M8207 STATIC DIAG #2 MACY11 30A(1052) 18-OCT-82 15:30 PAGE 90
 CZDMQE.P11 30-SEP-82 15:35 HARDWARE TESTS

3561	013154					BGNTST			
3562	013154					T6::			
3563	013154						MYINT		
3564	013154	013701	002516				MOV	KMCSR,R1	:RECORD DEVICE ADDR.
3565									:R1 CONTAINS BASE M8200,4,7 ADDRESS
3566	013160						MSTCLR		:MASTER CLEAR M8200,4,7
3567	013164	005037	002406				CLR	FLAG	:START WITH ADDRESS 0
3568	013170	012737	000001	002434	1\$:		MOV	#1,MRO	:START WITH BIT 0
3569	013176	042737	003777	013232	65\$:		BIC	#3777,66\$	:CLEAR ADDRESS FIELD OF INSTRUCTION

CZDMQEO M8207 STATIC DIAG #2 MACY11 30A(1052) 18-OCT-82 15:30 PAGE 91
CZDMQE.P11 30-SEP-82 15:35 HARDWARE TESTS

3570 013204 042737 000037 013240 BIC #37,68\$;CLEAR ADDRESS FIELD OF INSTRUCTION

CZDMQEO M8207 STATIC DIAG #2 MACY11 30A(1052) 18-OCT-82 15:30 PAGE 92
 CZDMQE.P11 30-SEP-82 15:35 HARDWARE TESTS

3571	013212	153737	002406	013232	BISB	FLAG,66\$	:ADD ADDRESS TO INSTRUCTION?
3572	013220	153737	002407	013240	BISB	FLAG+1,68\$	:ADD ADDRESS TO INSTRUCTION
3573	013226				ROMCLK		:NEXT WORD IS INSTRUCTION,
3574	013226	004537	003044		JSR	R5,ROMCLK	:CLOCK INSTRUCTION
3575	013232	010000		66\$:	0'0000		
3576	013234				ROMCLK		
3577	013234	004537	003044		JSR	R5,ROMCLK	:CLOCK INSTRUCTION
3578	013240	004000		68\$:	004000		:LOAD MAR HI
3579	013242	013761	002434	000004	MOV	MRO,4(R1)	:WRITE PATTERN IN PORT4
3580	013250				ROMCLK		:NEXT WORD IS INSTRUCTION,
3581	013250	004537	003044		JSR	R5,ROMCLK	:CLOCK INSTRUCTION
3582	013254	122500			122500		:MOVE PORT4 TO MEMORY
3583	013256				ROMCLK		:NEXT WORD IS INSTRUCTION,
3584	013256	004537	003044		JSR	R5,ROMCLK	:CLOCK INSTRUCTION
3585	013262	040620			040620		:MOVE MEMORY TO BR
3586	013264				ROMCLK		:NEXT WORD IS INSTRUCTION,
3587	013264	004537	003044		JSR	R5,ROMCLK	:CLOCK INSTRUCTION
3588	013270	061225			61225		:MOVE BR TO PORT5
3589	013272	013705	002434		MOV	MRO,R5	:PUT "EXPECTED" IN R5
3590	013276	116104	000005		MOVB	5(R1),R4	:PUT "FOUND" IN R4
3591	013302	120504			CMPB	R5,R4	:DATA CORRECT?
3592	013304	001410			BEQ	67\$	:BR IF YES
3593	013306				ERROR	6	:DATA ERROR
3594	013312	104455			TRAP	C\$ERDF	
3595	013314	000006			.WORD	6	
3596	013316	005055			.WORD	EMO	
3597	013320	006700			.WORD	ERR6	
3598	013322				ESCAPE	TST	
3599	013322	104410			TRAP	C\$ESCAPE	
3600	013324	000030			.WORD	L10050-	
3601	013326			67\$:			:SW09=1?
3602	013326	000241			CLC		:CLEAR CARRY
3603	013330	106137	002434		ROLB	MRO	:SHIFT BIT IN MRO
3604	013334	001320			BNE	65\$	:DONE IF MRO=0
3605	013336				BREAK		
3606	013336	104422			TRAP	C\$BRK	
3607	013340	005237	002406		INC	FLAG	:NEXT ADDRESS
3608	013344	023737	002436	002406	CMP	MEMSZ,FLAG	:LAST ADDRESS?
3609	013352	001306			BNE	1\$	:BR IF NO
3610	013354			2\$:			
3611	013354			ENDTST			
3612	013354			L10050:			
3613	013354	104401			TRAP	C\$ETST	
3614							
3615	013356				BADHEAD		
3616					:***** TEST 7 *****		
3617					:*IOP MAIN MEMORY TEST		
3618					:*FLOAT A 0 THROUGH ALL MAIN MEMORY LOCATIONS		
3619	013356				BADHEAD		
3620					:***** TEST 7 *****		
3621							
3622	013356			BGNTST			
3623	013356			T7::			
3624	013356				MYINT		
3625	013356	013701	002516		MOV	KMCSR,R1	:RECORD DEVICE ADDR.
3626							:R1 CONTAINS BASE M8200,4,7 ADDRESS

CZDMQEO M8207 STATIC DIAG #2 MACY11 30A(1052) 18-OCT-82 15:30 PAGE 93
 CZDMQE.P11 30-SEP-82 15:35 HARDWARE TESTS

3627	013362					MSTCLR		:MASTER CLEAR M8200,4,7
3628	013366	005037	002406			CLR	FLAG	:START WITH ADDRESS 0
3629	013372	012737	000001	002434	1\$:	MOV	#1,MRO	:START WITH BIT 0
3630	013400	005137	002434		64\$:	COM	MRO	:CHANGE TO FLOATING 0
3631	013404	042737	003777	013440	65\$:	BIC	#3777,66\$	:CLEAR ADDRESS FIELD OF INSTRUCTION
3632	013412	042737	000037	013446		BIC	#37,68\$	:CLEAR ADDRESS FIELD OF INSTRUCTION
3633	013420	153737	002406	013440		BISB	FLAG,66\$	:ADD ADDRESS TO INSTRUCTION
3634	013426	153737	002407	013446		BISB	FLAG+1,68\$	:ADD ADDRESS TO INSTRUCTION
3635	013434					ROMCLK		:NEXT WORD IS INSTRUCTION,
3636	013434	004537	003044			JSR	R5,.ROMCLK	:CLOCK INSTRUCTION
3637	013440	010000			66\$:	010000		:LOAD MAR LO WITH ADDRESS IN FLAG
3638	013442					ROMCLK		:NEXT WORD IS INSTRUCTION,
3639	013442	004537	003044			JSR	R5,.ROMCLK	:CLOCK INSTRUCTION
3640	013446	004000			68\$:	004000		:LOAD MAR HI
3641	013450	013761	002434	000004		MOV	MRO,4(R1)	:WRITE PATTERN IN PORT4
3642	013456					ROMCLK		:NEXT WORD IS INSTRUCTION,
3643	013456	004537	003044			JSR	R5,.ROMCLK	:CLOCK INSTRUCTION
3644	013462	122500				122500		:MOVE PORT4 TO MEMORY
3645	013464					ROMCLK		:NEXT WORD IS INSTRUCTION,
3646	013464	004537	003044			JSR	R5,.ROMCLK	:CLOCK INSTRUCTION
3647	013470	040620				040620		:MOVE MEMORY TO BR
3648	013472					ROMCLK		:NEXT WORD IS INSTRUCTION,
3649	013472	004537	003044			JSR	R5,.ROMCLK	:CLOCK INSTRUCTION
3650	013476	061225				61225		:MOVE BR TO PORT5
3651	013500	013705	002434			MOV	MRO,R5	:PUT 'EXPECTED' IN R5
3652	013504	116104	000005			MOVB	5(R1),R4	:PUT 'FOUND' IN R4
3653	013510	120504				CMPB	R5,R4	:DATA CORRECT?
3654	013512	001406				BEQ	67\$	:BR IF YES
3655	013514					ERROR	6	:DATA ERROR
3656	013520	104455				TRAP	C\$ERDF	
3657	013522	000006				.WORD	6	
3658	013524	005055				.WORD	EMO	
3659	013526	006700				.WORD	ERR6	
3660	013530				67\$:	ESCAPE	TST	
3661	013530	104410				TRAP	C\$ESCAPE	
3662	013532	000034				.WORD	L10051-	
3663	013534	005137	002434			COM	MRO	:CHANGE TO FLOATING 1
3664	013540	000241				CLC		:CLEAR CARRY
3665	013542	106137	002434			ROLB	MRO	:SHIFT BIT IN MRO
3666	013546	001314				BNE	64\$	:DONE IF MRO=0
3667	013550					BREAK		
3668	013550	104422				TRAP	C\$BRK	
3669	013552	005237	002406			INC	FLAG	:NEXT ADDRESS
3670	013556	023737	002436	002406		CMP	MEMSZ,FLAG	:LAST ADDRESS?
3671	013564	001302				BNE	1\$	:BR IF NO
3672	013566				2\$:			
3673	013566				ENDTST			
3674	013566				L10051:			
3675	013566	104401				TRAP	C\$ETST	
3676								
3677	013570					BADHEAD		
3678						:***** TEST 8 *****		
3679						:*IOP MAIN MEMORY DUAL ADDRESSING TEST		
3680						:*LOAD EACH MEMORY LOCATION WITH ITS OWN ADDRESS		
3681						:*READ BACK EACH LOCATION TO VERIFY CORRECT ADDRESSING		
3682	013570					BADHEAD		

PC	OP	OP2	OP3	OP4	OP5	OP6	OP7	OP8	OP9	OP10	OP11	OP12	OP13	OP14	OP15	OP16	OP17	OP18	OP19	OP20	OP21	OP22	OP23	OP24	OP25	OP26	OP27	OP28	OP29	OP30	OP31	OP32	OP33	OP34	OP35	OP36	OP37	OP38	OP39	OP40	OP41	OP42	OP43	OP44	OP45	OP46	OP47	OP48	OP49	OP50	OP51	OP52	OP53	OP54	OP55	OP56	OP57	OP58	OP59	OP60	OP61	OP62	OP63	OP64	OP65	OP66	OP67	OP68	OP69	OP70	OP71	OP72	OP73	OP74	OP75	OP76	OP77	OP78	OP79	OP80	OP81	OP82	OP83	OP84	OP85	OP86	OP87	OP88	OP89	OP90	OP91	OP92	OP93	OP94	OP95	OP96	OP97	OP98	OP99	OP100	OP101	OP102	OP103	OP104	OP105	OP106	OP107	OP108	OP109	OP110	OP111	OP112	OP113	OP114	OP115	OP116	OP117	OP118	OP119	OP120	OP121	OP122	OP123	OP124	OP125	OP126	OP127	OP128	OP129	OP130	OP131	OP132	OP133	OP134	OP135	OP136	OP137	OP138	OP139	OP140	OP141	OP142	OP143	OP144	OP145	OP146	OP147	OP148	OP149	OP150	OP151	OP152	OP153	OP154	OP155	OP156	OP157	OP158	OP159	OP160	OP161	OP162	OP163	OP164	OP165	OP166	OP167	OP168	OP169	OP170	OP171	OP172	OP173	OP174	OP175	OP176	OP177	OP178	OP179	OP180	OP181	OP182	OP183	OP184	OP185	OP186	OP187	OP188	OP189	OP190	OP191	OP192	OP193	OP194	OP195	OP196	OP197	OP198	OP199	OP200	OP201	OP202	OP203	OP204	OP205	OP206	OP207	OP208	OP209	OP210	OP211	OP212	OP213	OP214	OP215	OP216	OP217	OP218	OP219	OP220	OP221	OP222	OP223	OP224	OP225	OP226	OP227	OP228	OP229	OP230	OP231	OP232	OP233	OP234	OP235	OP236	OP237	OP238	OP239	OP240	OP241	OP242	OP243	OP244	OP245	OP246	OP247	OP248	OP249	OP250	OP251	OP252	OP253	OP254	OP255	OP256	OP257	OP258	OP259	OP260	OP261	OP262	OP263	OP264	OP265	OP266	OP267	OP268	OP269	OP270	OP271	OP272	OP273	OP274	OP275	OP276	OP277	OP278	OP279	OP280	OP281	OP282	OP283	OP284	OP285	OP286	OP287	OP288	OP289	OP290	OP291	OP292	OP293	OP294	OP295	OP296	OP297	OP298	OP299	OP300	OP301	OP302	OP303	OP304	OP305	OP306	OP307	OP308	OP309	OP310	OP311	OP312	OP313	OP314	OP315	OP316	OP317	OP318	OP319	OP320	OP321	OP322	OP323	OP324	OP325	OP326	OP327	OP328	OP329	OP330	OP331	OP332	OP333	OP334	OP335	OP336	OP337	OP338	OP339	OP340	OP341	OP342	OP343	OP344	OP345	OP346	OP347	OP348	OP349	OP350	OP351	OP352	OP353	OP354	OP355	OP356	OP357	OP358	OP359	OP360	OP361	OP362	OP363	OP364	OP365	OP366	OP367	OP368	OP369	OP370	OP371	OP372	OP373	OP374	OP375	OP376	OP377	OP378	OP379	OP380	OP381	OP382	OP383	OP384	OP385	OP386	OP387	OP388	OP389	OP390	OP391	OP392	OP393	OP394	OP395	OP396	OP397	OP398	OP399	OP400	OP401	OP402	OP403	OP404	OP405	OP406	OP407	OP408	OP409	OP410	OP411	OP412	OP413	OP414	OP415	OP416	OP417	OP418	OP419
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CZDMQEO M8207 STATIC DIAG #2 MACY11 30A(1052) 18-OCT-82 15:30 PAGE 95
 CZDMQE.P11 30-SEP-82 15:35 HARDWARE TESTS

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3739 014022 004000      8$: 004000      ;LOAD MAR HI
3740 014024      ROMCLK      ;NEXT WORD IS INSTRUCTION,
3741 014024 004537 003044 JSR      R5,,ROMCLK      ;CLOCK INSTRUCTION
3742 014030 040620      040620      ;MOVE MEMORY TO THE BR
3743 014032      ROMCLK      ;NEXT WORD IS INSTRUCTION,
3744 014032 004537 003044 JSR      R5,,ROMCLK      ;CLOCK INSTRUCTION
3745 014036 061225      61225      ;MOV BR TO PORT5
3746 014040 010205      MOV      R2,R5      ;PJT 'EXPECTED' IN R5
3747 014042 116104 000005 MOVB    S(R1),R4      ;PUT 'FOUND' IN R4
3748 014046 120504      CMPB    R5,R4      ;DATA CORRECT?
3749 014050 001406      BEQ      6$      ;BR IF YES
3750 014052      ERROR      6      ;ADDRESSING ERROR
3751 014056 104455      TRAP     C$ERDF
3752 014060 000006      .WORD    6
3753 014062 005055      .WORD    EMO
3754 014064 006700      .WORD    ERR6
3755 014066      6$: ESCAPE TST
3756 014066 104410      TRAP     C$ESCAPE
3757 014070 000020      .WORD    L10052-.
3758 014072      BREAK
3759 014072 104422      TRAP     C$BRK
3760 014074 005237 002406 INC      FLAG      ;NEXT ADDRESS
3761 014100 023737 002436 002406 CMP     MEMSZ,FLAG      ;IS IT THE LAST
3762 014106 001325      BNE      4$      ;BR IF NO
3763 014110      9$:
3764 014110      ENDTST
3765 014110      L10052:
3766 014110 104401      TRAP     C$ETST
3767
3768 014112      BADHEAD
3769      ;***** TEST 9 *****
3770      ;*IOP MAR TEST
3771      ;*PERFORM DUAL ADDRESSING TEST
3772      ;*USING MAR AUTO-INC FEATURE
3773 014112      BADHEAD
3774      ;***** TEST 9 *****
3775
3776 014112      BGNTST
3777 014112      T9::
3778 014112      K4ONLY      ;FOR 4K CPUS ONLY.
3779      ;DO NOT DO TEST IF M8200, OR M8204
3780 014122 104432      TRAP     C$EXIT
3781 014124 000342      .WORD    L10053-.
3782 014126      MYINT
3783 014126 013701 002516 MOV      KMCSR,R1      ;RECORD DEVICE ADDR.
3784      ;R1 CONTAINS BASE M8200,4,7 ADDRESS
3785 014132      MSTCLR      ;MASTER CLEAR M8200,4,7
3786 014136 005002      CLR      R2      ;START WITH A ZERO
3787 014140 013703 002436 MOV      MEMSZ,R3      ;GET MEMORY SIZE
3788 014144 005203      INC      R3      ;STOP ADDR=MEMSZ+1
3789 014146      ROMCLK      ;NEXT WORD IS INSTRUCTION,
3790 014146 004537 003044 JSR      R5,,ROMCLK      ;CLOCK INSTRUCTION
3791 014152 010000      010000      ;LOAD MAR WITH A ZERO
3792 014154      CLRMAR
3793 014154 004537 003044 JSR      R5,,ROMCLK      ;CLOCK INSTRUCTION
3794 014162 010261 000004 1$: MOV     R2,4(R1)      ;WRITE DATA TO PORT4
  
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CZDMQEO M8207 STATIC DIAG #2
CZDMQE.P11 30-SEP-82 15:35

MACV11 30A(1052) 18-OCT-82 15:30 PAGE 96
HARDWARE TESTS

3795	014166			ROMCLK		;NEXT WORD IS INSTRUCTION,
3796	014166	004537	003044	JSR	R5,.ROMCLK	;CLOCK INSTRUCTION
3797	014172	136500		136500		;MEM PORT4, AUTO-INC MAR
3798	014174	005202		INC	R2	;INCREMENT DATA
3799	014176	020302		CMP	R3,R2	;DONE YET?
3800	014200	001370		BNE	1\$	;BR IF NO
3801	014202	005002		CLR	R2	;RESTART WITH A ZERO
3802	014204			ROMCLK		;NEXT WORD IS INSTRUCTION,
3803	014204	004537	003044	JSR	R5,.ROMCLK	;CLOCK INSTRUCTION
3804	014210	010000		010000		;LOAD MAR WITH A ZERO
3805	014212			CLRMAR		
3806	014212	004537	003044	JSR	R5,.ROMCLK	;CLOCK INSTRUCTION
3807	014220					
3808	014220			2\$: SROMCLK		;NEXT WORD IS INSTRUCTION,
3809	014220	004537	003100	JSR	R5,.SROMCLK	
3810	014224	055224		055224		;MOVE MEM TO PORT4
3811	014226	010205		MOV	R2,R5	;PUT 'EXPECTED' IN R5
3812	014230	116104	000004	MOVB	4(R1),R4	;PUT 'FOUND' IN R4
3813	014234	120504		CMPB	R5,R4	;DATA CORRECT?
3814	014236	001406		BEQ	3\$	;BR IF YES
3815	014240			ERROR	11	;MAR ERROR
3816	014244	104455		TRAP	C\$ERDF	
3817	014246	000013		.WORD	11	
3818	014250	005055		.WORD	EMO	
3819	014252	007276		.WORD	ERR11	
3820	014254			3\$: SROMCLK		
3821	014254	004537	003100	JSR	R5,.SROMCLK	
3822	014260	000000		0		;DUMP NOP INSTR. TO CLK AUTO INC IN MAR.
3823	014262	005004		CLR	R4	
3824	014264			ROMCLK		;READ IBUS* <15> (MAR HIGH)
3825	014264	004537	003044	JSR	R5,.ROMCLK	;CLOCK INSTRUCTION
3826	014270	121325		121325		;MAR HIGH _POT 5
3827						
3828	014272			ROMCLK		;READ IBUS* <14> (MAR LOW)
3829	014272	004537	003044	JSR	R5,.ROMCLK	;CLOCK INSTRUCTION
3830	014276	121304		121304		
3831	014300	016104	000004	MOV	4(R1),R4	;ADD TO MAR HIGH.
3832	014304	042704	160000	BIC	#160000,R4	
3833	014310	005202		INC	R2	
3834	014312	020237	002436	CMP	R2,MEMSZ	
3835	014316	001002		BNE	35\$	
3836	014320	052702	010000	BIS	#10000,R2	;IF AT HIGH LIMIT,ADD IN OVERFLOW BIT.
3837	014324			35\$: CMP	R2,R4	;ADDR. OK?
3838	014324	020204		BEQ	4\$	
3839	014326	001406		ERROR	11	;ERROR MAR ADDR. BAD IN IBUS <14>AND <15>
3840	014330			TRAP	C\$ERDF	
3841	014334	104455		.WORD	11	
3842	014336	000013		.WORD	EMO	
3843	014340	005055		.WORD	ERR11	
3844	014342	007276				
3845						;EXPECTED (R4) IS COMBINATION OF
3846						;IBUS* <14> AND <15>
3847	014344			4\$: ESCAPE	TST	
3848	014344			TRAP	C\$ESCAPE	
3849	014344	104410		.WORD	L10053-	
3850	014346	000120				

CZDMQEO M8207 STATIC DIAG #2
CZDMQE.P11 30-SEP-82 15:35

MACV11 30A(1052) 18-OCT-82 15:30 PAGE 97
HARDWARE TESTS

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3851 014350          BREAK
3852 014350 104422    TRAP      C$BRK
3853 014352 032702    BIT      #10000,R2      ;DONE YET?
3854 014356 001720    BEQ      2$
3855
3856                ;* THIS SECTION OF CODE ADDED TO MAKE SURE
3857                ;* THAT MASTER CLEAR, CLEARS THE MAR
3858                ;*
3859
3860 014360          SKIP06 40$
3861                ;GOTO 40$ IF M8206
3862 014370 005737 002470  TST      RUNB
3863 014374 001034          BNE      40$
3864 014376 005737 002472  TST      RUNINH
3865 014402 001031          BNE      40$
3866 014404 052711 040000  BIS      #40000,(R1)  ;SET MASTER CLEAR
3867 014410 005011          CLR      (R1)        ;CLEAR MASTER CLEAR
3868 014412                ROMCLK              ;WE MUST FIRST CLOCK
3869 014412 004537 003044  JSR      R5,.,ROMCLK ;CLOCK INSTRUCTION
3870 014416 121325                ROMCLK        ;THE MAR LATCH REGS
3871 014420                ROMCLK              ;BEFORE WE CAN READ THEM
3872 014420 004537 003044  JSR      R5,.,ROMCLK ;CLOCK INSTRUCTION
3873 014424 121304                ROMCLK
3874 014426                ROMCLK              ;READ IBUS* <15> PUT IN PORT5
3875 014426 004537 003044  JSR      R5,.,ROMCLK ;CLOCK INSTRUCTION
3876 014432 121325                ROMCLK        ;MAR HIGH
3877 014434                ROMCLK              ;READ IBUS* <14>, PUT IN PORT4
3878 014434 004537 003044  JSR      R5,.,ROMCLK ;CLOCK INSTRUCTION
3879 014440 121304                ROMCLK        ;MAR LOW
3880 014442 005002          CLR      R2          ;EXPECT MAR CLEAR
3881 014444 016104 000004  MOV      = 4(R1),R4  ;READ PORTS 485. THEY CONTAIN
3882                ;THE CONTENTS OF THE MAR
3883                ;MASTER CLEAR SHOULD HAVE
3884                ;CLEARED THE MAR
3885                ;BRANCH END TST IF CLEAR
3886 014450 001406          BEQ      40$
3887 014452          ERROR      44
3888 014456 104455          TRAP      C$ERDF
3889 014460 000054          .WORD      44
3890 014462 005055          .WORD      EMO
3891 014464 011054          .WORD      ERR44
3892 014466          40$:
3893 014466          ENDTST
3894 014466          L10053:
3895 014466 104401          TRAP      C$ETST
3896
3897 014470          BADHEAD
3898          ;***** TEST 10 *****
3899          ;*JOP (CRAM) ODT BITS TEST
3900          ;*LOAD MAR WITH A 0 INC MAR UNTIL IT OVERFLOWS
3901          ;*VERIFY THAT IBUS* 10 BITS IS SET ONLY WHEN MAR BIT 8 IS A ONE
3902          ;*AND THAT IBUS* 10 BIT6 IS SET ON MAR OVERFLOW
3903 014470          BADHEAD
3904          ;***** TEST 10 *****
3905
3906 014470          BGN1ST

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CZDMQEO M8207 STATIC DIAG #2
CZDMQE.P11 30-SEP-82 15:35

MACV11 30A(1052) 18-OCT-82 15:30 PAGE 98
HARDWARE TESTS

3907	014470			T10::	MACEX		
3908	014470				:DO NOT DO TEST IF M8200		
3909					TRAP C\$EXIT		
3910	014476	104432			.WORD L10054-		
3911	014500	000234			MYINT		
3912	014502				MOV KMCSR,R1		:RECORD DEVICE ADDR.
3913	014502	013701	002516				:R1 CONTAINS BASE M8200,4,7 ADDRESS
3914							:MASTER CLEAR M8200,4,7
3915	014506				MSTCLR		:R2=SAME AS MAR CONTENTS
3916	014512	005002			CLR R2		:NEXT WORD IS INSTRUCTION,
3917	014514				ROMCLK		:CLOCK INSTRUCTION
3918	014514	004537	003044		JSR R5,.ROMCLK		:MAR_0
3919	014520	010000			010000		
3920	014522			1\$:			
3921	014522				ROMCLK		:NEXT WORD IS INSTRUCTION,
3922	014522	004537	003044		JSR R5,.ROMCLK		:CLOCK INSTRUCTION
3923	014526	121204			121204		:PORT4=IBUS*10
3924	014530	005005			CLR R5		:R5='EXPECTED'
3925	014532	032702	000400		BIT #BIT8,R2		:IS BIT8 SET IN MAR?
3926	014536	001402			BEQ .+6		:BR IF NO
3927	014540	012705	000040		MOV #BIT5,R5		:IF YES THEN SET BITS
3928	014544	016104	000004		MOV 4(R1),R4		:R4='FOUND'
3929	014550	042704	177637		BIC #177637,R4		:CLEAR UNWANTED BITS
3930	014554	020504			CMP R5,R4		:BITS 5&6 SHOULD BE CLEAR
3931	014556	001410			BEQ 15\$		:BR IF OK
3932	014560				ERROR 7		:ERROR BITS 5&6 NOT CLEAR
3933	014564	104455			TRAP C\$ERDF		
3934	014566	000007			.WORD 7		
3935	014570	005055			.WORD EMO		
3936	014572	007026			.WORD ERR7		
3937	014574				ESCAPE TST		
3938	014574	104410			TRAP C\$ESCAPE		
3939	014576	000136			.WORD L10054-		
3940	014600			15\$:			
3941	014600				ROMCLK		:NEXT WORD IS INSTRUCTION,
3942	014600	004537	003044		JSR R5,.ROMCLK		:CLOCK INSTRUCTION
3943	014604	014000			014000		:INC MAR
3944	014606	005202			INC R2		:BUMP MEM ADDRESS
3945	014610	022702	002000		CMP #2000,R2		:OVERFLOWED YET?(OVFL PAGE BITS).
3946	014614	001342			BNE 1\$		:BR IF NO
3947	014616				ROMCLK		:NEXT WORD IS INSTRUCTION,
3948	014616	004537	003044		JSR R5,.ROMCLK		:CLOCK INSTRUCTION
3949	014622	121204			121204		:PART4 IBUS* 10
3950	014624	012705	000100		MOV #BIT6,R5		:R5='EXPECTED'
3951	014630	016104	000004		MOV 4(R1),R4		:R4='FOUND'
3952	014634	042704	177627		BIC #177627,R4		:CLEAR UNWANTED BITS
3953	014640	020504			CMP R5,R4		:BIT6 SHOULD BE SET
3954	014642	001406			BEQ 17\$		:BR IF OK
3955	014644				ERROR 7		:ERROR, BIT6 NOT SET
3956	014650	104455			TRAP C\$ERDF		
3957	014652	000007			.WORD 7		
3958	014654	005055			.WORD EMO		
3959	014656	007026			.WORD ERR7		
3960	014660			17\$:			
3961	014660	004537	003044		ROMCLK		:NEXT WORD IS INSTRUCTION,
3962	014664	010000			JSR R5,.ROMCLK		:CLOCK INSTRUCTION
					010000		:MAR_U

CZDMQEO MB207 STATIC DIAG #2
CZDMQE.P11 30-SEP-82 15:35

MACV11 30A(1052) 18-OCT-82 15:30 PAGE 99
HARDWARE TESTS

3963	014666			ROMCLK		:NEXT WORD IS INSTRUCTION.
3964	014666	004537	003044	JSR	R5,ROMCLK	:CLOCK INSTRUCTION
3965	014672	004000		004000		:MAR HI 0
3966	014674			ROMCLK		:NEXT WORD IS INSTRUCTION.
3967	014674	004537	003044	JSR	R5,ROMCLK	:CLOCK INSTRUCTION
3968	014700	121204		121204		:PORT4 IBUS= 10
3969	014702	005005		CLR	R5	:R5='EXPECTED'
3970	014704	016104	000004	MOV	4(R1),R4	:R4='FOUND'
3971	014710	042704	177637	BIC	#177637,R4	:CLEAR UNWANTED BITS
3972	014714	020504		CMP	R5,R4	:BITS 5&6 SHOULD BE CLEAR
3973	014716	001406		BEQ	2\$	:BR IF OK
3974	014720			ERROR	7	:ERROR 5&6 NOT BOTH CLEAR
3975	014724	104455		TRAP	(SERDF	
3976	014726	000007		.WORD	7	
3977	014730	005055		.WORD	EMO	
3978	014732	007026		.WORD	ERR7	
3979	014734					
3980	014734					
3981	014734					
3982	014734	104401		2\$:		
3983				ENDTST		
3984	014736			L10054:		
3985				TRAP	(SETST	
3986				BADHEAD		
3987				:***** TEST 11 *****		
3988				:*CRAM TEST OF JUMP(1) NEVER MICRO-PROCESSOR INSTRUCTION.		
3989				:*PERFORM THE JUMP INSTRUCTION		
3990				:*VERIFY THE JUMP DID NOT OCCUR BY CLOCKING THE INSTRUCTION		
3991				:*IN THE LOCATION IT IS AT. THIS INSTRUCTION LOADS THE		
3992				:*BR WITH THE LOWEST 8 BITS OF THE CRAM PC. AT THIS POINT		
3993				:*THE BR DATA IS MOVED TO PORT4. IF THIS DATA IS CORRECT		
3994	014736			:*THE CRAM PC IS CORRECT. IF THE CRAM PC IS NOT RIGHT,		
3995				:*THEN PORT4 CONTAINS A 37		
3996				BADHEAD		
3997	014736			:***** TEST 1: *****		
3998	014736					
3999	014736			BGNST		
4000				T11::		
4001	014746			SKIP04	10\$	
4002	014746	104432		:GOTO 10\$ IF M8204		
4003	014750	000230		EXIT	TST	:CAN'T DO IF ROM,4k
4004	014752			TRAP	(SEXIT	
4005	014752			.WORD	L10055-	
4006	014752	013701	002516	10\$:		
4007				MYINT		
4008	014756			MOV	KMCSR,R1	:RECORD DEVICE ADDR.
4009	014762					:R1 CONTAINS BASE M8200,4,7 ADDRESS
4010	014762	104404		MSTCLR		:MASTER CLEAR M8200,4,7
4011	014764	004737	003474	BGNSEG		
4012	014770			TRAP	(BSEG	
4013	014770	004737	003166	JSR	PC,MEMSET	:SET MEM AND RAM
4014	014774					
4015	014774	004537	003100	JSR	PC,CLRALL	:CLEAR ALL CONDITIONS
4016	015000	100400		SROMCLK		:NEXT WORD IS INSTRUCTION.
4017	015002			JSR	R5,SROMCLK	
4018	015002	004537	003100	100400		:START AT ROM PC=0
				SROMCLK		:NEXT WORD IS INSTRUCTION.
				JSR	R5,SROMCLK	

CZDMQEO M8207 STATIC DIAG #2 MACV11 30A(1052) 18-OCT-82 15:30 PAGE 100
 CZDMQE.P11 30-SEP-82 15:35 HARDWARE TESTS

4019	015006	114377		114377!<400*0>	:JUMP TO ROM PC OF 1777
4020	015010	004737	003330	JSR PC,RAMDAT	:R4=CRAM PC (LSB 8 BITS)
4021	015014	000001		1	:EXPECTED DATA
4022	015016	120504		CMPB R5,R4	:IS ROM PC CORRECT?
4023	015020	001406		BEQ 2\$	:BR IF NO
4024	015022			ERROR 5	:ERROR, CRAM PC IS WRONG
4025	015026	104455		TRAP C\$ERDF	
4026	015030	000005		.WORD 5	
4027	015032	005055		.WORD EMO	
4028	015034	006556		.WORD ERR5	
4029	015036			ESCAPE SEG	
4030	015036	104410		TRAP C\$ESCAPE	
4031	015040	000002		.WORD 10000\$-	
4032	015042			ENDSEG	
4033	015042			10000\$:	
4034	015042	104405		TRAP C\$ESEG	
4035	015044			BGNSEG	
4036	015044	104404		TRAP C\$BSEG	
4037	015046	004737	003166	JSR PC,CLRALL	:CLEAR ALL CONDITIONS
4038	015052			SROMCLK	:NEXT WORD IS INSTRUCTION.
4039	015052	004537	003100	JSR R5,.SROMCLK	
4040	015056	100403		100403	:START AT ROM PC=3
4041	015060			SROMCLK	:NEXT WORD IS INSTRUCTION.
4042	015060	004537	003100	JSR R5,.SROMCLK	
4043	015064	100000		100000!<400*0>	:JUMP TO ROM PC OF 0
4044	015066	004737	003330	JSR PC,RAMDAT	:R4=CRAM PC (LSB 8 BITS)
4045	015072	000004		4	:EXPECTED DATA
4046	015074	120504		CMPB R5,R4	:IS ROM PC CORRECT?
4047	015076	001406		BEQ 4\$	:BR IF YES
4048	015100			ERROR 5	:ERROR, CROM PC IS WRONG
4049	015104	104455		TRAP C\$ERDF	
4050	015106	000005		.WORD 5	
4051	015110	005055		.WORD EMO	
4052	015112	006556		.WORD ERR5	
4053	015114			ESCAPE SEG	
4054	015114	104410		TRAP C\$ESCAPE	
4055	015116	000002		.WORD 10001\$-	
4056	015120			ENDSEG	
4057	015120			10001\$:	
4058	015120	104405		TRAP C\$ESEG	
4059	015122			BGNSEG	
4060	015122	104404		TRAP C\$BSEG	
4061	015124	004737	003166	JSR PC,CLRALL	:CLEAR ALL CONDITIONS
4062	015130			SROMCLK	:NEXT WORD IS INSTRUCTION.
4063	015130	004537	003100	JSR R5,.SROMCLK	
4064	015134	100406		100406	:START AT ROM PC=6
4065	015136			SROMCLK	:NEXT WORD IS INSTRUCTION.
4066	015136	004537	003100	JSR R5,.SROMCLK	
4067	015142	104125		104125!<400*0>	:JUMP TO ROM PC OF 525
4068	015144	004737	003330	JSR PC,RAMDAT	:R4=CRAM PC (LSB 8 BITS)
4069	015150	000007		7	:EXPECTED DATA
4070	015152	120504		CMPB R5,R4	:IS ROM PC CORRECT?
4071	015154	001406		BEQ 6\$	:BR IF YES
4072	015156			ERROR 5	:ERROR, CRAM PC IS WRONG
4073	015162	104455		TRAP C\$ERDF	
4074	015164	000005		.WORD 5	

CZDMQEO M8207 S:ATIC DIAG #2
CZDMQE.P11 30-SEP-82 15:35

MARV11 30A(1052) 18-OCT-82 15:30 PAGE 101
HARDWARE TESTS

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4075 015166 005055      .WORD    EMO
4076 015170 006556      .WORD    ERR5
4077 015172             6$:  ESCAPE SEG
4078 015172 104410      TRAP    C$ESCAPE
4079 015174 000002      .WORD    10002$-.
4080 015176             ENDSEG
4081 015176             10002$:
4082 015176 104405      TRAP    C$ESEG
4083 015200             ENDTST
4084 015200 L10055:      TRAP    C$ETST
4085 015200 104401
4086
4087 015202             BADHEAD
4088             :***** TEST 12 *****
4089             :*CRAM TEST OF JUMP(1) ALWAYS MICRO-PROCESSOR INSTRUCTION.
4090             :*PERFORM THE JUMP INSTRUCTION
4091             :*VERIFY THE JUMP DID OCCUR BY CLOCKING THE INSTRUCTION
4092             :*IN THE LOCATION IT IS AT. THIS INSTRUCTION LOADS THE
4093             :*BR WITH THE LOWEST 8 BITS OF THE CRAM PC. AT THIS POINT
4094             :*THE BR DATA IS MOVED TO PORT4. IF THIS DATA IS CORRECT
4095             :*THE JUMP WAS SUCCESSFUL, IF THE JUMP WAS UNSUCCESSFUL
4096             :*THEN PORT4 WILL CONTAIN A 37
4097 015202             BADHEAD
4098             :***** TEST 12 *****
4099
4100 015202             BGNTST
4101 015202 T12::
4102 015202
4103             MACEX2      :DON'T DO IF M8200
4104 015212 104432      :DO NOT DO TEST IF M8200
4105 015214 000214      TRAP    C$EXIT
4106 015216             .WORD    L10056-.
4107 015216 013701 002516 MYINT
4108             MOV        KMCSR,R1      :RECORD DEVICE ADDR.
4109             MSTCLR      :R1 CONTAINS BASE M8200,4,7 ADDRESS
4110 015222 004737 003474 JSR     PC,MEMSET :MASTER CLEAR M8200,4,7
4111 015232             BGNSEG      :SET MEM AND RAM
4112 015232 104404      TRAP    C$BSEG
4113 015234             SROMCLK     :NEXT WORD IS INSTRUCTION.
4114 015234 004537 003100 JSR     R5,.SROMCLK
4115 015240 100400      100400      :START AT ROM PC=0
4116 015242             SROMCLK     :NEXT WORD IS INSTRUCTION.
4117 015242 004537 003100 JSR     R5,.SROMCLK
4118 015246 114777      114377!<400*1> :JUMP TO ROM PC OF 1777
4119 015250 004737 003330 JSR     PC,RAMDAT :R4=CRAM PC (LSB 8 BITS)
4120 015254 000377      377          :EXPECTED DATA
4121 015256 120504      CMPB     R5,R4  :IS ROM PC CORRECT?
4122 015260 001406      BEQ      2$    :BR IF YES
4123 015262             ERROR      :ERROR, CRAM PC IS WRONG
4124 015266 104455      TRAP    C$ERDF
4125 015270 000005      .WORD    5
4126 015272 005055      .WORD    EMO
4127 015274 006556      .WORD    ERR5
4128 015276             2$:  ESCAPE SEG
4129 015276 104410      TRAP    C$ESCAPE
4130 015300 000002      .WORD    10000$-.

```

CZDMQEO.M8207 STATIC DIAG #2
CZDMQE.P11 30-SEP-82 15:35

MACY11 30A(1052) 18-OCT-82 15:30 PAGE 102
HARDWARE TESTS

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4131 015302
4132 015302
4133 015302 104405
4134 015304
4135 015304 104404
4136 015306
4137 015306 004537 003100
4138 015312 100403
4139 015314
4140 015314 004537 003100
4141 015320 100400
4142 015322 004737 003330
4143 015326 000000
4144 015330 120504
4145 015332 001406
4146 015334
4147 015340 104455
4148 015342 000005
4149 015344 005055
4150 015346 006556
4151 015350
4152 015350 104410
4153 015352 000002
4154 015354
4155 015354
4156 015354 104405
4157 015356
4158 015356 104404
4159 015360
4160 015360 004537 003100
4161 015364 100406
4162 015366
4163 015366 004537 003100
4164 015372 104525
4165 015374 004737 003330
4166 015400 000125
4167 015402 120504
4168 015404 001406
4169 015406
4170 015412 104455
4171 015414 000005
4172 015416 005055
4173 015420 006556
4174 015422
4175 015422 104410
4176 015424 000002
4177 015426
4178 015426
4179 015426 104405
4180 015430
4181 015430
4182 015430 104401
4183
4184 015432
4185
4186

10000$: ENDSEG
TRAP C$ESEG
BGNSEG
TRAP C$BSEG
SROMCLK ;NEXT WORD IS INSTRUCTION,
JSR R5,.SROMCLK
100403 ;START AT ROM PC=3
SROMCLK ;NEXT WORD IS INSTRUCTION,
JSR R5,.SROMCLK
100000!<400*1> ;JUMP TO ROM PC OF 0
JSR PC,RAMDAT ;R4=CRAM PC (LSB 8 BITS)
0 ;EXPECTED DATA
CMPB R5,R4 ;IS ROM PC CORRECT?
BEQ 4$ ;BR IF YES
ERROR 5 ;ERROR, CRAM PC IS WRONG
TRAP C$ERDF
.WORD 5
.WORD EMO
.WORD ERR5
4$: ESCAPE SEG
TRAP C$ESCAPE
.WORD 10001$-.
ENDSEG

10001$: TRAP C$ESEG
BGNSEG
TRAP C$BSEG
SROMCLK ;NEXT WORD IS INSTRUCTION,
JSR R5,.SROMCLK
100406 ;START AT ROM PC=6
SROMCLK ;NEXT WORD IS INSTRUCTION,
JSR R5,.SROMCLK
104125!<400*1> ;JUMP TO ROM PC OF 525
JSR PC,RAMDAT ;R4=CRAM PC (LSB 8 BITS)
125 ;EXPECTED DATA
CMPB R5,R4 ;IS ROM PC CORRECT?
BEQ 6$ ;BR IF YES
ERROR 5 ;ERROR, CRAM PC IS WRONG
TRAP C$ERDF
.WORD 5
.WORD EMO
.WORD ERR5
6$: ESCAPE SEG
TRAP C$ESCAPE
.WORD 10002$-.
ENDSEG

10002$: TRAP C$ESEG
ENDTST
L10056: TRAP C$ETST

BADHEAD
***** TEST 13 *****
*CRAM TEST OF JUMP(1) ON C BIT SET MICRO-PROCESSOR INSTRUCTION.

```

CZDMQEO M8207 STATIC DIAG #2
CZDMQE.P11 30-SEP-82 15:35

MACV11 30A(1052) 18-OCT-82 15:30 PAGE 103
HARDWARE TESTS

SEQ 102

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4187
4188
4189
4190
4191
4192
4193
4194 015432
4195
4196
4197 015432
4198 015432
4199 015432
4200
4201 015442 104432
4202 015444 000230
4203 015446
4204 015446 013701 002516
4205
4206 015452
4207 015456 004737 003474
4208 015462
4209 015462 104404
4210 015464 004737 003260
4211 015470
4212 015470 004537 003100
4213 015474 100400
4214 015476
4215 015476 004537 003100
4216 015502 115377
4217 015504 004737 003330
4218 015510 000377
4219 015512 120504
4220 015514 001406
4221 015516
4222 015522 104455
4223 015524 000005
4224 015526 005055
4225 015530 006556
4226 015532
4227 015532
4228 015532 104410
4229 015534 000002
4230 015536
4231 015536
4232 015536 104405
4233 015540
4234 015540 104404
4235 015542 004737 003260
4236 015546
4237 015546 004537 003100
4238 015552 100403
4239 015554
4240 015554 004537 003100
4241 015560 101000
4242 015562 004737 003330

; *SET THE C BIT, PERFORM THE JUMP INSTRUCTION.
; *VERIFY THE JUMP DID OCCUR BY CLOCKING THE INSTRUCTION
; *IN THE LOCATION IT IS AT. THIS INSTRUCTION LOADS THE
; *BR WITH THE LOWEST 8 BITS OF THE CRAM PC. AT THIS POINT
; *THE BR DATA IS MOVED TO PORT4. IF THIS DATA IS CORRECT
; *THE JUMP WAS SUCCESSFUL, IF THE JUMP WAS UNSUCCESSFUL
; *THEN PORT4 WILL CONTAIN A 37
BADHEAD
; ***** TEST 13 *****

BGNTST
113::
MACEX2

; DO NOT DO TEST IF M8200
; DON'T DO IF M8200
TRAP C$EXIT
; WORD L10057-.
MYINT
MOV KMCSR,R1
; RECORD DEVICE ADDR.
; R1 CONTAINS BASE M8200,4,7 ADDRESS
; MASTER CLEAR M8200,4,7
; SET MEM AND RAM
MSTCLR
JSR PC, MEMSET
1$:
BGNSEG
TRAP C$BSEG
JSR PC, SETC
; SET THE C BIT
; NEXT WORD IS INSTRUCTION,
SROMCLK
JSR R5, .SROMCLK
; START AT ROM PC=0
; NEXT WORD IS INSTRUCTION,
100400
SROMCLK
JSR R5, .SROMCLK
114377! <400*2>
; JUMP TO ROM PC OF 1777
JSR PC, RAMDAT
; R4=CRAM PC (LSB 8 BITS)
; EXPECTED DATA
; IS ROM PC CORRECT?
; BR IF YES
; ERROR, CRAM PC IS WRONG
CMPB R5,R4
BEQ 2$
ERROR 5
TRAP C$ERDF
; WORD 5
; WORD EMO
; WORD ERR5
2$:
; LOOP TO 1$ IF SW09=1
ESCAPE SEG
TRAP C$ESCAPE
; WORD 10000$-.
ENDSEG
10000$:
TRAP C$ESEG
BGNSEG
TRAP C$BSEG
JSR PC, SETC
; SET THE C BIT
; NEXT WORD IS INSTRUCTION,
SROMCLK
JSR R5, .SROMCLK
; START AT ROM PC=3
; NEXT WORD IS INSTRUCTION,
100403
SROMCLK
JSR R5, .SROMCLK
100000! <400*2>
; JUMP TO ROM PC OF 0
JSR PC, RAMDAT
; R4=CRAM PC (LSB 8 BITS)

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CZDMQEO M8207 STATIC DIAG #2
CZDMQE.P11 30-SEP-82 15:35

MACY11 30A(1052) 18-OCT-82 15:30 PAGE 104
HARDWARE TESTS

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4243 015566 000000      0
4244 015570 120504      CMPB    R5,R4      ;EXPECTED DATA
4245 015572 001406      BEQ      4$      ;IS ROM PC CORRECT?
4246 015574      ERROR    5      ;BR IF YES
4247 015600 104455      TRAP    C$ERDF      ;ERROR, CRAM PC IS WRONG
4248 015602 000005      .WORD    5
4249 015604 005055      .WORD    EMO
4250 015606 006556      .WORD    ERR5
4251 015610      4$:      ;LOOP TO 3$ IF SW09=1
4252 015610      ESCAPE SEG
4253 015610 104410      TRAP    C$ESCAPE
4254 015612 000002      .WORD    10001$-.
4255 015614      ENDSEG
4256 015614      10001$:
4257 015614 104405      TRAP    C$ESEG
4258 015616      BGNSEG
4259 015616 104404      TRAP    C$BSEG
4260 015620 004737 003260 JSR      PC,SETC      ;SET THE C BIT'
4261 015624      SROMCLK      ;NEXT WORD IS INSTRUCTION,
4262 015624 004537 003100 JSR      R5,.SROMCLK
4263 015630 100406      100406
4264 015632      SROMCLK      ;START AT ROM PC=6
4265 015632 004537 003100 JSR      R5,.SROMCLK      ;NEXT WORD IS INSTRUCTION,
4266 015636 105125      104125!<400*2>
4267 015640 004737 003330 JSR      PC,RAMDAT      ;JUMP TO ROM PC OF 525
4268 015644 000125      125      ;R4=CRAM PC (LSB 8 BITS)
4269 015646 120504      CMPB    R5,R4      ;EXPECTED DATA
4270 015650 001406      BEQ      6$      ;IS ROM PC CORRECT?
4271 015652      ERROR    5      ;BR IF YES
4272 015656 104455      TRAP    C$ERDF      ;ERROR, CRAM PC IS WRONG
4273 015660 000005      .WORD    5
4274 015662 005055      .WORD    EMO
4275 015664 006556      .WORD    ERR5
4276 015666      6$:      ESCAPE SEG
4277 015666 104410      TRAP    C$ESCAPE
4278 015670 000002      .WORD    10002$-.
4279 015672      ENDSEG
4280 015672      10002$:
4281 015672 104405      TRAP    C$ESEG
4282 015674      ENDTST
4283 015674      L10057:
4284 015674 1044^1      TRAP    C$ETST
4285
4286 015676      BADHEAD
4287      ;***** TEST 14 *****
4288      ;*CRAM TEST OF JUMP(1) ON Z BIT SET MICRO-PROCESSOR INSTRUCTION.
4289      ;*SET THE Z BIT, PERFORM THE JUMP INSTRUCTION.
4290      ;*VERIFY THE JUMP DID OCCUR BY CLOCKING THE INSTRUCTION
4291      ;*IN THE LOCATION IT IS AT. THIS INSTRUCTION LOADS THE
4292      ;*BR WITH THE LOWEST 8 BITS OF THE CRAM PC. AT THIS POINT
4293      ;*THE BR DATA IS MOVED TO PORT4. IF THIS DATA IS CORRECT
4294      ;*THE JUMP WAS SUCCESSFUL, IF THE JUMP WAS UNSUCCESSFUL
4295      ;*THEN PORT4 WILL CONTAIN A 37
4296 015676      BADHEAD
4297      ;***** TEST 14 *****
4298

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CZDMQEO M8207 STATIC DIAG #2
CZDMQE.P11 30-SEP-82 15:35

MACY11 30A(1052) 18-OCT-82 15:30 PAGE 105
HARDWARE TESTS

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4299 015676
4300 015676
4301 015676
4302
4303 015706 104432
4304 015710 000230
4305 015712
4306 015712 013701 002516
4307
4308 015716
4309 015722 004737 003474
4310 015726
4311 015726 104404
4312 015730 004737 003312
4313 015734
4314 015734 004537 003100
4315 015740 100400
4316 015742
4317 015742 004537 003100
4318 015746 115777
4319 015750 004737 003330
4320 015754 000377
4321 015756 120504
4322 015760 001406
4323 015762
4324 015766 104455
4325 015770 000005
4326 015772 005055
4327 015774 006556
4328 015776
4329 015776 104410
4330 016000 000002
4331 016002
4332 016002
4333 016002 104405
4334 016004
4335 016004 104404
4336 016006 004737 003312
4337 016012
4338 016012 004537 003100
4339 016016 100403
4340 016020
4341 016020 004537 003100
4342 016024 101400
4343 016026 004737 003330
4344 016032 000000
4345 016034 120504
4346 016036 001406
4347 016040
4348 016044 104455
4349 016046 000005
4350 016050 005055
4351 016052 006556
4352 016054
4353 016054 104410
4354 016056 000002

BGNTST
T14::
MACEX2
;DO NOT DO TEST IF M8200
TRAP C$EXIT
;DON'T DO IF M8200.
;WORD L10060-.
MYINT
MOV KMCSR,R1
;RECORD DEVICE ADDR.
;R1 CONTAINS BASE M8200,4,7 ADDRESS
MSTCLR
JSR PC,MEMSET
;MASTER CLEAR M8200,4,7
;SET MEM AND RAM
1$:
BGNSEG
TRAP C$BSEG
JSR PC,SETZ
;SET THE Z BIT'
;NEXT WORD IS INSTRUCTION,
SROMCLK
JSR R5,.SROMCLK
;START AT ROM PC=0
;NEXT WORD IS INSTRUCTION,
100400
SROMCLK
JSR R5,.SROMCLK
;JUMP TO ROM PC OF 1777
114377!<400*3>
JSR PC,RAMDAT
;R4=CRAM PC (LSB 8 BITS)
;EXPECTED DATA
;IS ROM PC CORRECT?
;BR IF YES
;ERROR, CRAM PC IS WRONG
377
CMPB R5,R4
BEQ 2$
ERROR 5
TRAP C$ERDF
;WORD 5
;WORD EMO
;WORD ERR5
2$:
ESCAPE SEG
TRAP C$ESCAPE
;WORD 10000$-.
ENDSEG
10000$:
TRAP C$ESEG
BGNSEG
TRAP C$BSEG
JSR PC,SETZ
;SET THE Z BIT'
;NEXT WORD IS INSTRUCTION,
SROMCLK
JSR R5,.SROMCLK
;START AT ROM PC=3
;NEXT WORD IS INSTRUCTION,
100403
SROMCLK
JSR R5,.SROMCLK
;JUMP TO ROM PC OF 0
100000!<400*3>
JSR PC,RAMDAT
;R4=CRAM PC (LSB 8 BITS)
;EXPECTED DATA
;IS ROM PC CORRECT?
;BR IF YES
;ERROR, CRAM PC IS WRONG
0
CMPB R5,R4
BEQ 4$
ERROR 5
TRAP C$ERDF
;WORD 5
;WORD EMO
;WORD ERR5
4$:
ESCAPE SEG
TRAP C$ESCAPE
;WORD 10001$-.

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CZDMQEO M8207 STATIC DIAG #2
CZDMQE.P11 30-SEP-82 15:35

MACY11 30A(1052) 18-OCT-82 15:30 PAGE 106
HARDWARE TESTS

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4355 016060
4356 016060
4357 016060 104405
4358 016062
4359 016062 104404
4360 016064 004737 003312
4361 016070
4362 016070 004537 003100
4363 016074 100406
4364 016076
4365 016076 004537 003100
4366 016102 105525
4367 016104 004737 003330
4368 016110 000125
4369 016112 120504
4370 016114 001406
4371 016116
4372 016122 104455
4373 016124 000005
4374 016126 005055
4375 016130 006556
4376 016132
4377 016132 104410
4378 016134 000002
4379 016136
4380 016136
4381 016136 104405
4382 016140
4383 016140
4384 016140 104401
4385
4386 016142
4387
4388
4389
4390
4391
4392
4393
4394
4395
4396 016142
4397
4398
4399 016142
4400 016142
4401 016142
4402
4403 016152 104432
4404 016154 000230
4405 016156
4406 016156 013701 002516
4407
4408 016162
4409 016166 004737 003474
4410 016172

10001$: ENDSEG
TRAP C$ESEG
BGNSEG
TRAP C$BSEG
JSR PC,SETZ ;SET THE Z BIT
SROMCLK ;NEXT WORD IS INSTRUCTION.
JSR R5,.SROMCLK
100406 ;START AT ROM PC=6
SROMCLK ;NEXT WORD IS INSTRUCTION.
JSR R5,.SROMCLK
104125!<400*3> ;JUMP TO ROM PC OF 525
JSR PC,RAMDAT ;R4=CRAM PC (LSB 8 BITS)
125 ;EXPECTED DATA
CMPB R5,R4 ;IS ROM PC CORRECT?
BEQ 6$ ;BR IF YES
ERROR 5 ;ERROR, CRAM PC IS WRONG
TRAP C$ERDF
WORD 5
WORD EMO
WORD ERR5
6$: ESCAPE SEG
TRAP C$ESCAPE
WORD 10002$-.
ENDSEG
10002$: TRAP C$ESEG
ENDTST
L10060: TRAP C$ETST

BADHEAD
:***** TEST 15 *****
:*CRAM TEST OF JUMP(1) ON BRO SET MICRO-PROCESSOR INSTRUCTION.
:*SET THE BRO BIT, PERFORM THE JUMP INSTRUCTION.
:*VERIFY THE JUMP DID OCCUR BY CLOCKING THE INSTRUCTION
:*IN THE LOCATION IT IS AT. THIS INSTRUCTION LOADS THE
:*BR WITH THE LOWEST 8 BITS OF THE CRAM PC. AT THIS POINT
:*THE BR DATA IS MOVED TO PCRT4. IF THIS DATA IS CORRECT
:*THE JUMP WAS SUCCESSFUL, IF THE JUMP WAS UNSUCCESSFUL
:*THEN PORT4 WILL CONTAIN A 37
BADHEAD
:***** TEST 15 *****

BGNTEST
T15:: MACEX2 ;DON'T DO IF M8200.
DO NOT DO TEST IF M8200
TRAP C$EXIT
WORD L10061-.
MYINT
MOV KMCSR,R1 ;RECORD DEVICE ADDR.
;R1 CONTAINS BASE M8200.4,7 ADDRESS
MSTCLR ;MASTER CLEAR M8200.4,7
JSR PC,MEMSET ;SET MEM AND RAM

1$:

```

CZDMQEO M8207 STATIC DIAG #2
CZDMQE.P11 30-SEP-82 15:35

MACV11 30A(1052) 18-OCT-82 15:30 PAGE 107
HARDWARE TESTS

4411	016172			BGNSEG		
4412	016172	104404		TRAP	C\$BSEG	
4413	016174	004737	003220	JSR	PC,SETBRO	:SET THE BRO BIT'
4414	016200			SROMCLK		:NEXT WORD IS INSTRUCTION.
4415	016200	004537	003100	JSR	R5, SROMCLK	
4416	016204	100400		100400		:START AT ROM PC=0
4417	016206			SROMCLK		:NEXT WORD IS INSTRUCTION.
4418	016206	004537	003100	JSR	R5, SROMCLK	
4419	016212	116377		116377!<400*4>		:JUMP TO ROM PC OF 1777
4420	016214	004737	003330	JSR	PC, RAMDAT	:R4=CRAM PC (LSB 8 BITS)
4421	016220	000377		377		:EXPECTED DATA
4422	016222	120504		CMPB	R5,R4	:IS ROM PC CORRECT?
4423	016224	001406		BEQ	2\$	:BR IF YES
4424	016226			ERROR	5	:ERROR, CRAM PC IS WRONG
4425	016232	104455		TRAP	C\$ERDF	
4426	016234	000005		.WORD	5	
4427	016236	005055		.WORD	EMO	
4428	016240	006556		.WORD	ERR5	
4429	016242			2\$: ESCAPE	SEG	
4430	016242	104410		TRAP	C\$ESCAPE	
4431	016244	000002		.WORD	10000\$-	
4432	016246			ENDSEG		
4433	016246			10000\$: TRAP	C\$ESEG	
4434	016246	104405		BGNSEG		
4435	016250			TRAP	C\$BSEG	
4436	016250	104404		JSR	PC,SETBRO	:SET THE BRO BIT'
4437	016252	004737	003220	SROMCLK		:NEXT WORD IS INSTRUCTION.
4438	016256			JSR	R5, SROMCLK	
4439	016256	004537	003100	100403		:START AT ROM PC=3
4440	016262	100403		SROMCLK		:NEXT WORD IS INSTRUCTION.
4441	016264			JSR	R5, SROMCLK	
4442	016264	004537	003100	100000!<400*4>		:JUMP TO ROM PC OF 0
4443	016270	102000		JSR	PC, RAMDAT	:R4=CRAM PC (LSB 8 BITS)
4444	016272	004737	003330	0		:EXPECTED DATA
4445	016276	000000		CMPB	R5,R4	:IS ROM PC CORRECT?
4446	016300	120504		BEQ	4\$	:BR IF YES
4447	016302	001406		ERROR	5	:ERROR, CRAM PC IS WRONG
4448	016304			TRAP	C\$ERDF	
4449	016310	104455		.WORD	5	
4450	016312	000005		.WORD	EMO	
4451	016314	005055		.WORD	ERR5	
4452	016316	006556		4\$: ESCAPE	SEG	
4453	016320			TRAP	C\$ESCAPE	
4454	016320	104410		.WORD	10001\$-	
4455	016322	000002		ENDSEG		
4456	016324			10001\$: TRAP	C\$ESEG	
4457	016324	104405		BGNSEG		
4458	016324			TRAP	C\$BSEG	
4459	016326	104404		JSR	PC,SETBRO	:SET THE BRO BIT'
4460	016326	004737	003220	SROMCLK		:NEXT WORD IS INSTRUCTION.
4461	016330			JSR	R5, SROMCLK	
4462	016334	004537	003100	100406		:START AT ROM PC=6
4463	016334	004537	003100	SROMCLK		:NEXT WORD IS INSTRUCTION.
4464	016340	100406		JSR	R5, SROMCLK	
4465	016342					
4466	016342	004537	003100			

CZDMQEO M8207 STATIC DIAG #2
CZDMQOE.P11 30-SEP-82 15:35

MACY11 30A(1052) 18-OCT-82 15:30 PAGE 108
HARDWARE TESTS

SEQ 107

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4467 016346 106125      104125!<400*4>      :JUMP TO ROM PC OF 525
4468 016350 004737 003330 JSR      PC,RAMDAT      :R4=CRAM PC (LSB 8 BITS)
4469 016354 000125      125              :EXPECTED DATA
4470 016356 120504      CMPB      R5,R4      :IS ROM PC CORRECT?
4471 016360 001406      BEQ      6$      :BR IF YES
4472 016362          ERROR      5      :ERROR, CRAM PC IS WRONG
4473 016366 104455      TRAP      C$ERDF
4474 016370 000005      .WORD      5
4475 016372 005055      .WORD      EMO
4476 016374 006556      .WORD      ERR5
4477 016376          6$:      ESCAPE SEG
4478 016376 104410      TRAP      C$ESCAPE
4479 016400 000002      .WORD      10002$-.
4480 016402          10002$:      ENDSEG
4481 016402          TRAP      C$ESEG
4482 016402 104405      ENDTST
4483 016404          L10061:      TRAP      C$ETST
4484 016404 104401
4485 016404
4486
4487 016406      BADHEAD
4488      :***** TEST 16 *****
4489      :*CRAM TEST OF JUMP(1) ON BR1 SET MICRO-PROCESSOR INSTRUCTION.
4490      :*SET THE BR1 BIT, PERFORM THE JUMP INSTRUCTION.
4491      :*VERIFY THE JUMP DID OCCUR BY CLOCKING THE INSTRUCTION
4492      :*IN THE LOCATION IT IS AT. THIS INSTRUCTION LOADS THE
4493      :*BR WITH THE LOWEST 8 BITS OF THE CRAM PC. AT THIS POINT
4494      :*THE BR DATA IS MOVED TO PORT4. IF THIS DATA IS CORRECT
4495      :*THE JUMP WAS SUCCESSFUL, IF THE JUMP WAS UNSUCCESSFUL
4496      :*THEN PORT4 WILL CONTAIN A 37
4497 016406      BADHEAD
4498      :***** TEST 16 *****
4499
4500 016406      BGN1ST
4501 016406      T16::
4502 016406
4503      MACEX2      :DON'T DO IF M8200.
4504 016416 104432      :DO NOT DO TEST IF M8200
4505 016420 000230      TRAP      C$EXIT
4506 016422          .WORD      L10062-.
4507 016422 013701 002516 MYINT
4508          MOV      KMCSR,R1      :RECORD DEVICE ADDR.
4509 016426          :R1 CONTAINS BASE M8200,4,7 ADDRESS
4510 016432 004737 003474 MSTCLR      :MASTER CLEAR M8200,4,7
4511 016436          JSR      PC,MEMSET      :SET MEM AND RAM
4512 016436          1$:      BGNSEG
4513 016436 104404      TRAP      C$BSEG
4514 016440 004737 003230 JSR      PC,SETBR1      :SET THE BR1 BIT
4515 016444          SROMCLK      :NEXT WORD IS INSTRUCTION,
4516 016444 004537 003100 JSR      R5,.SROMCLK
4517 016450 100400          100400      :START AT ROM PC=0
4518 016452          SROMCLK      :NEXT WORD IS INSTRUCTION,
4519 016452 004537 003100 JSR      R5,.SROMCLK
4520 016456 116777      114377!<400*5>      :JUMP TO ROM PC OF 1777
4521 016460 004737 003330 JSR      PC,RAMDAT      :R4=CRAM PC (LSB 8 BITS)
4522 016464 000377      377              :EXPECTED DATA

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CZDMQEO M8207 STATIC DIAG #2
CZDMQE.P11 30-SEP-82 15:35

MACY11 30A(1052) 18-OCT-82 15:30 PAGE 109
HARDWARE TESTS

4523	016466	120504		CMPB	R5,R4		;IS ROM PC CORRECT?
4524	016470	001406		BEQ	2\$		;BR IF YES
4525	016472			ERROR	5		;ERROR, CRAM PC IS WRONG
4526	016476	104455		TRAP	C\$ERDF		
4527	016500	000005		.WORD	5		
4528	016502	005055		.WORD	EMO		
4529	016504	006556		.WORD	ERR5		
4530	016506		2\$:	ESCAPE	SEG		
4531	016506	104410		TRAP	C\$ESCAPE		
4532	016510	000002		.WORD	10000\$-		
4533	016512			ENDSEG			
4534	016512		10000\$:				
4535	016512	104405		TRAP	C\$ESEG		
4536	016514			BGNSEG			
4537	016514	104404		TRAP	C\$BSEG		
4538	016516	004737	003230	JSR	PC,SETBR1		;SET THE BR1 BIT'
4539	016522			SROMCLK			;NEXT WORD IS INSTRUCTION,
4540	016522	004537	003100	JSR	R5,.SROMCLK		
4541	016526	100403		100403			;START AT ROM PC=3
4542	016530			SROMCLK			;NEXT WORD IS INSTRUCTION,
4543	016530	004537	003100	JSR	R5,.SROMCLK		
4544	016534	102400		100000!<400*5>			;JUMP TO ROM PC OF 0
4545	016536	004737	003330	JSR	PC,RAMDAT		;R4=CRAM PC (LSB 8 BITS)
4546	016542	000000		0			;EXPECTED DATA
4547	016544	120504		CMPB	R5,R4		;IS ROM PC CORRECT?
4548	016546	001406		BEQ	4\$		;BR IF YES
4549	016550			ERROR	5		;ERROR, CRAM PC IS WRONG
4550	016554	104455		TRAP	C\$ERDF		
4551	016556	000005		.WORD	5		
4552	016560	005055		.WORD	EMO		
4553	016562	006556		.WORD	ERR5		
4554	016564		4\$:	ESCAPE	SEG		
4555	016564	104410		TRAP	C\$ESCAPE		
4556	016566	000002		.WORD	10001\$-		
4557	016570			ENDSEG			
4558	016570		10001\$:				
4559	016570	104405		TRAP	C\$ESEG		
4560	016572			BGNSEG			
4561	016572	104404		TRAP	C\$BSEG		
4562	016574	004737	003230	JSR	PC,SETBR1		;SET THE BR1 BIT'
4563	016600			SROMCLK			;NEXT WORD IS INSTRUCTION,
4564	016600	004537	003100	JSR	R5,.SROMCLK		
4565	016604	100406		100406			;START AT ROM PC=6
4566	016606			SROMCLK			;NEXT WORD IS INSTRUCTION,
4567	016606	004537	003100	JSR	R5,.SROMCLK		
4568	016612	106525		104125!<400*5>			;JUMP TO ROM PC OF 525
4569	016614	004737	003330	JSR	PC,RAMDAT		;R4=CRAM PC (LSB 8 BITS)
4570	016620	000125		125			;EXPECTED DATA
4571	016622	120504		CMPB	R5,R4		;IS ROM PC CORRECT?
4572	016624	001406		BEQ	6\$		;BR IF YES
4573	016626			ERROR	5		;ERROR, CRAM PC IS WRONG
4574	016632	104455		TRAP	C\$ERDF		
4575	016634	000005		.WORD	5		
4576	016636	005055		.WORD	EMO		
4577	016640	006556		.WORD	ERR5		
4578	016642		6\$:	ESCAPE	SEG		

CZDMQEO M8207 STATIC DIAG #2
CZDMQEO.P11 30-SEP-82 15:35

MACV11 30A(1052) 18-OCT-82 15:30 PAGE 110
HARDWARE TESTS

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4579 016642 104410      TRAP      C$ESCAPE
4580 016644 000002      .WORD    10002$-.
4581 016646              ENDSEG
4582 016646              10002$:
4583 016646 104405      TRAP      C$ESEG
4584 016650              ENDTST
4585 016650              L10062:
4586 016650 104401      TRAP      C$ETST
4587
4588 016652              BADHEAD
4589                      :***** TEST 17 *****
4590                      :*CRAM TEST OF JUMP(I) ON BR4 SET MICRO-PROCESSOR INSTRUCTION.
4591                      :*SET THE BR4 BIT, PERFORM THE JUMP INSTRUCTION.
4592                      :*VERIFY THE JUMP DID OCCUR BY CLOCKING THE INSTRUCTION
4593                      :*IN THE LOCATION IT IS AT. THIS INSTRUCTION LOADS THE
4594                      :*BR WITH THE LOWEST 8 BITS OF THE CRAM PC. AT THIS POINT
4595                      :*THE BR DATA IS MOVED TO PORT4. IF THIS DATA IS CORRECT
4596                      :*THE JUMP WAS SUCCESSFUL, IF THE JUMP WAS UNSUCCESSFUL
4597                      :*THEN PORT4 WILL CONTAIN A 37
4598 016652              BADHEAD
4599                      :***** TEST 17 *****
4600
4601 016652              BGNTST
4602 016652              T17::
4603 016652              MACEX2
4604                      :DO NOT DO TEST IF M8200 :DON'T DO IF M8200.
4605 016662 104432      TRAP      C$EXIT
4606 016664 000230      .WORD    L10063-.
4607 016666              MYINT
4608 016666 013701 002516      MOV      KMCSR,R1
4609 016672              MSTCLR
4610 016676 004737 003474      JSR      PC, MEMSET
4611 016702              1$:
4612 016702              BGNSEG
4613 016702 104404      TRAP      C$BSEG

```

:RECORD DEVICE ADDR.
:MASTER CLEAR M8200,4,7
:SET MEM AND RAM

CZDMQEO M8207 STATIC DIAG #2
CZDMQE.P11 30-SEP-82 15:35 MACV11 30A(1052) 18-OCT-82 15:30 PAGE 111
HARDWARE TESTS

4614	016704	004737	003240	JSR	PC,SETBR4	;SET THE BR4 BIT'
4615	016710			SROMCLK		;NEXT WORD IS INSTRUCTION,
4616	016710	004537	003100	JSR	R5,.SROMCLK	
4617	016714	100400		100400		;START AT ROM PC=0
4618	016716			SROMCLK		;NEXT WORD IS INSTRUCTION,
4619	016716	004537	003100	JSR	R5,.SROMCLK	

CZDMQEO M8207 STATIC DIAG #2 MACV11 30A(1052) 18-OCT-82 15:30 PAGE 112
CZDMQE.P11 30-SEP-82 15:35 HARDWARE TESTS

4620	016722	117377	114377!<400*6>	:JUMP TO ROM PC OF 1777
4621	016724	004737	003330 JSR PC,RAMDAT	:R4=CHAM PC (LSB 8 BITS)

CZDMQEO M8207 STATIC DIAG #2
CZDMQE.P11 30-SEP-82 15:35

MACV11 30A(1052) 18-OCT-82 15:30 PAGE 113
HARDWARE TESTS

4622 016730 000377
4623 016732 120504

377
CMPB R5,R4

:EXPECTED DATA
:IS ROM PC CORRECT?

0

J 9

SEQ 113

CZDMQEO MB207 STATIC DIAG #2
CZDMQE.P11 30-SEP-82 15:35

MACV11 30A(1052) 18-OCT-82 15:30 PAGE 114
HARDWARE TESTS

4624 016734 001406

BEQ 25

;BR IF YES

01

CZDMQEO M8207 STATIC DIAG #2
CZDMQE.P11 30-SEP-82 15:35

MACV11 30A(1052) 18-OCT-82 15:30 PAGE 115
HARDWARE TESTS

4625 016736
4626 016742 104455
4627 016744 000C05
4628 016746 005055
4629 016750 006556

ERROR 5
TRAP C\$ERDF
.WORD 5
.WORD EMO
.WORD ERR5

;ERROR, CRAM PC IS WRONG

CZDMQEO M8207 STATIC DIAG #2
CZDMQE.P11 30-SEP-82 15:35

MACY11 30A(1052) 18-OCT-82 15:30 PAGE 116
HARDWARE TESTS

4630	016752		2\$:	ESCAPE SEG	
4631	016752	104410		TRAP	C\$ESCAPE
4632	016754	000002		.WORD	10000\$-.
4633	016756			ENDSEG	
4634	016756		10000\$:		
4635	016756	104405		TRAP	C\$ESEG
4636	016760			BGNSEG	
4637	016760	104404		TRAP	C\$BSEG
4638	016762	004737 003240		JSR	PC,SETBR4
4639	016766			SROMCLK	
4640	016766	004537 003100		JSR	R5,.SROMCLK
4641	016772	100403		100403	
4642	016774			SROMCLK	
4643	016774	004537 003100		JSR	R5,.SROMCLK
4644	017000	103000		100000!<400*6>	
4645	017002	004737 003330		JSR	PC,RAMDAT
4646	017006	000000		0	
4647	017010	120504		CMPB	R5,R4
4648	017012	001406		BEQ	4\$
4649	017014			ERROR	5
4650	017020	104455		TRAP	C\$ERDF
4651	017022	000005		.WORD	5
4652	017024	005055		.WORD	EMO
4653	017026	006556		.WORD	ERR5
4654	017030		4\$:	ESCAPE SEG	
4655	017030	104410		TRAP	C\$ESCAPE
4656	017032	000002		.WORD	10001\$-.
4657	017034			ENDSEG	
4658	017034		10001\$:		
4659	017034	104405		TRAP	C\$ESEG
4660	017036			BGNSEG	
4661	017036	104404		TRAP	C\$BSEG
4662	017040	004737 003240		JSR	PC,SETBR4
4663	017044			SROMCLK	
4664	017044	004537 003100		JSR	R5,.SROMCLK
4665	017050	100406		100406	
4666	017052			SROMCLK	
4667	017052	004537 003100		JSR	R5,.SROMCLK
4668	017056	107125		104125!<400*6>	
4669	017060	004737 003330		JSR	PC,RAMDAT
4670	017064	000125		125	
4671	017066	120504		CMPB	R5,R4
4672	017070	001406		BEQ	6\$
4673	017072			ERROR	5
4674	017076	104455		TRAP	C\$ERDF
4675	017100	000005		.WORD	5
4676	017102	005055		.WORD	EMO
4677	017104	006556		.WORD	ERR5
4678	017106		6\$:	ESCAPE SEG	
4679	017106	104410		TRAP	C\$ESCAPE
4680	017110	000002		.WORD	10002\$-.
4681	017112			ENDSEG	
4682	017112		10002\$:		
4683	017112	104405		TRAP	C\$ESEG
4684	017114		ENDTST		
4685	017114		L10063:		

;SET THE BR4 BIT'
;NEXT WORD IS INSTRUCTION,
;START AT ROM PC=3
;NEXT WORD IS INSTRUCTION,
;JUMP TO ROM PC OF 0
;R4=CRAM PC (LSB 8 BITS)
;EXPECTED DATA
;IS ROM PC CORRECT?
;BR IF YES
;ERROR, CRAM PC IS WRONG

;SET THE BR4 BIT'
;NEXT WORD IS INSTRUCTION,
;START AT ROM PC=6
;NEXT WORD IS INSTRUCTION,
;JUMP TO ROM PC OF 525
;R4=CRAM PC (LSB 8 BITS)
;EXPECTED DATA
;IS ROM PC CORRECT?
;BR IF YES
;ERROR, CRAM PC IS WRONG

CZDMQEO M8207 STATIC DIAG #2
CZDMQEO.P11 30-SEP-82 15:35

MACV11 30A(1052) 18-OCT-82 15:30 PAGE 117
HARDWARE TESTS

SEQ 116

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4686 017114 104401          TRAP    C$ETST
4687
4688 017116
4689
4690          BADHEAD
4691          ;***** TEST 18 *****
4692          ;*CRAM TEST OF JUMP(1) ON BR7 SET MICRO-PROCESSOR INSTRUCTION.
4693          ;*SET THE BR7 BIT, PERFORM THE JUMP INSTRUCTION.
4694          ;*VERIFY THE JUMP DID OCCUR BY CLOCKING THE INSTRUCTION
4695          ;*IN THE LOCATION IT IS AT. THIS INSTRUCTION LOADS THE
4696          ;*BR WITH THE LOWEST 8 BITS OF THE CRAM PC. AT THIS POINT
4697          ;*THE BR DATA IS MOVED TO PORT4. IF THIS DATA IS CORRECT
4698          ;*THE JUMP WAS SUCCESSFUL, IF THE JUMP WAS UNSUCCESSFUL
4699          ;*THEN PORT4 WILL CONTAIN A 37
4700          BADHEAD
4701          ;***** TEST 18 *****
4702
4703          BGNTEST
4704          T18::
4705          MACEX2
4706          ;DO NOT DO TEST IF M8200
4707          TRAP    C$EXIT
4708          .WORD   L10064-.
4709          MYINT
4710          MOV     KMCSR,R1
4711          ;RECORD DEVICE ADDR.
4712          ;R1 CONTAINS BASE M8200,4,7 ADDRESS
4713          MSTCLR
4714          JSR     PC,MEMSET
4715          ;MASTER CLEAR M8200,4,7
4716          ;SET MEM AND RAM
4717          BGNSEG
4718          TRAP    C$BSEG
4719          JSR     PC,SETBR7
4720          ;SET THE BR7 BIT
4721          SROMCLK
4722          JSR     R5,.,SROMCLK
4723          ;NEXT WORD IS INSTRUCTION.
4724          100400
4725          ;START AT ROM PC=0
4726          SROMCLK
4727          JSR     R5,.,SROMCLK
4728          ;NEXT WORD IS INSTRUCTION.
4729          114377!<400*7>
4730          JSR     PC,RAMDAT
4731          ;JUMP TO ROM PC OF 1777
4732          377
4733          ;R4=CRAM PC (LSB 8 BITS)
4734          CMPB    R5,R4
4735          ;EXPECTED DATA
4736          BEQ     2$
4737          ;IS ROM PC CORRECT?
4738          ERROR   5
4739          ;BR IF YES
4740          TRAP    C$ERDF
4741          ;ERROR, CRAM PC IS WRONG
4742          .WORD   5
4743          .WORD   EMO
4744          .WORD   ERR5
4745          2$:
4746          ESCAPE SEG
4747          TRAP    C$ESCAPE
4748          .WORD   10000$-.
4749          ENDSEG
4750          10000$:
4751          TRAP    C$ESEG
4752          BGNSEG
4753          TRAP    C$BSEG
4754          JSR     PC,SETBR7
4755          ;SET THE BR7 BIT
4756          SROMCLK
4757          JSR     R5,.,SROMCLK
4758          ;NEXT WORD IS INSTRUCTION.
4759          100403
4760          ;START AT ROM PC=3

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CZDMQEO M8207 STATIC DIAG #2
CZDMQE.P11 30-SEP-82 15:35

MACY11 30A(1052) 18-OCT-82 15:30 PAGE 118
HARDWARE TESTS

SEQ 117

4742	017240			SROMCLK		
4743	017240	004537	003100	JSR	R5, SROMCLK	:NEXT WORD IS INSTRUCTION,
4744	017244	103400		100000!<400*7>		:JUMP TO ROM PC OF 0
4745	017246	004737	003330	JSR	PC, RAMDAT	:R4=CRAM PC (LSB 8 BITS)
4746	017252	000000		0		:EXPECTED DATA
4747	017254	120504		CMPB	R5, R4	:IS ROM PC CORRECT?
4748	017256	001406		BEQ	4\$	:BR IF YES
4749	017260			ERROR	5	:ERROR, CRAM PC IS WRONG
4750	017264	104455		TRAP	C\$ERDF	
4751	017266	000005		.WORD	5	
4752	017270	005055		.WORD	EMO	
4753	017272	006556		.WORD	ERR5	
4754	017274			4\$: ESCAPE	SEG	
4755	017274	104410		TRAP	C\$ESCAPE	
4756	017276	000002		.WORD	10001\$-	
4757	017300			ENDSEG		
4758	017300			10001\$: TRAP	C\$ESEG	
4759	017300	104405		BGNSEG		
4760	017302			TRAP	C\$BSEG	
4761	017302	104404		JSR	PC, SETBR7	:SET THE BR7 BIT'
4762	017304	004737	003250	SROMCLK		:NEXT WORD IS INSTRUCTION,
4763	017310			JSR	R5, SROMCLK	
4764	017310	004537	003100	100406		:START AT ROM PC=6
4765	017314	100406		SROMCLK		:NEXT WORD IS INSTRUCTION,
4766	017316			JSR	R5, SROMCLK	
4767	017316	004537	003100	104125!<400*7>		:JUMP TO ROM PC OF 525
4768	017322	107525		JSR	PC, RAMDAT	:R4=CRAM PC (LSB 8 BITS)
4769	017324	004737	003330	125		:EXPECTED DATA
4770	017330	000125		CMPB	R5, R4	:IS ROM PC CORRECT?
4771	017332	120504		BEQ	6\$	:BR IF YES
4772	017334	001406		ERROR	5	:ERRCR, CRAM PC IS WRONG
4773	017336			TRAP	C\$ERDF	
4774	017342	104455		.WORD	5	
4775	017344	000005		.WORD	EMO	
4776	017346	005055		.WORD	ERR5	
4777	017350	006556		6\$: ESCAPE	SEG	
4778	017352			TRAP	C\$ESCAPE	
4779	017352	104410		.WORD	10002\$-	
4780	017354	000002		ENDSEG		
4781	017356			10002\$: TRAP	C\$ESEG	
4782	017356	104405				
4783	017360			ENDTST		
4784	017360			L10064: TRAP	C\$ETST	
4785	017360	104401				
4786	017360			BADHEAD		
4787				:***** TEST 19 *****		
4788	017362			:*CRAM TEST OF JUMP(I) ON C BIT CLEAR MICRO-PROCESSOR INSTRUCTION.		
4789				:*SET THE C BIT, PERFORM THE JUMP INSTRUCTION.		
4790				:*VERIFY THE JUMP DID OCCUR BY CLOCKING THE INSTRUCTION		
4791				:*IN THE LOCATION IT IS AT. THIS INSTRUCTION LOADS THE		
4792				:*BR WITH THE LOWEST 8 BITS OF THE CRAM PC. AT THIS POINT		
4793				:*THE BR DATA IS MOVED TO PORT4. IF THIS DATA IS CORRECT		
4794				:*THE JUMP WAS SUCCESSFUL, IF THE JUMP WAS UNSUCCESSFUL		
4795				:*THEN PORT4 WILL CONTAIN A 37		
4796						
4797						

CZDMQEO M8207 STATIC DIAG #2
CZDMQE.P11 30-SEP-82 15:35

MACY11 30A(1052) 18-OCT-82 15:30 PAGE 119
HARDWARE TESTS

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4798 017362          BADHEAD
4799                ;***** TEST 19 *****
4800
4801 017362          BGNTST
4802 017362          T19::
4803 017362
4804                MACEX2
4805 017372 104432    ;DO NOT DO TEST IF M8200 ;DON'T DO IF M8200.
4806 017374 000244    TRAP C$EXIT
4807 017376          .WORD L10065-.
4808 017376 013701 002516 MYINT
4809 017402          MOV KMCSR,R1 ;RECORD DEVICE ADDR.
4810 017406 004737 003474 MSTCLR ;MASTER CLEAR M8200,4,7
4811 017412          JSR PC,MEMSET ;SET MEM AND RAM
4812 017412 104404    1$: BGNSEG
4813 017414 004737 003260 TRAP C$BSEG
4814 017420 004737 003166 JSR PC,SETC
4815 017424          JSR PC,CLRALL
4816 017424 004537 003100 SR0MCLK ;NEXT WORD IS INSTRUCTION,
4817 017430 100400    JSR R5,.SR0MCLK
4818 017432          100400 ;START AT ROM PC=0
4819 017432 004537 003100 SR0MCLK ;NEXT WORD IS INSTRUCTION,
4820 017436 115377    JSR R5,.SR0MCLK
4821 017440 004737 003330 114377!<400*2> ;JUMP TO ROM PC OF 1777
4822 017444 000001    JSR PC,RAMDAT ;R4=CRAM PC (LSB 8 BITS)
4823 017446 120504    1 ;EXPECTED DATA
4824 017450 001406    CMPB R5,R4 ;IS ROM PC CORRECT?
4825 017452          BEQ 2$ ;BR IF YES
4826 017456 104455    ERROR 5 ;ERROR, CRAM PC IS WRONG
4827 017460 000005    TRAP C$ERDF
4828 017462 005055    .WORD 5
4829 017464 006556    .WORD EMO
4830 017466          .WORD ERR5
4831 017466 104410    2$: ESCAPE SEG
4832 017470 000002    TRAP C$ESCAPE
4833 017472          .WORD 10000$-.
4834 017472          ENDSEG
4835 017472 104405    10000$: TRAP C$ESEG
4836 017474          BGNSEG
4837 017474 104404    TRAP C$BSEG
4838 017476          SKIP06 6$
4839          ;GOTO 6$ IF M8206
4840 017506 004737 003166 JSR PC,CLRALL ;CLEAR ALL CONDITIONS
4841 017512          SR0MCLK ;NEXT WORD OF INSTRUCTION
4842 017512 004537 003100 JSR R5,.SR0MCLK
4843 017516 100403    100403 ;START AT ROM PC=3
4844 017520          SR0MCLK ;NEXT WORD OF INSTRUCTION
4845 017520 004537 003100 JSR R5,.SR0MCLK
4846 017524 101000    100000!<400*2> ;JUMP TO ROM PC OF 0
4847 017526 004737 003330 JSR PC,RAMDAT ;R4=CRAM PC (LSB 8 BITS)
4848 017532 000004    4 ;EXPECTED DATA
4849 017534 120504    CMPB R5,R4 ;IS ROM PC CORRECT?
4850 017536 001406    BEQ 4$ ;BR IF YES
4851 017540          ERROR 5 ;ERROR, CRAM PC IS WRONG
4852 017544 104455    TRAP C$ERDF
4853 017546 000005    .WORD 5

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CZDMQEO M8207 STATIC DIAG #2
CZDMQE.P11 30-SEP-82 15:35

MACY11 30A(1052) 18-OCT-82 15:30 PAGE 120
HARDWARE TESTS

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4854 017550 005055
4855 017552 006556
4856 017554
4857 017554 104410
4858 017556 000002
4859 017560
4860 017560
4861 017560 104405
4862 017562
4863 017562 104404
4864 017564 004737 003166
4865 017570
4866 017570 004537 003100
4867 017574 100406
4868 017576
4869 017576 004537 003100
4870 017602 105125
4871 017604 004737 003330
4872 017610 000007
4873 017612 120504
4874 017614 001406
4875 017616
4876 017622 104455
4877 017624 000005
4878 017626 005055
4879 017630 006556
4880 017632
4881 017632 104410
4882 017634 000002
4883 017636
4884 017636
4885 017636 104405
4886 017640
4887 017640
4888 017640 104401
4889
4890 017642
4891
4892
4893
4894
4895
4896
4897
4898
4899
4900 017642
4901
4902
4903 017642
4904 017642
4905 017642
4906
4907 017652 104432
4908 017654 000244
4909 017656

      .WORD EMO
      .WORD ERR5
4$:   ESCAPE SFG
      TRAP C$ESCAPE
      .WORD 10001$-.
      ENDSEG
10001$:
      TRAP C$ESEG
      BGNSEG
      TRAP C$BSEG
      JSR PC,CLRALL          ;CLEAR ALL CONDITIONS
      SROMCLK                ;NEXT WORD IS INSTRUCTION,
      JSR R5,.SROMCLK
      100406                  ;START AT ROM PC=6
      SROMCLK                ;NEXT WORD IS INSTRUCTION,
      JSR R5,.SROMCLK
      104125:<400*2>          ;JUMP TO ROM PC OF 525
      JSR PC,RAMDAT          ;R4=CRAM PC (LSB 8 BITS)
      7                      ;EXPECTED DATA
      CMPB R5,R4             ;IS ROM PC CORRECT?
      BEQ 6$                 ;BR IF YES
      ERROR 5                ;ERROR, CRAM PC IS WRONG
      TRAP C$ERDF
      .WORD 5
      .WORD EMO
      .WORD ERR5
6$:   ESCAPE SEG
      TRAP C$ESCAPE
      .WORD 10002$-.
      ENDSEG
10002$:
      TRAP C$ESEG
ENDTST
L10065:
      TRAP C$ETST

BADHEAD
:***** TEST 20 *****
:*CRAM TEST OF JUMP(1) ON Z BIT CLEAR MICRO-PROCESSOR INSTRUCTION.
:*CLEAR THE Z BIT, PERFORM THE JUMP INSTRUCTION.
:*VERIFY THE JUMP DID OCCUR BY CLOCKING THE INSTRUCTION
:*IN THE LOCATION IT IS AT. THIS INSTRUCTION LOADS THE
:*BR WITH THE LOWEST 8 BITS OF THE CRAM PC. AT THIS POINT
:*THE BR DATA IS MOVED TO PORT4. IF THIS DATA IS CORRECT
:*THE JUMP WAS SUCCESSFUL, IF THE JUMP WAS UNSUCCESSFUL
:*THEN PORT4 WILL CONTAIN A 37
BADHEAD
:***** TEST 20 *****

BGNST
T20::
      MACEX2
      ;DO NOT DO TEST IF M8200
      TRAP C$EXIT
      .WORD L10066-.
      MYINT
      ;DON'T DO IF M8200.

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CZDMQEO M8207 STATIC DIAG #2
CZDMQE.P11 30-SEP-82 15:35

MACY11 30A(1052) 18-OCT-82 15:30 PAGE 121
HARDWARE TESTS

4910	017656	013701	002516	MOV	KMCSR,R1		
4911	017662			MSTCLR			;RECORD DEVICE ADDR.
4912	017666	004737	003474	JSR	PC, MEMSET		;MASTER CLEAR M8200,4,7
4913	017672			1\$: BGNSEG			;SET MEM AND RAM
4914	017672	104404		TRAP	C\$BSEG		
4915	017674	004737	003312	JSR	PC, SETZ		
4916	017700	004737	003166	JSR	PC, CLRALL		; CLEAR CONDITION CODES ;*** BO
4917	017704			SROMCLK			;NEXT WORD IS INSTRUCTION,
4918	017704	004537	003100	JSR	R5, .SROMCLK		
4919	017710	100400		100400			;START AT ROM PC=0
4920	017712			SROMCLK			;NEXT WORD IS INSTRUCTION,
4921	017712	004537	003100	JSR	R5, .SROMCLK		
4922	017716	115777		114377!<400*3>			;JUMP TO ROM PC OF 1777
4923	017720	004737	003330	JSR	PC, RAMDAT		;R4=CRAM PC (LSB 8 BITS)
4924	017724	000001		1			;EXPECTED DATA
4925	017726	120504		CMPB	R5, R4		;IS ROM PC CORRECT?
4926	017730	001406		BEQ	2\$		;BR IF YES
4927	017732			ERROR	5		;ERROR, CRAM PC IS WRONG
4928	017736	104455		TRAP	C\$ERDF		
4929	017740	000005		.WORD	5		
4930	017742	005055		.WORD	EMO		
4931	017744	006556		.WORD	ERR5		
4932	017746			2\$: ESCAPE SEG			
4933	017746	104410		TRAP	C\$ESCAPE		
4934	017750	000002		.WORD	10000\$-		
4935	017752			ENDSEG			
4936	017752			10000\$: TRAP	C\$ESEG		
4937	017752	104405		BGNSEG			
4938	017754			TRAP	C\$BSEG		
4939	017754	104404		SKIP06	6\$		
4940	017756			:GOTO 6\$ IF M8206			
4941				JSR	PC, CLRALL		;CLEAR ALL CONDITIONS
4942	017766	004737	003166	SROMCLK			;NEXT WORD IS INSTRUCTION,
4943	017772			JSR	R5, .SROMCLK		
4944	017772	004537	003100	100403			;START AT ROM PC=3
4945	017776	100403		SROMCLK			;NEXT WORD IS INSTRUCTION,
4946	020000			JSR	R5, .SROMCLK		
4947	020000	004537	003100	100000!<400*3>			;JUMP TO ROM PC OF 0
4948	020004	101400		JSR	PC, RAMDAT		;R4=CRAM PC (LSB 8 BITS)
4949	020006	004737	003330	4			;EXPECTED DATA
4950	020012	000004		CMPB	R5, R4		;IS ROM PC CORRECT?
4951	020014	120504		BEQ	4\$		;BR IF YES
4952	020016	001406		ERROR	5		;ERROR, CRAM PC IS WRONG
4953	020020			TRAP	C\$ERDF		
4954	020024	104455		.WORD	5		
4955	020026	000005		.WORD	EMO		
4956	020030	005055		.WORD	ERR5		
4957	020032	006556		4\$: ESCAPE SEG			
4958	020034			TRAP	C\$ESCAPE		
4959	020034	104410		.WORD	10001\$-		
4960	020036	000002		ENDSEG			
4961	020040			10001\$: TRAP	C\$ESEG		
4962	020040			BGNSEG			
4963	020040	104405		TRAP	C\$BSEG		
4964	020042						
4965	020042	104404					

CZDMQEO M8207 STATIC DIAG #2
CZDMQE.P11 30-SEP-82 15:35

MACY11 30A(1052) 18-OCT-82 15:30 PAGE 122
HARDWARE TESTS

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4966 020044 004737 003166      JSR      PC,CLRALL      ;CLEAR ALL CONDITIONS
4967 020050                      SROMCLK      ;NEXT WORD IS INSTRUCTION,
4968 020050 004537 003100      JSR      R5,.SROMCLK
4969 020054 100406                      100406      ;START AT ROM PC=6
4970 020056                      SROMCLK      ;NEXT WORD IS INSTRUCTION,
4971 020056 004537 003100      JSR      R5,.SROMCLK
4972 020062 105525      104125!<400*3>      ;JUMP TO ROM PC OF 525
4973 020064 004737 003330      JSR      PC,RAMDAT      ;R4=CRAM PC (LSB 8 BITS)
4974 020070 000007                      7          ;EXPECTED DATA
4975 020072 120504      CMPB      R5,R4      ;IS ROM PC CORRECT?
4976 020074 001406      BEQ      6$          ;BR IF YES
4977 020076                      ERROR      5      ;ERROR, CRAM PC IS WRONG
4978 020102 104455      TRAP      C$ERDF
4979 020104 000005      .WORD      5
4980 020106 005055      .WORD      EMO
4981 020110 006556      .WORD      ERR5
4982 020112                      6$:      ESCAPE SEG
4983 020112 104410      TRAP      C$ESCAPE
4984 020114 000002      .WORD      10002$-.
4985 020116                      ENDSEG
4986 020116                      10002$:
4987 020116 104405      TRAP      C$ESEG
4988 020120                      ENDTST
4989 020120                      L10066:
4990 020120 104401      TRAP      C$ETST
4991
4992 020122                      BADHEAD
4993                      ;***** TEST 21 *****
4994                      ;*CRAM TEST OF JUMP(1) ON BRO CLEAR MICRO-PROCESSOR INSTRUCTION.
4995                      ;*CLEAR THE BRO BIT, PERFORM THE JUMP INSTRUCTION.
4996                      ;*VERIFY THE JUMP DID OCCUR BY CLOCKING THE INSTRUCTION
4997                      ;*IN THE LOCATION IT IS AT. THIS INSTRUCTION LOADS THE
4998                      ;*BR WITH THE LOWEST 8 BITS OF THE CRAM PC. AT THIS POINT
4999                      ;*THE BR DATA IS MOVED TO PORT4. IF THIS DATA IS CORRECT
5000                      ;*THE JUMP WAS SUCCESSFUL, IF THE JUMP WAS UNSUCCESSFUL
5001                      ;*THEN PORT4 WILL CONTAIN A 37
5002 020122                      BADHEAD
5003                      ;***** TEST 21 *****
5004
5005 020122                      BGNTST
5006 020122                      T21::
5007 020122                      MACEX2
5008                      ;DO NOT DO TEST IF M8200 ;DON'T DO IF M8200.
5009 020132 104432      TRAP      C$EXIT
5010 020134 000240      .WORD      L10067-.
5011 020136                      MYINT
5012 020136 013701 002516      MOV      KMCSR,R1      ;RECORD DEVICE ADDR.
5013 020142                      MSTCLR      ;MASTER CLEAR M8200,4,7
5014 020146 004737 003474      JSR      PC,MEMSET      ;SET MEM AND RAM
5015 020152                      1$:      BGNSEG
5016 020152 104404      TRAP      C$BSEG
5017 020154 004737 003166      JSR      PC,CLRALL      ;CLEAR ALL CONDITIONS
5018 020160                      SROMCLK      ;NEXT WORD IS INSTRUCTION,
5019 020160 004537 003100      JSR      R5,.SROMCLK
5020 020164 100400                      100400      ;START AT ROM PC=0
5021 020166                      SROMCLK      ;NEXT WORD IS INSTRUCTION,

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CZDMQEO M8207 STATIC DIAG #2
CZDMQE.P11 30-SEP-82 15:35

MACV11 30A(1052) 18-OCT-82 15:30 PAGE 123
HARDWARE TESTS

5022	020166	004537	003100	JSR	R5, SROMCLK	
5023	020172	116377		114377!<400*4>		: JUMP TO ROM PC OF 1777
5024	020174	004737	003330	JSR	PC, RAMDAT	: R4=CRAM PC (LSB 8 BITS)
5025	020200	000001		1		: EXPECTED DATA
5026	020202	120504		CMPB	R5, R4	: IS ROM PC CORRECT?
5027	020204	001406		BEQ	2\$	: BR IF YES
5028	020206			ERROR	5	: ERROR, CRAM PC IS WRONG
5029	020212	104455		TRAP	C\$ERDF	
5030	020214	000005		.WORD	5	
5031	020216	005055		.WORD	EMO	
5032	020220	006556		.WORD	ERR5	
5033	020222			2\$: ESCAPE	SEG	
5034	020222	104410		TRAP	C\$ESCAPE	
5035	020224	000002		.WORD	10000\$-	
5036	020226			ENDSEG		
5037	020226			10000\$: TRAP	C\$SEFG	
5038	020226	104405		BGNSEG		
5039	020230			TRAP	C\$BSEG	
5040	020230	104404		SKIP06	6\$	
5041	020232			: GOTO 6\$ IF M8206		
5042				JSR	PC, CLRALL	: CLEAR ALL CONDITIONS
5043	020242	004737	003166	SROMCLK		: NEXT WORD IS INSTRUCTION.
5044	020246			JSR	R5, SROMCLK	
5045	020246	004537	003100	100403		: START AT ROM PC-3
5046	020252	100403		SROMCLK		: NEXT WORD IS INSTRUCTION.
5047	020254			JSR	R5, SROMCLK	
5048	020254	004537	003100	100000!<400*4>		: JUMP TO ROM PC OF 0
5049	020260	102000		JSR	PC, RAMDAT	: R4=CRAM PC (LSB 8 BITS)
5050	020262	004737	003330	4		: EXPECTED DATA
5051	020266	000004		CMPB	R5, R4	: IS ROM PC CORRECT?
5052	020270	120504		BEQ	4\$	: BR IF YES
5053	020272	001406		ERROR	5	: ERROR, CRAM PC IS WRONG
5054	020274			TRAP	C\$ERDF	
5055	020300	104455		.WORD	5	
5056	020302	000005		.WORD	EMO	
5057	020304	005055		.WORD	ERR5	
5058	020306	006556		4\$: ESCAPE	SEG	
5059	020310			TRAP	C\$ESCAPE	
5060	020310	104410		.WORD	10001\$-	
5061	020312	000002		ENDSEG		
5062	020314			10001\$: TRAP	C\$ESEG	
5063	020314			BGNSEG		
5064	020314	104405		TRAP	C\$BSEG	
5065	020316			JSR	PC, CLRALL	: CLEAR ALL CONDITIONS
5066	020316	104404		SROMCLK		: NEXT WORD IS INSTRUCTION.
5067	020320	004737	003166	JSR	R5, SROMCLK	
5068	020324			100406		: START AT ROM PC=6
5069	020324	004537	003100	SROMCLK		: NEXT WORD IS INSTRUCTION.
5070	020330	100406		JSR	R5, SROMCLK	
5071	020332			104125!<400*4>		: JUMP TO ROM PC OF 525
5072	020332	004537	003100	JSR	PC, RAMDAT	: R4=CRAM PC (LSB 8 BITS)
5073	020336	106125		7		: EXPECTED DATA
5074	020340	004737	003330	CMPB	R5, R4	: IS ROM PC CORRECT?
5075	020344	000007		BEQ	6\$	: BR IF YES
5076	020346	120504				
5077	020350	001406				

CZDMQEO M8207 STATIC DIAG #2
CZDMQE.P11 30-SEP-82 15:35

MACY11 30A(1052) 18-OCT-82 15:30 PAGE 124
HARDWARE TESTS

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5078 020352          ERROR 5          ;ERROR, CRAM PC IS WRONG
5079 020356 104455   TRAP  C$ERDF
5080 020360 000005   .WORD 5
5081 020362 005055   .WORD EMO
5082 020364 006556   .WORD ERR5
5083 020366          6$: ESCAPE SEG
5084 020366 104410   TRAP  C$ESCAPE
5085 020370 000002   .WORD 10002$-.
5086 020372          ENDSEG
5087 020372          10002$:
5088 020372 104405   TRAP  C$ESEG
5089 020374          ENDTST
5090 020374          L10067:
5091 020374 104401   TRAP  C$ETST
5092
5093 020376          BADHEAD
5094          :***** TEST 22 *****
5095          :*CRAM TEST OF JUMP(1) ON BR1 CLEAR MICRO-PROCESSOR INSTRUCTION.
5096          :*CLEAR THE BR1 BIT, PERFORM THE JUMP INSTRUCTION.
5097          :*VERIFY THE JUMP DID OCCUR BY CLOCKING THE INSTRUCTION
5098          :*IN THE LOCATION IT IS AT. THIS I STRUCTION LOADS THE
5099          :*BR WITH THE LOWEST 8 BITS OF THE CRAM PC. AT THIS POINT
5100          :*THE BR DATA IS MOVED TO PORT4. IF THIS DATA IS CORRECT
5101          :*THE JUMP WAS SUCCESSFUL, IF THE JUMP WAS UNSUCCESSFUL
5102          :*THEN PORT4 WILL CONTAIN A 37
5103 020376          BADHEAD
5104          :***** TEST 22 *****
5105
5106 020376          BGN TST
5107 020376          T22::
5108 020376
5109          MACEX2          ;DON'T DO IF M8200.
5110 020406 104432   :DO NOT DO TEST IF M8200
5111 020410 000240   TRAP  C$EXIT
5112 020412          .WORD  L10070-.
5113 020412 013701 002516  MYINT
5114 020416          MOV  KMCSR,R1          ;RECORD DEVICE ADDR.
5115 020422 004737 003474  MSTCLR          ;MASTER CLEAR M8200,4,7
5116 020426          JSR  PC, MEMSET        ;SET MEM AND RAM
5117 020426 104404          1$: BGNSEG
5118 020430 004737 003166   TRAP  C$BSEG
5119 020434          JSR  PC, CLRALL        ;CLEAR ALL CONDITIONS
5120 020434 004537 003100   SROMCLK      ;NEXT WORD IS INSTRUCTION.
5121 020440 100400          JSR  R5, .SROMCLK
5122 020442          100400          ;START AT ROM PC=0
5123 020442 004537 003100   SROMCLK      ;NEXT WORD IS INSTRUCTION.
5124 020446 116777          JSR  R5, .SROMCLK
5125 020450 004737 003330   JSR  114377!<400*5>
5126 020454 000001          JSR  PC, RAMDAT
5127 020456 120504          1          ;JUMP TO ROM PC OF 1777
5128 020460 001406          CMPB  R5,R4    ;R4=CRAM PC (LSB 8 BITS)
5129 020462          BEQ  2$              ;EXPECTED DATA
5130 020466 104455          ERROR 5        ;IS ROM PC CORRECT?
5131 020470 000005          TRAP  C$ERDF    ;BR IF YES
5132 020472 005055          .WORD 5        ;ERROR, CRAM PC IS WRONG
5133 020474 006556          .WORD EMO
                    .WORD ERR5

```

CZDMQEO M8207 STATIC DIAG #2
CZDMQE.P11 30-SEP-82 15:35

MACV11 30A(1052) 18-OCT-82 15:30 PAGE 125
HARDWARE TESTS

5134	020476			2\$:	ESCAPE SEG	
5135	020476	104410			TRAP C\$ESCAPE	
5136	020500	000002			.WORD 10000\$-	
5137	020502				ENDSEG	
5138	020502			10000\$:		
5139	020502	104405			TRAP C\$ESEG	
5140	020504				BGNSEG	
5141	020504	104404			TRAP C\$BSEG	
5142	020506				SKIP06 6\$	
5143					:GOTO 6\$ IF M8206	
5144	020516	004737	003166		JSR PC,CLRALL	:CLEAR ALL CONDITIONS
5145	020522				SROMCLK	:NEXT WORD IS INSTRUCTION,
5146	020522	004537	003100		JSR R5,.SROMCLK	
5147	020526	100403			100403	:START AT ROM PC=3
5148	020530				SROMCLK	:NEXT WORD IS INSTRUCTION,
5149	020530	004537	003100		JSR R5,.SROMCLK	
5150	020534	102400			100000!<400*5>	:JUMP TO ROM PC OF 0
5151	020536	004737	003330		JSR PC,RAMDAT	:R4=CRAM PC (LSB 8 BITS)
5152	020542	000004			4	:EXPECTED DATA
5153	020544	120504			CMPB R5,R4	:IS ROM PC CORRECT?
5154	020546	001406			BEQ 4\$	:BR IF YES
5155	020550				ERROR 5	:ERROR, CRAM PC IS WRONG
5156	020554	104455			TRAP C\$ERDF	
5157	020556	000005			.WORD 5	
5158	020560	005055			.WORD EMO	
5159	020562	006556			.WORD ERR5	
5160	020564			4\$:	ESCAPE SEG	
5161	020564	104410			TRAP C\$ESCAPE	
5162	020566	000002			.WORD 10001\$-	
5163	020570				ENDSEG	
5164	020570			10001\$:		
5165	020570	104405			TRAP C\$ESEG	
5166	020572				BGNSEG	
5167	020572	104404			TRAP C\$BSEG	
5168	020574	004737	003166		JSR PC,CLRALL	:CLEAR ALL CONDITIONS
5169	020600				SROMCLK	:NEXT WORD IS INSTRUCTION,
5170	020600	004537	003100		JSR R5,.SROMCLK	
5171	020604	100406			100406	:START AT ROM PC=6
5172	020606				SROMCLK	:NEXT WORD IS INSTRUCTION,
5173	020606	004537	003100		JSR R5,.SROMCLK	
5174	020612	106525			104125!<400*5>	:JUMP TO ROM PC OF 525
5175	020614	004737	003330		JSR PC,RAMDAT	:R4=CRAM PC (LSB 8 BITS)
5176	020620	000007			7	:EXPECTED DATA
5177	020622	120504			CMPB R5,R4	:IS ROM PC CORRECT?
5178	020624	001406			BEQ 6\$	:BR IF YES
5179	020626				ERROR 5	:ERROR, CRAM PC IS WRONG
5180	020632	104455			TRAP C\$ERDF	
5181	020634	000005			.WORD 5	
5182	020636	005055			.WORD EMO	
5183	020640	006556			.WORD ERR5	
5184	020642			6\$:	ESCAPE SEG	
5185	020642	104410			TRAP C\$ESCAPE	
5186	020644	000002			.WORD 10002\$-	
5187	020646				ENDSEG	
5188	020646			10002\$:		
5189	020646	104405			TRAP C\$ESEG	

CZDMQEO MB207 STATIC DIAG #2
CZDMQE.P11 30-SEP-82 15:35

MACY11 30A(1052) 18-OCT-82 15:30 PAGE 126
HARDWARE TESTS

5190 020650
5191 020650
5192 020650 104401
5193
5194 020652
5195
5196
5197
5198
5199
5200
5201
5202 020652 020652
5203
5204
5205 020654
5206
5207

ENDTST
L10070:

TRAP C\$ETST

BADHEAD

***** TEST 23 *****
;*CRAM TEST OF JUMP(1) ON BR4 CLEAR MICRO-PROCESSOR INSTRUCTION.
;*CLEAR THE BR4 BIT, PERFORM THE JUMP INSTRUCTION.
;*VERIFY THE JUMP DID NOT OCCUR BY CLOCKING THE INSTRUCTION
;*IN THE LOCATION IT IS AT. THIS INSTRUCTION LOADS THE
;*BR WITH THE LOWEST 8 BITS OF THE CRAM PC. AT THIS POINT
;*THE BR DATA IS MOVED TO PORT4. IF THIS DATA IS CORRECT

;*THE CRAM PC IS CORRECT, IF THE CRAM PC IS NOT RIGHT.
;*THEN PORT4 CONTAINS A 37

BADHEAD

***** TEST 23 *****

CZDMQEO M8207 STATIC DIAG #2
CZDMQE.P11 30-SEP-82 15:35

MACY11 30A(1052) 18-OCT-82 15:30 PAGE 127
HARDWARE TESTS

5208	020654			BGNTST		
5209	020654			T23::		
5210	020654				MACEX2	
5211					:DO NOT DO TEST IF M8200	:DON'T DO IF M8200.
5212	020664	104432			TRAP C\$EXIT	
5213	020666	000240			.WORD L10071-	
5214	020670				MYINT	
5215	020670	013701	002516		MOV KMCSR,R1	:RECORD DEVICE ADDR.
5216	020674				MSTCLR	:MASTER CLEAR M8200,4,7
5217	020700	004737	003474		JSR PC,MEMSET	:SET MEM AND RAM
5218	020704			1\$:	BGNSEG	
5219	020704	104404			TRAP C\$BSEG	
5220	020706	004737	003166		JSR PC,CLRALL	:CLEAR ALL CONDITIONS
5221	020712				SROMCLK	:NEXT WORD IS INSTRUCTION.
5222	020712	004537	003100		JSR R5,.SROMCLK	
5223	020716	100400			100400	:START AT ROM PC=0
5224	020720				SROMCLK	:NEXT WORD IS INSTRUCTION.
5225	020720	004537	003100		JSR R5,.SROMCLK	
5226	020724	117377			114377!<400*6>	:JUMP TO ROM PC OF 1777
5227	020726	004737	003330		JSR PC,RAMDAT	:R4=CRAM PC (LSB 8 BITS)

CZDMQEO M8207 STATIC DIAG #2
CZDMQE.P11 30-SEP-82 15:35

MACY11 30A(1052) 18-OCT-82 15:30 PAGE 129
HARDWARE TESTS

5255 021022 120504
5256 021024 001406

CMPB R5,R4
BEQ 48

:IS ROM PC CORRECT?
:BSR IF YES

CZDMQEO M8207 STATIC DIAG #2
CZDMQE.P11 30-SEP-82 15:35

MACY11 30A(1052) 18-OCT-82 15:30 PAGE 130
HARDWARE TESTS

5257 021026
5258 021032 104455
5259 021034 000005
5260 021036 005055
5261 021040 006556

ERROR 5
TRAP C\$ERDF
.WORD 5
.WORD EMO
.WORD ERR5

;ERROR, CRAM PC IS WRONG

CZDMQEO M8207 STATIC DIAG #2
CZDMQE.P11 30-SEP-82 15:35

MACY11 30A(1052) 18-OCT-82 15:30 PAGE 131
HARDWARE TESTS

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5262 021042
5263 021042 104410
5264 021044 000002
5265 021046
5266 021046
5267 021046 104405
5268 021050
5269 021050 104404
5270 021052 004737 003166
5271 021056
5272 021056 004537 003100
5273 021062 100406
5274 021064
5275 021064 004537 003100
5276 021070 107125
5277 021072 004737 003330
5278 021076 000007
5279 021100 120504
5280 021102 001406
5281 021104
5282 021110 104455
5283 021112 000005
5284 021114 005055
5285 021116 006556
5286 021120
5287 021120 104410
5288 021122 000002
5289 021124
5290 021124
5291 021124 104405
5292 021126
5293 021126
5294 021126 104401
5295
5296 021130
5297
5298
5299
5300
5301
5302
5303
5304
5305
5306 021130
5307
5308
5309 021130
5310 021130
5311 021130
5312
5313 021140 104432
5314 021142 000240
5315 021144
5316 021144 013701 002516
5317 021150

4$:      ESCAPE SEG
        TRAP      C$ESCAPE
        .WORD     10001$-.
        ENDSEG
10001$:  TRAP      C$ESEG
        BGNSEG
        TRAP      C$BSEG
        JSR      PC,CLRALL      ;CLEAR ALL CONDITIONS
        SROMCLK   ;NEXT WORD IS INSTRUCTION,
        JSR      RS,.SROMCLK
        100406      ;START AT ROM PC=6
        SROMCLK   ;NEXT WORD IS INSTRUCTION,
        JSR      RS,.SROMCLK
        104125!<400*6> ;JUMP TO ROM PC OF 525
        JSR      PC,RAMDAT      ;R4=CRAM PC (LSB 8 BITS)
        7          ;EXPECTED DATA
        CMPB     RS,R4          ;IS ROM PC CORRECT?
        BEQ      6$            ;BR IF YES
        ERROR    5             ;EPROR, CRAM PC IS WRONG
        TRAP      C$ERDF
        .WORD     5
        .WORD     EMO
        .WORD     ERR5
6$:      ESCAPE SEG
        TRAP      C$ESCAPE
        .WORD     10002$-.
        ENDSEG
10002$:  TRAP      C$ESEG
ENDTST
L10071:  TRAP      C$ETST

BADHEAD
:***** TEST 24 *****
:*CRAM TEST OF JUMP(1) ON BR7 CLEAR MICRO-PROCESSOR INSTRUCTION.
:*CLEAR THE BR7 BIT, PERFORM THE JUMP INSTRUCTION.
:*VERIFY THE JUMP DID NOT OCCUR BY CLOCKING THE INSTRUCTION
:*IN THE LOCATION IT IS AT. THIS INSTRUCTION LOADS THE
:*BR WITH THE LOWEST 8 BITS OF THE CRAM PC. AT THIS POINT
:*THE BR DATA IS MOVED TO PORT4. IF THIS DATA IS CORRECT
:*THE CRAM PC IS CORRECT, IF THE CRAM PC IS NOT RIGHT.
:*THEN PORT4 CONTAINS A 37
BADHEAD
:***** TEST 24 *****

BGNTST
T24::
MACEX2
;DO NOT DO TEST IF M8200 ;DON'T DO IF M8200.
TRAP      C$EXIT
.WORD     L10072-.
MYINT
MOV      KMCSR,R1          ;RECORD DEVICE ADDR.
MSTCLR          ;MASTER CLEAR M8200,4,7

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CZDMQEO M8207 STATIC DIAG #2
CZDMQE.P11 30-SEP-82 15:35

MACY11 30A(1052) 18-OCT-82 15:30 PAGE 132
HARDWARE TESTS

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5318 021154 004737 003474      JSR      PC, MEMSET      ;SET MEM AND RAM
5319 021160      1$: BGNSEG
5320 021160 104404      TRAP      C$BSEG
5321 021162 004737 003166      JSR      PC, CLRALL      ;CLEAR ALL CONDITIONS
5322 021166      SROMCLK      ;NEXT WORD IS INSTRUCTION,
5323 021166 004537 003100      JSR      R5, .SROMCLK
5324 021172 100400      100400      ;START AT ROM PC=0
5325 021174      SROMCLK      ;NEXT WORD IS INSTRUCTION,
5326 021174 004537 003100      JSR      R5, .SROMCLK
5327 021200 117777      114377!<400*7> ;JUMP TO ROM PC OF 1777
5328 021202 004737 003330      JSR      PC, RAMDAT      ;R4=CRAM PC (LSB 8 BITS)
5329 021206 000001      1      ;EXPECTED DATA
5330 021210 120504      CMPB      R5, R4      ;IS ROM PC CORRECT?
5331 021212 001406      BEQ      2$      ;BR IF YES
5332 021214      ERROR      5      ;ERROR, CRAM PC IS WRONG
5333 021220 104455      TRAP      C$ERDF
5334 021222 000005      .WORD      5
5335 021224 005055      .WORD      EMO
5336 021226 006556      .WORD      ERR5
5337 021230      2$: ESCAPE SEG
5338 021230 104410      TRAP      C$ESCAPE
5339 021232 000002      .WORD      10000$-.
5340 021234      ENDSEG
5341 021234      10000$:
5342 021234 104405      TRAP      C$ESEG
5343 021236      BGNSEG
5344 021236 104404      TRAP      C$BSEG
5345 021240      SKIP06      6$
5346      ;GOTO 6$ IF M8206
5347 021250 004737 003166      JSR      PC, CLRALL      ;CLEAR ALL CONDITIONS
5348 021254      SROMCLK      ;NEXT WORD IS INSTRUCTION,
5349 021254 004537 003100      JSR      R5, .SROMCLK
5350 021260 100403      100403      ;START AT ROM PC=3
5351 021262      SROMCLK      ;NEXT WORD IS INSTRUCTION,
5352 021262 004537 003100      JSR      R5, .SROMCLK
5353 021266 103400      100000!<400*7> ;JUMP TO ROM PC OF 0
5354 021270 004737 003330      JSR      PC, RAMDAT      ;R4=CRAM PC (LSB 8 BITS)
5355 021274 000004      4      ;EXPECTED DATA
5356 021276 120504      CMPB      R5, R4      ;IS ROM PC CORRECT?
5357 021300 001406      BEQ      4$      ;BR IF YES
5358 021302      ERROR      5      ;ERROR, CRAM PC IS WRONG
5359 021306 104455      TRAP      C$ERDF
5360 021310 000005      .WORD      5
5361 021312 005055      .WORD      EMO
5362 021314 006556      .WORD      ERR5
5363 021316      4$: ESCAPE SEG
5364 021316 104410      TRAP      C$ESCAPE
5365 021320 000002      .WORD      10001$-.
5366 021322      ENDSEG
5367 021322      10001$:
5368 021322 104405      TRAP      C$ESEG
5369 021324      BGNSEG
5370 021324 104404      TRAP      C$BSEG
5371 021326 004737 003166      JSR      PC, CLRALL      ;CLEAR ALL CONDITIONS
5372 021332      SROMCLK      ;NEXT WORD IS INSTRUCTION,
5373 021332 004537 003100      JSR      R5, .SROMCLK

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CZDMQEO M8207 STATIC DIAG #2
CZDMQE.P11 30-SEP-82 15:35

MACY11 30A(1052) 18-OCT-82 15:30 PAGE 133
HARDWARE TESTS

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5374 021336 100406          100406          ;START AT ROM PC=6
5375 021340          SR0MCLK          ;NEXT WORD IS INSTRUCTION.
5376 021340 004537 003100    JSR      R5,.SR0MCLK
5377 021344 107525          104125!<400*7>    ;JUMP TO ROM PC OF 525
5378 021346 004737 003330    JSR      PC,RAMDAT    ;R4=CRAM PC (LSB 8 BITS)
5379 021352 000007          7            ;EXPECTED DATA
5380 021354 120504          CMPB      R5,R4    ;IS ROM PC CORRECT?
5381 021356 001406          BEQ      6$        ;BR IF YES
5382 021360          ERROR      5            ;ERROR, CRAM PC IS WRONG
5383 021364 104455          TRAP      C$ERDF
5384 021366 000005          .WORD      5
5385 021370 005055          .WORD      EMO
5386 021372 006556          .WORD      ERR5
5387 021374          6$:      ESCAPE SEG
5388 021374 104410          TRAP      C$ESCAPE
5389 021376 000002          .WORD      10002$-.
5390 021400          ENDSEG
5391 021400          10002$:
5392 021400 104405          TRAP      C$ESEG
5393 021402          ENDTST
5394 021402          L10072:
5395 021402 104401          TRAP      C$ETST
5396
5397 021404          BADHEAD
5398          ;***** TEST 25 *****
5399          ;*
5400          ;*MAIN MEMORY PAGE DUAL ADDRESS TEST.
5401          ;*IN THIS TEST WE WILL VERIFY THAT PAGES DO
5402          ;*NOT DUAL ADDRESS. THIS TEST IS DIFFERENT FROM THE
5403          ;*PREVIOUS DUAL ADDRESS TESTS IN THAT THE OTHER
5404          ;*TEST REALLY DIDN'T CHECK PAGE DUAL ADDRESSING
5405 021404          BADHEAD
5406          ;***** TEST 25 *****
5407
5408 021404          BGNTST
5409 021404          T25::
5410 021404          K4ONLY          ;FOR 4K CPUS ONLY.
5411          ;DO NOT DO TEST IF M8200, OR M8204
5412 021414 104432          TRAP      C$EXIT
5413 021416 000156          .WORD      L10073-.
5414 021420          MYINT
5415 021420 013701 002516    MOV      KMCSR,R1          ;RECORD DEVICE ADDR.
5416 021424          MSTCLR
5417 021430 005002          CLR R2          ;R2 WILL BE PAGE #
5418 021432 042737 000037 021456 1$: BIC #37,2$    ;CLEAR UNUSED BITS
5419 021440 050237 021456    BIS R2,2$    ;ADD CURRENT PAGE MARKER.
5420 021444          ROMCLK          ;SET ADDR D
5421 021444 004537 003044    JSR      R5,.ROMCLK    ;CLOCK INSTRUCTION
5422 021450 010000          10000
5423 021452          ROMCLK          ;OF PAGE X
5424 021452 004537 003044    JSR      R5,.ROMCLK    ;CLOCK INSTRUCTION
5425 021456 004000          2$: 4000          ;THIS LOCATION MODIFIED BY LOST
5426          ;FEW INSTRUCTIONS
5427 021460 010261 000004    MOV R2,4(R1)    ;PUT PAGE # INTO PART 4
5428 021464          ROMCLK          ;CLOCK PART 4 INTO MEMORY
5429 021464 004537 003044    JSR      R5,.ROMCLK    ;CLOCK INSTRUCTION

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CZDMQEO M8207 STATIC DIAG #2
CZDMQE.P11 30-SEP-82 15:35

MACV11 30A(1052) 18-OCT-82 15:30 PAGE 134
HARDWARE TESTS

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5430 021470 122500          122500          ;WHOSE PAGE # IS IN R2
5431 021472 005202          INC R2          ;UPDATE PAGE #
5432 021474 032702 000020  BIT #20,R2      ;DONE ALL PAGES?
5433 021500 001754          BEQ 1$          ;NO-DO NEXT ONE
5434
5435
5436
5437
5438
5439
5440 021502 005002          CLR R2          ;R2 STILL HAS PAGE NUMBER
5441
5442 021504 042737 000037 021522 3$: BIC #37,4$
5443 021512 050237 021522      BIS R2,4$
5444 021516          ROMCLK          ;LOAD PAGE NUMBER
5445 021516 004537 003044      JSR R5,.ROMCLK ;CLOCK INSTRUCTION
5446 021522 004000          4$: 4000
5447 021524          ROMCLK          ;MOVE MEM TO PART 4
5448 021524 004537 003044      JSR R5,.ROMCLK ;CLOCK INSTRUCTION
5449 021530 041224          041224
5450 021532 116104 000004      MOVB 4(R1),R4 ;'FOUND'
5451 021536 110205          MOVB R2,R5      ;'EXPECTED'
5452 021540 120504          CMPB R5,R4      ;ADDRESS PROBLEM?
5453 021542 001406          BEQ 5$
5454
5455 021544          ERROR 13          ;PAGE ADDRESSING ERROR IN MAIN
5456 021550 104455          TRAP C$ERDF
5457 021552 000015          .WORD 13
5458 021554 005055          .WORD EMO
5459 021556 007542          .WORD ERR13
5460
5461
5462
5463
5464 021560          5$: ESCAPE TST
5465 021560 104410          TRAP C$ESCAPE
5466 021562 000012          .WORD L10073-.
5467 021564 005202          INC R2          ;UPDATE PAGE ADDRESS
5468 021566 032702 000020  BIT #20,R2      ;ALL DONE?
5469 021572 001744          BEQ 3$          ;NO-CHECK NEXT PAGE.
5470
5471
5472
5473 021574 104401          ENDTST
5474
5475
5476 021576          L10073: TRAP C$ETST
5477
5478
5479
5480
5481
5482
5483
5484
5485
BADHEAD
***** TEST 26 *****
*
*JUMP FIELD,PAGE TEST
*
*IN THIS TEST WILL MAKE SURE A JUMP FIELD INSTRUCTION
*WORKS. TO DO THIS, WE'LL PUT THE DESIRED PAGE FIELD
*INFORMATION IN IBUS*13> THEN ISSUE A JUMP FIELD
*THEN WE'LL READ PC REG. AND VERIFY.
** REV. E - CHANGE TO TEST BITS 4 & 5 (PC BITS 12 & 13)

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CZDMQEO M8207 STATIC DIAG #2
CZDMQE.P11 30-SEP-82 15:35

MACV11 30A(1052) 18-OCT-82 15:30 PAGE 135
HARDWARE TESTS

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5486 021576          RADHEAD
5487          ;***** TEST 26 *****
5488
5489 021576          BGNTST
5490 021576          T26::
5491 021576          K4ONLY          ;FOR 4K CPUS ONLY
5492          ;DO NOT DO TEST IF M8200, OR M8204
5493 021606 104432    TRAP          C$EXIT
5494 021610 000132    .WORD        L10074-.
5495 021612          MYINT
5496 021612 013701 002516    MOV          KMCSR,R1          ;RECORD DEVICE ADDR.
5497 021616          MSTCLR
5498
5499 021622 005002    CLR R2          ;R2 TO CONTAIN FIELD #
5500
5501
5502
5503 021624 042737 000077 021642 1$:    BIC #77,2$          ;CLEAR ANY JUNK (REV E - CHANGE TO 77)
5504 021632 050237 021642          BIS R2,2$          ;SET FIELD # INTO INSTR.
5505
5506 021636          ROMCLK          ;CLOCK FIELD BITS INTO BREG.
5507 021636 004537 003044          JSR          R5,ROMCLK          ;CLOCK INSTRUCTION
5508 021642 000400          000400          ;CONTAINS FIELD,PAGE BITS
5509 021644          ROMCLK          ;XFERR BREG INTO IBUS*13>
5510 021644 004537 003044          JSR          R5,ROMCLK          ;CLOCK INSTRUCTION
5511 021650 061233          061233
5512 021652          SR0MCLK          ;GET INSTRUCTION CLOCKED.
5513 021652 004537 003100          JSR          R5,SR0MCLK
5514 021656 100000          100000          ;BAS FORM FOR JUM FIELD INSTR.
5515
5516
5517 021660 142761 000002 000001    BICB #BIT1,1(R1)          ;CLEAR ROMI
5518 021666          ROMCLK          ;CLOCK NEXT INSTR.
5519 021666 004537 003044          JSR          R5,ROMCLK          ;CLOCK INSTRUCTION
5520 021672 121264          121264          ;MOVE IBUS*TO PORT 4
5521 021674 116104 000004          MOVB 4(R1),R4          ;GET IT.
5522 021700 042704 177700          BIC          #^C<77>,R4          ;(REV E - CHANGE TO 77)
5523 021704 120402          CMPB R4,R2          ;FIELD OK?
5524 021706 001407          BEQ 3$          ;IF OK GO AHEAD
5525 021710 010205          MOV          R2,R5
5526 021712          ERROR 14          ;CHANGE FIELD INSTRUCTION ;*** 80
5527 021716 104455          TRAP          C$ERDF
5528 021720 000016          .WORD        14
5529 021722 005055          .WORD        EMO
5530 021724 007664          .WORD        ERR14
5531
5532          ;FAILED. FOR FIELD,PAGE INDICATES
5533          ;BY "EXPECTED" BITS 0,1,2,3 OF
5534          ;EXPECTED REPRESENT FIELD BITS.
5535 021726          3$:    ESCAPE TST
5536 021726 104410          TRAP          C$ESCAPE
5537 021730 000012          .WORD        L10074-.
5538
5539 021732 005202          INC R2          ;UPDATE TO NEXT FIELD
5540 021734 032702 000100          BIT #100,R2          ;DONE ALL FIELDS? (REV E - CHANGE TO 100)
5541 021740 001731          BEQ          1$

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CZDMQEO M8207 STATIC DIAG #2
CZDMQOE.P11 30-SEP-82 15:35

MACY11 30A(1052) 18-OCT-82 15:30 PAGE 136
HARDWARE TESTS

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5542
5543 021742
5544 021742
5545 021742 104401
5546
5547 021744
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5576
5577
5578
5579 021744
5580
5581
5582 021744
5583 021744
5584 021744
5585 021744 013701 002516
5586 021750
5587
5588 021760 104432
5589 021762 000336
5590 021764
5591
5592 021770 012737 000000 002406
5593
5594
5595
5596 021776 012702 000000
5597

```

ENDTST
L10074:

TRAP C\$ETST

BADHEAD

***** TEST 27 *****

*JUMP TEST, JUMP ALWAYS, JUMP CHANGE FIELD

*IN THIS TEST, WE WILL CHECK THE ABILITY OF THE
*MICRO PROCESSOR TO JUMP (BRANCH & ALWAYS INSTRUCTION)
*TO LOCATIONS, FIELDS FROM OTHER LOCATIONS FIELDS.
*WE ALREADY KNOW THAT THE BRANCH INSTR WORKS FROM
*OTHER TEST.

PROCEDURE:

1. START ADDR 0, FIELD 0
2. **CALCULATE NEW ADDR, FIELD VIA INC.
3. CAUSE JUMP (BRANCH) TO NEW ADDRESS
4. READ PC FROM IBUS*12 AND IBUS*13
5. REPEAT STEP 2-4 256.TIMES

TO CALCULATE NEW ADDRESS:

1. INC LOW BYTE OF ADDRESS FOR PC ADDRESS 0-7
2. INC LOW BYTE OF NADDRESS FOR PC ADDRESS 8-11

BITS REPRESENTED AS BITS 0-3. WHEN 0-3 OVERFLOWS,
RESTARTS AT ZERO.

NET RESULT IS JUMPS FROM:

FIELD,PAGE	LOC
0	0
1	1
2	2
3	3
10	7
11	11
:10	:
17	377

BADHEAD

***** TEST 27 *****

BGNTST

T27::

MYINT

MOV KMCSR,R1 ;RECORD DEVICE ADDR.

K4ONLY ;4K CPUS ONLY.

;DO NOT DO TEST IF M8200, OR M8204

TRAP C\$EXIT

.WORD L10075-.

MSTCLR

MOV #0, FLAG ;FLAG TO REPRESENT
;FIELD,PAGE
;TO VARIE STARTING PAGE,FIELD,
;CHANGE #0 PORTION OF INSTR.
;R2 TO CONTAIN JUMPED
;TO CHANGE STARTING IMM ADDR.,

MOV #0, R2

CZDMQEO M8207 STATIC DIAG #2 MACV11 30A(1052) 18-OCT-82 15:30 PAGE 137
 CZDMQE.P11 30-SEP-82 15:35 HARDWARE TESTS

```

5598
5599 022002 012737 000000 002412      MOV    #0, FADR      ;VARIE #0 PORTIONS OF INSTR.
5600                                ;LOOP HERE      ;ADDRESS
5601 022010
5602 022010 042737 000017 022050 1$:    BIC #17,2$      ;CLEAR JUNK FROM FIELD
5603                                ;PORTION OF CHANGE FIELD INSTR
5604 022016 013700 002406      MOV FLAG,R0      ;INORDER TO INC, DEC FIELD,PAGE
5605 022022 042700 177760      BIC #^C<17>,R0
5606 022026 050037 022050      BIS R0,2$      ;NOW POSITION IN INSTR.
5607 022032 042737 077777 022064      BIC #077777,3$    ;NOW FOR IMMED. BR INSTR.
5608 022040 050237 022064      BIS R2,3$      ;NOW ADD IMMEDIATE ADDR
5609
5610
5611
5612 022044
5613 022044 004537 003044      ROMCLK
5614 022050 000400 2$:    JSR    R5,.ROMCLK    ;CLOCK INSTRUCTION
5615 022052      000400      ;MOVE PAGE, FIELD # TO BREG.
5616 022052 004537 003044      ROMCLK
5617 022054 061233      JSR    R5,.ROMCLK    ;CLOCK INSTRUCTION
5618 022060      61233      ;MOV    BREG TO PC HIGH REG.
5619 022060 004537 003100      SROMCLK
5620 022064 100000 3$:    JSR    R5,.SROMCLK
5621      100000      ;NOW CLOCK IT IN BY JMP FIELD INSTR.
5622 022066
5623 022066 004537 003044      ROMCLK
5624 022072 121265      JSR    R5,.ROMCLK    ;READ PC REG HI
5625 022074      121265      ;CLOCK INSTRUCTION
5626 022074 004537 003044      ROMCLK
5627 022100 121244      JSR    R5,.ROMCLK    ;READ PC REG LOW
5628      121244      ;CLOCK INSTRUCTION
5629 022102 016104 000004      MOV 4(R1),R4
5630 022106 042704 170000      BIC    #170000,R4    ;READ PC REG (NOW IN SEL 4)
5631      ;STRIP FOR ONLY PAGE, FIELD BITS.
5632 022112 013705 022050      MOV 2$,R5
5633 022116 000305      SWAB R5
5634 022120 042705 170377      BIC #170377,R5
5635 022124 050205      BIS R2,R5
5636 022126      SKIP06 5$
5637      ;GOTO 5$ IF M8206
5638 022136 105205 5$:    INCB    R5
5639 022140      ;UPDATE ADDR. EXPECTED SENCE THE READ
5640      ;OF THE IBUS <13> INC THE PC.
5641
5642 022140 020504      CMP R5,R4
5643 022142 001406      BEQ 4$
5644 022144      ERROR 15
5645 022150 104455      TRAP    C$ERDF
5646 022152 000017      .WORD    15
5647 022154 005055      .WORD    EMO
5648 022156 010006      .WORD    ERR15
5649
5650      ;"FROM ADDR" REPRESENTS
5651      ;THE ADDRESS WE STARTED AT
5652      ;"TO ADDR" REPRESENTS WHERE
5653      ;WE EXPECTED TO JUMP TO,
5654      ;"BAD ADDR" REPRESENTS WHERE

```

CZDMQEO M8207 STATIC DIAG #2
CZDMQE.P11 30-SEP-82 15:35

MACY11 30A(1052) 18-OCT-82 15:30 PAGE 138
HARDWARE TESTS

;WE WENT TO.

.REM %

15	12	11	10	9	8	7	0
UNUSED		FIELD		PAGE		IMMED. ADDR	
		BITS		BITS			

;THIS IS A PICTURE OF THE P.C. REG.

BITS 0-7 ARE IN IBUS*(<12>

BITS 8-11 ARE IN IBUS*(<13>

THEY GOT CLOCK IN THERE VIA JUMPS TAKEN

THE FIELD BITS

ARE IN BIT POSITION 0,1 OF THE INSTRUCTION AT 2\$.

3\$ WAS THE JUMP ALWAYS INSTRUCTION. THE IMMED. ADDR.

WAS IN 0-7 OF THE JUMP INSTR. THE PAGE BITS,

PC REG BITS 8,9, WERE IN BITS 11,12 OF THE INSTR.

JUMP INSTRUCTIONS HAVE BEEN CHECKED OUT

BEFORE, SO THE IMPORTANT THING TO REMEMBER TO

WATCH IS THE "FROM ADDR", "TO ADDR"

%

4\$:

ESCAPE TST

TRAP C\$ESCAPE

.WORD L10075-

MOV R4,FADR

INC FLAG

;UPDATE PAGE,FIELD

INCB R2

;UPDATE IMMED. ADDR

BNE 1\$

;LOOP IF NOT DONE.

::*

::*CHECK HERE TO SEE IF MASTER CLEAR CLEARS P.C. REG

::*

SKIP06 40\$

;GOTO 40\$ IF M8206

TST RUNB

BNE 40\$

TST RUNINH

BNE 40\$

BIS #40000,(R1) ;SET MASTER CLEAR

TSTB 1(R1)

BIC #40000,(R1)

;TO RUN THIS SECTION OF CODE YOU MUST TURN SW7 OF SWITCH PACK #E28

;OFF SO THAT M8207 NOT SELFSTARTING.

ROMCLK

JSR R5,.ROMCLK

;WE MUST FIRST CLOCK

121265

;CLOCK INSTRUCTION

ROMCLK

;THE PC LATCH REGS

JSR R5,.ROMCLK

;BEFORE WE CAN READ THEM

121244

;CLOCK INSTRUCTION

5654
5655
5656
5657
5658
5659
5660
5661
5662
5663
5664
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5666
5667
5668
5669
5670
5671
5672
5673
5674
5675
5676
5677
5678
5679 022160
5680 022160 104410
5681 022162 000136
5682 022164 010437 002412
5683 022170 005237 002406
5684 022174 105202
5685 022176 001304
5686
5687
5688
5689
5690
5691 022200
5692
5693 022210 005737 002470
5694 022214 001041
5695 022216 005737 002472
5696 022222 001036
5697 022224 052711 040000
5698 022230 105761 000001
5699 022234 042711 040000
5700
5701
5702
5703
5704 022240
5705 022240 004537 003044
5706 022244 121265
5707 022246
5708 022246 004537 003044
5709 022252 121244

CZDMQEO M8207 STATIC DIAG #2 MACV11 30A(1052) 18-OCT-82 15:30 PAGE 139
 CZDMQE.P11 30-SEP-82 15:35 HARDWARE TESTS

```

5710 022254          ROMCLK          :REG PC REG HI, PUT IN PORT5
5711 022254 004537 003044      JSR      R5, .ROMCLK      :CLOCK INSTRUCTION
5712 022260 121265
5713
5714 022262          ROMCLK          :REG PC REG LOW, PUT IN PORT4
5715 022262 004537 003044      JSR      R5, .ROMCLK      :CLOCK INSTRUCTION
5716 022266 121244
5717 022270 005005          CLR      R5          :EXPECT ZERO
5718 022272 016104 000004      MOV      4(R1), R4      :READ PC REG FROM PORT 4&5
5719 022276 042704 170003      BIC      #170003, R4
5720 022302 001406      BEQ      40$
5721
5722
5723
5724
5725
5726
5727 022304          ERROR      45          :MASTER CLEAR FAILED TO CLEAR
5728 022310 104455      TRAP      C$ERDF
5729 022312 000055      .WORD     45
5730 022314 005055      .WORD     EMO
5731 022316 011124      .WORD     ERR45
5732
5733 022320          :PC REG
5734 022320
5735 022320
5736 022320 104401      40$:
5737 022322          ENDTST
5738
5739          L10075:
5740          TRAP      C$ETST
5741          BADHEAD
5742          :***** TEST 28 *****
5743          :
5744          :JUMP TEST, JUMP ALWAYS, JUMP CHANGE FIELD
5745          :
5746          :IN THIS TEST, WE WILL CHECK THE ABILITY OF THE
5747          :MICRO PROCESSOR TO JUMP (BRANCH & ALWAYS INSTRUCTION)
5748          :TO LOCATIONS, FIELDS FROM OTHER LOCATIONS FIELDS.
5749          :WE ALREADY KNOW THAT THE BRANCH INSTR WORKS FROM
5750          :OTHER TEST.
5751          :
5752          :PROCEDURE:
5753          :1. START ADDR 0, FIELD 0
5754          :2. **CALCULATE NEW ADDRS, FIELD VIA DEC,
5755          :3. CAUSE JUMP (BRANCH) TO NEW ADDRESS
5756          :4. READ PC FROM IBUS*12 AND IBUS*13
5757          :5. REPEAT STEP 2-4 256.TIMES
5758          :
5759          :TO CALCULATE NEW ADDRESS:
5760          :1. DEC LOW BYTE OF ADDRESS FOR PC ADDRESS 0-7
5761          :2. DEC LOW BYTE OF NADDRESS FOR PC ADDRESS 8-11
5762          :   BITS REPRESENTED AS BITS 0-3. WHEN 0-3 OVERFLOWS,
5763          :   RESTARTS AT ZERO.
5764          :   NET RESULT IS JUMPS FROM:
5765          :   FIELD,PAGE          LOC
5766          :   0              0
5767          :   17             377

```

CZDMQEO M8207 STATIC DIAG #2
CZDMQEO.P11 30-SEP-82 15:35

MACV11 30A(1052) 18-OCT-82 15:30 PAGE 140
HARDWARE TESTS

```

5762          :*          16          376
5763          :*          15          375
5764          :*          :TO
5765          :*          00          000
5766          :*
5767 022322    BADHEAD
5768          :***** TEST 28 *****
5769
5770 022322    BGNIST
5771 022322    T28::
5772 022322
5773 022322 013701 002516    MYINT
5774 022326    MOV      KMCSR,R1          ;RECORD DEVICE ADDR.
5775          K4ONLY          ;4K CPUS ONLY.
5776 022336 104432    ;DO NOT DO TEST IF M8200, OR M8204
5777 022340 000216    TRAP      C$EXIT
5778 022342    .WORD      L10076-.
5779          MSTCLR
5780 022346 012737 000000 002406    MOV      #0, FLAG          ;FLAG TO REPRESENT
5781          ;FIELD,PAGE
5782          ;TO VARIE STARTING PAGE,FIELD,
5783          ;CHANGE #0 PORTION OF INSTR.
5784 022354 012702 000000    MOV      #0, R2          ;R2 TO CONTAIN JUMPED
5785          ;TO CHANGE STARTING IMM ADDR.,
5786          ;VARIE #0 PORTIONS OF INSTR.
5787 022360 012737 000000 002412    MOV      #0, FADR          ;ADDRESS
5788          ;LOOP HERE
5789 022366          1$:
5790 022366 042737 000017 022426    BIC #17,2$          ;CLEAR JUNK FROM FIELD
5791          ;PORTION OF CHANGE FIELD INSTR
5792 022374 013700 002406          ;INORDER TO INC, DEC FIELD,PAGE
5793 022400 042700 177760    MOV FLAG,R0
5794 022404 050037 022426    BIC #^C<17>,R0
5795 022410 042737 077777 022442    BIS R0,2$          ;NOW POSITION IN INSTR.
5796 022416 050237 022442    BIC #077777,3$          ;NOW FOR IMMED. BR INSTR.
5797          BIS R2,3$          ;NOW ADD IMMEDIATE ADDR
5798
5799
5800 022422          ROMCLK
5801 022422 004537 003044          JSR      R5,..ROMCLK          ;CLOCK INSTRUCTION
5802 022426 000400          2$:          000400          ;MOVE PAGE,FIELD # TO BREG.
5803 022430          ROMCLK
5804 022430 004537 003044          JSR      R5,..ROMCLK          ;CLOCK INSTRUCTION
5805 022434 061233          61233          ;MOV      BREG TO PC HIGH REG.
5806 022436          SROMCLK
5807 022436 004537 003100          JSR      R5,..SROMCLK
5808 022442 100000          3$:          100000          ;NOW CLOCK IT IN BY JMP FIELD INSTR.
5809
5810 022444          ROMCLK
5811 022444 004537 003044          JSR      R5,..ROMCLK          ;READ PC REG HI
5812 022450 121265          121265          ;CLOCK INSTRUCTION
5813 022452          ROMCLK
5814 022452 004537 003044          JSR      R5,..ROMCLK          ;READ PC REG LOW
5815 022456 121244          121244          ;CLOCK INSTRUCTION
5816
5817 022460 016104 000004          MOV 4(R1),R4          ;READ PC REG (NOW IN SEL 4)

```

CZDMQEO M8207 STATIC DIAG #2
CZDMQE.P11 30-SEP-82 15:35

MACY11 30A(1052) 18-OCT-82 15:30 PAGE 141
HARDWARE TESTS

```

5818 022464 042704 170000      BIC      #170000,R4      ;STRIP FOR ONLY PAGE, FIELD BITS.
5819
5820 022470 013705 022426      MOV 2$,R5      ;NOW FROM ADDR WE WANTED TO
5821 022474 000305              SWAB R5      ;JUMP TO
5822 022476 042705 170377      BIC #170377,R5      ;CLEAR JUNK
5823 022502 050205              BIS R2,R5      ;ADD IMMED ADDR
5824 022504
5825
5826 022514 105205              ;GOTO 5$ IF M8206
5827 022516      5$:      INCB      R5      ;UPDATE ADDR. EXPECTED SENCE THE READ
5828
5829
5830 022516 020504              CMP R5,R4      ;JUMP GO OK?
5831 022520 001406              BEQ 4$      ;YEA, CONTINUES
5832 022522              ERROR 15      ;FAILED TO JUMP PROPERLY.
5833 022526 104455              TRAP      C$ERDF
5834 022530 000017              .WORD      15
5835 022532 005055              .WORD      EMO
5836 022534 010006              .WORD      ERR15
5837
5838
5839
5840
5841
5842
5843
5844
5845
5846
5847
5848
5849
5850
5851
5852
5853
5854
5855
5856
5857
5858
5859
5860
5861
5862
5863
5864
5865
5866
5867 022536
5868 022536 104410
5869 022540 000016
5870 022542 010437 002412
5871 022546 005337 002406
5872 022552 105302
5873 022554 001304

```

;'FROM ADDR' REPRESENTS
 ;THE ADDRESS WE STARTED AT
 ;'TO ADDR' REPRESENTS WHERE
 ;WE EXPECTED TO JUMP TO,
 ;'BAD ADDR' REPRESENTS WHERE
 ;WE WENT TO.

.REM %

15	12	11	10	9	8	7	0
UNUSED		FIELD		PAGE		IMMED. ADDR	
		BITS		BITS			

;THIS IS A PICTURE OF THE P.C. REG.
 BITS 0-7 ARE IN IBUS* <12>
 BITS 8-11 ARE IN IBUS* <13>
 THEY GOT CLOCK IN THERE VIA JUMPS TAKEN
 THE FIELD BITS
 ARE IN BIT POSITION 0,1 OF THE INSTRUCTION AT 2\$.

3\$ WAS THE JUMP ALWAYS INSTRUCTION. THE IMMED. ADDR.
 WAS IN 0-7 OF THE JUMP INSTR. THE PAGE BITS,
 PC REG BITS 8,9, WERE IN BITS 11,12 OF THE INSTR.
 JUMP INSTRUCTIONS HAVE BEEN CHECKED OUT
 BEFORE, SO THE IMPORTANT THING TO REMEMBER TO
 WATCH IS THE "FROM ADDR", "TO ADDR"

%

4\$:


```

      ESCAPE TST
      TRAP      C$ESCAPE
      .WORD      L10076-.
      MOV R4,FADR
      DEC FLAG
      DECB R2
      BNE 1$
    
```

 ;UPDATE PAGE, FIELD
 ;UPDATE IMMED. ADDR
 ;LOOP IF NOT DONE.

CZDMQEO M8207 STATIC DIAG #2
CZDMQE.P11 30-SEP-82 15:35

MACY11 30A(1052) 18-OCT-82 15:30 PAGE 142
HARDWARE TESTS

```

5874
5875
5876 022556
5877 022556
5878 022556 104401
5879 022560
5880
5881
5882
5883
5884
5885
5886 022560
5887
5888
5889 022560
5890 022560
5891 022560
5892
5893 022570 104432
5894 022572 000200
5895 022574
5896 022600
5897 022600 013701 002516
5898 022604 004737 003166
5899 022610
5900 022610 004537 003044
5901 022614 121264
5902 022616 116104 000004
5903 022622 042704 177477
5904 022626 012705 000000
5905 022632 120405
5906 022634 001410
5907 022636
5908 022642 104455
5909 022644 000020
5910 022646 005055
5911 022650 010134
5912
5913 022652
5914 022652 104410
5915 022654 000116
5916 022656 004737 003312
5917 022662
5918 022662 004537 003044
5919 022666 121264
5920
5921 022670 016104 000004
5922 022674 042704 177477
5923 022700 012705 000200
5924 022704 120405
5925 022706 001410
5926 022710
5927 022714 104455
5928 022716 000020
5929 022720 005055

ENDTST
L10076:
TRAP C$ETST
BADHEAD
***** TEST 29 *****
;*
;* IN THIS TEST WE'LL VERIFY THAT THE Z BIT CAN BE READ FROM
;* IBUS*(<13>). WE ALLREADY KNOW THAT THE Z BIT WORKS PROPERLY,
;* ALL WE WANT TO KNOW HERE IS THAT IT CAN BE READ.
;*
BADHEAD
***** TEST 29 *****

129::
BGNTEST
K4ONLY
;DO NOT DO TEST IF M8200, OR M8204
TRAP C$EXIT
;WORD L10077-.
MSTCLR
MYINT
MOV KMCSR,R1
JSR PC,CLRALL
ROMCLK
JSR R5,.ROMCLK
121264
MOV 4(R1),R4
BIC #177477,R4
MOV #0,R5
CMPB R4,R5
BEQ 1$
ERROR 16
TRAP C$ERDF
;WORD 16
;WORD EMO
;WORD ERR16

ESCAPE TST
TRAP C$ESCAPE
;WORD L10077-.
JSR PC,SETZ
ROMCLK
JSR R5,.ROMCLK
121264
MOV 4(R1),R4
BIC #C<300>,R4
MOV #200,R5
CMPB R4,R5
BEQ 2$
ERROR 16
TRAP C$ERDF
;WORD 16
;WORD EMO

;M8206 & M8207 ONLY!
;RECORD DEVICE ADDR.
;CLR CONDITION CODES.
;NOW READ IBUS*(<15>)PUT IN PORT 4
;CLOCK INSTRUCTION
;READ IT FROM PORT 4
;STRIP ANY JUNK,C&Z BITS 6,7
;EXPECT IT CLEAR
;OK?
;FAILURE OF Z&C TO BE CLEAR.
;SET Z BIT.
;NOW GO BACK AND CHECK Z BIT SET.
;CLOCK INSTRUCTION
;GET INFO.
;STRIP FOR C&Z BITS.
;EXPECT ONLY Z BIT SET.
;SET OK?
;Z BIT FAILED TO SET PROPERLY.

```

CZDMQEO M8207 STATIC DIAG #2
CZDMQE.P11 30-SEP-82 15:35

MACV11 30A(1052) 18-OCT-82 15:30 PAGE 143
HARDWARE TESTS

```

5930 022722 010134          .WORD  ERR16
5931
5932 022724          ESCAPE  TST
5933 022724 104410        TRAP   C$ESCAPE
5934 022726 000044        .WORD  L10077-.
5935 022730 004737 003166 2$:  JSR    PC,CLRALL          ;NOW TRY TO CLEAR Z BIT.
5936 022734          ROMCLK
5937 022734 004537 003044  JSR    R5,.ROMCLK      ;CLOCK INSTRUCTION
5938 022740 121264
5939 022742 016104 000004  MOV    4(R1),R4
5940 022746 042704 177477  BIC    #^C<300>,R4          ;STRIP FOR C&Z BITS
5941 022752 001407        BEQ    3$              ;IF ZERO,WE'RE OK
5942 022754 005005        CLR    R5              ;ELSE REPORT ERROR
5943 022756          ERROR  16                  ;Z BIT FAILED TO CLEAR PROPERLY.
5944 022762 104455        TRAP   C$ERDF
5945 022764 000020        .WORD  16
5946 022766 005055        .WORD  EMO
5947 022770 010134        .WORD  ERR16
5948 022772          3$:
5949 022772          ENDTST
5950 022772          L10077:
5951 022772 104401        TRAP   C$ETST
5952          ;FINDFAST
5953 022774          BADHEAD
5954          ;***** TEST 30 *****
5955          ;*
5956          ;* IN THIS TEST WE'LL VERIFY THAT THE C BIT CAN BE READ FROM
5957          ;* IBUS*(<13>). WE ALLREADY KNOW THAT THE C BIT WORKS PROPERLY,
5958          ;* ALL WE WANT TO KNOW HERE IS THAT IT CAN BE READ.
5959          ;*
5960 022774          BADHEAD
5961          ;***** TEST 30 *****
5962
5963 022774          T30::  BGNST
5964 022774
5965 022774          K4ONLY
5966          ;DO NOT DO TEST IF M8200, OR M8204          ;M8206 &M8207 ONLY!
5967 023004 104432        TRAP   C$EXIT
5968 023006 000200        .WORD  L10100-.
5969 023010          MSTCLR
5970 023014          MYINT
5971 023014 013701 002516  MOV    KMCSR,R1          ;RECORD DEVICE ADDR.
5972 023020 004737 003166  JSR    PC,CLRALL      ;CLR CONDITION CODES.
5973 023024          ROMCLK
5974 023024 004537 003044  JSR    R5,.ROMCLK      ;NOW READ IBUS*(<13>PUT IN PORT 4
5975 023030 121264          ;CLOCK INSTRUCTION
5976 023032 116104 000004  MOVB   4(R1),R4          ;READ IT FROM PORT 4
5977 023036 042704 177477  BIC    #177477,R4      ;STRIP ANY JUNK,C&Z BITS 6,7
5978 023042 012705 000000  MOV    #0,R5          ;EXPECT IT CLEAR
5979 023046 120405        CMPB   R4,R5          ;OK?
5980 023050 001410        BEQ    1$
5981 023052          ERROR  16                  ;FAILURE OF Z&C TO BE CLEAR.
5982 023056 104455        TRAP   C$ERDF
5983 023060 000020        .WORD  16
5984 023062 005055        .WORD  EMO
5985 023064 010134        .WORD  ERR16

```

CZDMQEO M8207 STATIC DIAG #2
CZDMQE.P11 30-SEP-82 15:35

MACY11 30A(1052) 18-OCT-82 15:30 PAGE 144
HARDWARE TESTS

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5986
5987 023066
5988 023066 104410
5989 023070 000116
5990 023072 004737 0032b0
5991 023076
5992 023076 004537 003044
5993 023102 121264
5994 023104 016104 000004
5995 023110 042704 177477
5996 023114 012705 000100
5997 023120 120405
5998 023122 001410
5999 023124
6000 023130 104455
6001 023132 000020
6002 023134 005055
6003 023136 010134
6004
6005 023140
6006 023140 104410
6007 023142 000044
6008 023144 004737 003166
6009 023150
6010 023150 004537 003044
6011 023154 121264
6012 023156 016104 000004
6013 023162 042704 177477
6014 023166 001407
6015 023170 005005
6016 023172
6017 023176 104455
6018 023200 000020
6019 023202 005055
6020 023204 010134
6021 023206
6022 023206
6023 023206
6024 023206 104401
6025 023210
6026
6027
6028
6029
6030
6031 023210
6032
6033
6034 023210
6035 023210
6036 023210
6037 023210 013701 002516
6038 023214
6039 023220 005037 002440
6040 023224 005037 002444
6041 023230 012761 000020 000004

          ESCAPE TST
          TRAP C$ESCAPE
          .WORD L10100-
1$:      JSR PC,SETC          ;SET C BIT.
          ROMCLK             ;NOW GO BACK AND CHECK C BIT SET.
          JSR R5,.ROMCLK     ;CLOCK INSTRUCTION
          121264
          MOV 4(R1),R4        ;GET INFO.
          BIC #^C<300>,R4    ;STRIP FOR C&Z BITS.
          MOV #100,R5        ;EXPECT ONLY C BIT SET.
          CMPB R4,R5         ;SET OK?
          BEQ 2$
          ERROR 16           ;C BIT FAILED TO SET PROPERLY.
          TRAP C$ERDF
          .WORD 16
          .WORD EMO
          .WORD ERR16

          ESCAPE TST
          TRAP C$ESCAPE
          .WORD L10100-
2$:      JSR PC,CLRALL       ;NOW TRY TO CLEAR C BIT.
          ROMCLK             ;CLOCK INSTRUCTION
          JSR R5,.ROMCLK
          121264
          MOV 4(R1),R4
          BIC #^C<300>,R4    ;STRIP FOR C&Z BITS
          BEQ 3$             ;IF ZERO,WE'RE OK
          CLR R5             ;ELSE REPORT ERROR
          ERROR 16           ;C BIT FAILED TO CLEAR PROPERLY.
          TRAP C$ERDF
          .WORD 16
          .WORD EMO
          .WORD ERR16

3$:      ENDTST
L10100:  TRAP C$ETST
          BADHEAD
          ;***** TEST 31 *****
          ;*TEST OF PROGRAM CLOCK BIT
          ;*DO A MASTER CLEAR, VERIFY THAT PROGRAM CLOCK IS SET
          ;*WRITE PROGRAM CLOCK BIT TO A ONE, VERIFY THAT IT CLEARS.
          ;*AND THEN SETS SOME TIME LATER
          BADHEAD
          ;***** TEST 31 *****

          BGNTST
          T31::
          MYINT
          MOV KMCSR,R1        ;RECORD DEVICE ADDR.
          MSTCLP              ;MASTER CLEAR M8200,4,7
          CLR TEMP            ;PREPARE FOR
          CLR $TMP0           ;DELAY
          MOV #20,4(R1)       ;LOAD PORT 4

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CZDMQEO M8207 STATIC DIAG #2 MACY11 30A(1052) 18-OCT-82 15:30 PAGE 145
 CZDMQE.P11 30-SEP-82 15:35 HARDWARE TESTS

6042	023236	152761	000002	000001	BISB	#BIT1,1(R1)	;SET ROMI
6043	023244	012761	121111	000006	MOV	#121111,6(R1)	;SEL6 INSTRUCTION
6044	023252	152761	000003	000001	BISB	#BIT1!BIT0,1(R1)	;SET CLOCK BIT
6045	023260	012761	121224	000006	MOV	#121224,6(R1)	;LOAD NEXT INSTRUCTION
6046	023266	152761	000003	000001	BISB	#BIT1!BIT0,1(R1)	;READ CLOCK BIT
6047	023274	142761	030001	000001	BICB	#BIT!BIT0,1(R1)	;CLEAR MAINT BITS
6048	023302	016104	000004		MOV	4(R1),R4	;PUT 'FOUND' IN R4
6049	023306	005037	002452		CLR	\$GDDAT	;PUT 'EXPECTED' IN \$GDDAT
6050	023312	123704	002452		CMPB	\$GDDAT,R4	;IS PGM CLOCK CLEAR?
6051	023316	001406			BEQ	2\$	
6052	023320	013702	002452		MOV	\$GDDAT,R2	
6053	023324				ERRDF	50,EMB50	;ERROR, PGM CLOCK IS NOT CLEAR
6054	023324	104455			TRAP	C\$ERDF	
6055	023326	000062			.WORD	50	
6056	023330	005545			.WORD	EMB50	
6057	023332	000000			.WORD	0	
6058	023334				2\$:		
6059	023334				ROMCLK		;NEXT WORD IS INSTRUCTION,
6060	023334	004537	003044		JSR	R5,.ROMCLK	;CLOCK INSTRUCTION
6061	023340	121224			121224		;PORT4 LU11
6062	023342	122761	000020	000004	CMPB	#20,4(R1)	;IS PGM CLOCK SET?
6063	023350	001420			BEQ	3\$	;BR IF YES
6064	023352	005237	002440		INC	TEMP	;INCREMENT DELAY
6065	023356	005537	002444		ADC	\$TMP0	;INCREMENT DELAY
6066	023362	022737	000006	002444	CMP	#6,\$TMP0	;IS DELAY DONE
6067	023370	001361			BNE	2\$	;BR IF NO
6068	023372	012702	000006		MOV	#6,R2	
6069	023376	013704	002444		MOV	\$TMP0,R4	
6070	023402				ERRDF	51,EMB51	;ERROR PGM CLOCK NOT SET
6071	023402	104455			TRAP	C\$ERDF	
6072	023404	000063			.WORD	51	
6073	023406	005577			.WORD	EMB51	
6074	023410	000000			.WORD	0	
6075	023412				3\$:		
6076							
6077	023412	122737	000007	002414	CMPB	#7,WTYPE	; ONLY DO NEXT TEST IF M8207
6078	023420	001013			BNE	4\$	; EXIT IF NOT.
6079							
6080	023422	005737	002444		TST	\$TMP0	; IF ANY LARGE COUNT, WE'RE OK
6081	023426	001010			BNE	4\$	; THEN EXIT
6082							
6083	023430	042737	000007	002440	BIC	#7,TEMP	; CLEAR OUT ANY SMALL COUNT
6084	023436	001004			BNE	4\$	; IF LARGE COUNT LEFT OVER, WE'RE OK.
6085							
6086	023440				ERRDF	100,EMB1	; ERROR
6087	023440	104455			TRAP	C\$ERDF	
6088	023442	000144			.WORD	100	
6089	023444	005410			.WORD	EMB1	
6090	023446	000000			.WORD	0	
6091							; TIME T1000 SHORT FOR CLOCK. MUST BE
6092							; DEFECTIVE CAPACITOR IN TIMEING CIRCUIT.
6093	023450				4\$:		
6094							
6095	023450				ENDTST		
6096	023450				L10101:		
6097	023450	104401			TRAP	C\$ETST	

CZDMQEO M8207 STATIC DIAG #2
CZDMQE.P11 30-SEP-82 15:35

MACY11 30A(1052) 18-OCT-82 15:30 PAGE 146
HARDWARE TESTS

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6098
6099 023452
6100
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6107 023452
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6110 023452
6111 023452
6112 023452
6113 023452 104433
6114 023454
6115 023454 013701 002516
6116
6117 023460
6118 023464 005037 002440
6119 023470 013737 000024 002444
6120 023476 013746 000024
6121 023502 012737 023564 000024
6122 023510 012761 000002 000004
6123 023516 012711 001000
6124 023522 012761 121111 000006
6125 023530 012711 005400
6126 023534 005237 002440
6127 023540 001375
6128 023542
6129 023546
6130 023552 104455
6131 023554 000021
6132 023556 005055
6133 023560 010256
6134 023562 000445
6135 023564 012737 023602 000024 1$:
6136 023572 010637 023600
6137 023576 000000
6138 023600 000000
6139 023602 013706 023600
6140 023606 012737 024002 000024
6141 023614 005037 024000
6142 023620 005237 024000
6143 023624 001375
6144
6145
6146 023626
6147 023630 013701 002516
6148 023634 012637 000024
6149 023640 023737 002444 000024
6150 023646 001413
6151 023650
6152 023654 104455
6153 023656 000021

BADHEAD
***** TEST 32 *****
*FORCE POWER FAIL TEST
*SET FORCE POWER FAIL BIT VERIFY THAT PROCESSOR TRAPS TO 24
*GOING DOWN AND COMING UP. VERIFY ALSO THAT BUS INIT WAS
*BLOCKED FROM GETTING TO THE M8200,4,7 DURING THE POWER FAIL
*THIS TEST WILL TAKE LONGER THAN 2 SECONDS TO RUN. THIS TEST
*SHOULD NOT BE RUN IF YOU HAVE VOLATILABLE MEMORY IN YOUR SYSTEM.
BADHEAD
***** TEST 32 *****

BGNTST
T32::

BRESET
TRAP CSRESET ;STALL FOR TIME
MYINT
MOV KMCSR,R1 ;RECORD DEVICE ADDR.
;R1 CONTAINS BASE M8200,4,7 ADDRESS
MSTCLR ;MASTER CLEAR M8200,4,7
CLR TEMP ;PREPARE FOR DELAY
MOV @#24,$TMP0 ;SAVE POWER FAIL ADDRESS
MOV @#24,-(SP) ;STORE POWER FAIL ADDRESS
MOV #1$,@#24 ;SET U FOPR FORCE POWER FAIL
MOV #2,4(R1) ;LOAD PORT4
MOV #BIT9,(R1) ;SET ROMI
MOV #121111,6(R1) ;LOAD INSTRUCTION
MOV #BIT9!BIT8!BIT11,(R1) ;CLOCK INSTRUCTION
INC TEMP ;WAIT FOR POWER FAIL
BNE 5$ ;BR IF DELAY NOT DONE
MSTCLR
ERROR 17 ;ERROR, NO POWER FAIL
TRAP CSERDF
.WORD 17
.WORD EMO
.WORD ERR17
BR 4$
MOV #3$,@#24 ;POWER UP ADDRESS
MOV SP,2$ ;STORE STACK
HALT ;WAIT FOR POWER UP SEQUENCE
O
2$:
3$: MOV 2$,SP ;RESTORE STACK
MOV #10$,@#24 ;PUT IN CASE OF FALSE POWER-UP.
CLR 11$
INC 11$ ;STALL ON POWER UP.
BNE 12$ ;WAIT HERE IF BAD,WILL POWER OUT OF HERE.
;ELSE PROCEED.

POPS2
MOV KMCSR,R1 ;POP STACK TWICE2
MOV (SP)+,@#24 ;RESTORE TRUE POWER FAIL ADDRESS
CMP $TMP0,@#24 ;IS IT CORRECT?
BEQ 4$ ;BR IF YES
ERROR 17 ;ERROR, STACK IS INCORRECT
TRAP CSERDF
.WORD 17

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CZDMQEO M8207 STATIC DIAG #2
CZDMQE.P11 30-SEP-82 15:35

MACV11 30A(1052) 18-OCT-82 15:30 PAGE 147
HARDWARE TESTS

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6154 023660 005055      .WORD  EMO
6155 023662 010256      .WORD  ERR17
6156 023664 013737 002444 000024      MOV  $TMP0, @#24      ;RESTORE TRUE POWER FAIL ADDRESS
6157 023672 013706 002344      MOV  PSTACK, SP      ;RESTORE STACK
6158 023676 032711 004000      4$:  BIT  #BIT11, (R1)      ;BIT11 STILL SET?
6159 023702 001016      BNE  7$
6160 023704 005737 002470      TST  RUNB
6161 023710 001013      BNE  7$
6162 023712 011104      MOV  (R1), R4
6163 023714 012705 004000      MOV  #BIT11, R5
6164 023720      ERROR  35      ;OAC FAILED
6165 023724 104455      TRAP  C$ERDF
6166 023726 000043      .WORD  35
6167 023730 005055      .WORD  EMO
6168 023732 010472      .WORD  ERR35
6169      ;TO PREVENT
6170      ;INIT FROM
6171      ;CLEARING CSR
6172 023734      EXIT  TST
6173 023734 104432      TRAP  C$EXIT
6174 023736 000104      .WORD  L10102-
6175 023740 012711 003000      7$:  MOV  #BIT9:BIT10, (R1) ;SEL6 = MAINT IR
6176 023744 012705 121111      MOV  #121111, R5      ;R5 = EXPECTED
6177 023750 016104 000006      MOV  6(R1), R4      ;R4 = FOUND
6178 023754 020504      CMP  R5, R4      ;MAINT IR SHOULD = 12111
6179 023756 001431      BEQ  6$      ;BR IF OK
6180 023760      MSTCLR
6181 023764      ERROR  35      ;IF = 0 THEN BUS INIT WAS
6182 023770 104455      TRAP  C$ERDF
6183 023772 000043      .WORD  35
6184 023774 005055      .WORD  EMO
6185 023776 010472      .WORD  ERR35
6186      ;NOT BLOCKED FROM CLEARING
6187      ;THE M8200,4,7
6188
6189 024000 000000      11$: .WORD  0      ;TEMP COUNT FOR STALL ON POWER UP.
6190
6191 024002 052711 040000      10$: BIS  #BIT14, (R1) ;CLR THE THING SO IT CAN'T ASSIRT AC LOW
6192      ;AGAIN!
6193 024006      MSTCLR
6194 024012      ERROR  17      ;ERROR GLIP GAVE US SECOUND UNEXPECTED
6195 024016 104455      TRAP  C$ERDF
6196 024020 000021      .WORD  17
6197 024022 005055      .WORD  EMO
6198 024024 010256      .WORD  ERR17
6199      ;ASSERTION OF AC LOW ON UNIBUS.
6200      ;FATEL TYPE OF ERROR.
6201 024026 062706 000004      ADD  #4, SP      ;RESTORE STACK.
6202 024032 012637 000024      MOV  (SP)+, @#24
6203 024036      MSTCLR
6204 024042      6$:
6205 024042      ENDTST
6206 024042      L10102:
6207 024042 104401      TRAP  C$ETST
6208
6209 024044      BADHEAD

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CZDMQEO M8207 STATIC DIAG #2
CZDMQE.P11 30-SEP-82 15:35

MACV11 30A(1052) 18-OCT-82 15:30 PAGE 148
HARDWARE TESTS

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6217 024044
6218
6219
6220 024044
6221 024044
6222 024044
6223 024044 013701 002516
6224 024050
6225 024054 005002
6226 024056 042737 000017 024104 1$:
6227 024064 156237 025100 024104
6228 024072 116261 025106 000004
6229 024100
6230 024100 004537 003044
6231 024104 121100 2$:
6232 024106 005202
6233 024110 022702 000005
6234 024114 001360
6235 024116 005002
6236 024120 042737 000017 024166 3$:
6237 024126 042737 000017 024202
6238 024134 042737 000017 024214
6239 024142 050237 024166
6240 024146 050237 024202
6241 024152 050237 024214
6242 024156 105061 000004
6243 024162
6244 024162 004537 003044
6245 024166 122100 4$:
6246 024170 112761 000377 000004
6247 024176
6248 024176 004537 003044
6249 024202 122100 5$:
6250 024204 110261 000004
6251 024210
6252 024210 004537 003044
6253 024214 122100 6$:
6254 024216 005202
6255 024220 022702 000010
6256 024224 001335
6257 024226 005002
6258 024230 042737 000017 024276 7$:
6259 024236 042737 000017 024312
6260 024244 042737 000017 024324
6261 024252 050237 024276
6262 024256 050237 024312
6263 024262 050237 024324
6264 024266 105061 000004
6265 024272

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***** TEST 33 *****
: MICRO-PROCESSOR NOISE TEST
: WRITE ALL ZERO'S THEN ALL ONE'S THEN A DATA PATTERN
: TO THE IBUS* AND IBUS REGISTERS AND TO THE SP AND MAIN MEM
: THEN GO BACK AND READ THE DATA PATTERNS TO VERIFY THAT
: READING AND WRITING OF OTHER LOCATIONS AND REGISTERS
: DID NOT CHANGE THE DATA.
BADHEAD
***** TEST 33 *****

BGNTST
T33::

MYINT
MOV KMCSR,R1 ;RECORD DEVICE ADDR.
MSTCLR ;MASTER CLEAR M8200.4,7
CLR R2 ;R2 IS INDEX REGISTER
BIC #17,2\$;CLEAR ADDRESS FIELD
BISB 30\$(R2),2\$;ADD IBUS* REG ADDRESS TO INSTRUCTION
MOVB 31\$(R2),4(R1) ;LOAD PORT4
ROMCLK ;NEXT WORD IS INSTRUCTION,
JSR R5,ROMCLK ;CLOCK INSTRUCTION
121100 ;WRITE IBUS* REGISTER
INC R2 ;INC INDEX REGISTER
CMP #5,R2 ;DONE YET?
BNE 1\$;BR IF NO
CLR R2 ;R2 IS IBUS REGISTER ADDRESS
BIC #17,4\$;CLEAR ADDRESS FIELD OF INSTRUCTIONS
BIC #17,5\$
BIC #17,6\$
BIS R2,4\$;ADD IBUS REG ADDRESS TO INSTRUCTION
BIS R2,5\$
BIS R2,6\$
CLRB 4(R1) ;CLEAR PORT4
ROMCLK ;NEXT WORD IS INSTRUCTION,
JSR R5,ROMCLK ;CLOCK INSTRUCTION
122100 ;WRITE 0 TO IBUS REG
MOVB #377,4(R1) ;LOAD PORT4
ROMCLK ;NEXT WORD IS INSTRUCTION,
JSR R5,ROMCLK ;CLOCK INSTRUCTION
122100 ;WRITE ALL ONES TO IBUS REG
MOVB R2,4(R1) ;LOAD PORT4
ROMCLK ;NEXT WORD IS INSTRUCTION,
JSR R5,ROMCLK ;CLOCK INSTRUCTION
122100 ;WRITE ITS OWN ADDRESS TO IBUS REG
INC R2 ;NEXT ADDRESS
CMP #10,R2 ;DONE YET?
BNE 3\$;BR IF NO
CLR R2 ;START AT SP ADDRESS 0
BIC #17,8\$;CLEAR ADDRESS FIELD
BIC #17,9\$
BIC #17,10\$
BIS R2,8\$;ADD ADDRESS TO INSTRUCTION
BIS R2,9\$
BIS R2,10\$
CLRB 4(R1) ;CLEAR PORT4
ROMCLK ;NEXT WORD IS INSTRUCTION,

CZDMQEO M8207 STATIC DIAG #2 MACV11 30A(1052) 18-OCT-82 15:30 PAGE 149
 CZDMQE.P11 30-SEP-82 15:35 HARDWARE TESTS

6266	024272	004537	003044			JSR	R5,,ROMCLK	:CLOCK INSTRUCTION
6267	024276	123100			8\$:	123100		:WRITE ZERO TO SP
6268	024300	112761	000377	000004		MOVB	#377,4(R1)	:LOAD PORT4
6269	024306					ROMCLK		:NEXT WORD IS INSTRUCTION,
6270	024306	004537	003044			JSR	R5,,ROMCLK	:CLOCK INSTRUCTION
6271	024312	123100			9\$:	123100		:WRITE ALL ONES TO SP
6272	024314	110261	000004			MOVB	R2,4(R1)	:LOAD PORT4
6273	024320					ROMCLK		:NEXT WORD IS INSTRUCTION,
6274	024320	004537	003044			JSR	R5,,ROMCLK	:CLOCK INSTRUCTION
6275	024324	123100			10\$:	123100		:WRITE SP ADDRESS TO ITSELF
6276	024326	005202				INC	R2	:NEXT SP ADDRESS
6277	024330	022702	000020			CMP	#20,R2	:DONE YET?
6278	024334	001335				BNE	7\$	:BR IF NO
6279	024336	005002				CLR	R2	:R2 = ,AOM ,E, ADDRESS
6280	024340					ROMCLK		:NEXT WORD IS INSTRUCTION,
6281	024340	004537	003044			JSR	R5,,ROMCLK	:CLOCK INSTRUCTION
6282	024344	010000				010000		:MAR - 0
6283	024346					ROMCLK		
6284	024346	004537	003044			JSR	R5,,ROMCLK	:CLOCK INSTRUCTION
6285	024352	004000				4000		
6286	024354	105061	000004		11\$:	CLRB	4(R1)	:CLEAR PORT4
6287	024360					ROMCLK		:NEXT WORD IS INSTRUCTION,
6288	024360	004537	003044			JSR	R5,,ROMCLK	:CLOCK INSTRUCTION
6289	024364	122500				122500		:WRITE ZEROS TO MEM
6290	024366	112761	000377	000004		MOVB	#377,4(R1)	:LOAD PORT4
6291	024374					ROMCLK		:NEXT WORD IS INSTRUCTION,
6292	024374	004537	003044			JSR	R5,,ROMCLK	:CLOCK INSTRUCTION
6293	024400	122500				122500		:WRITE ONES TO MEM
6294	024402	110261	000004			MOVB	R2,4(R1)	:LOAD PORT4
6295	024406					ROMCLK		:NEXT WORD IS INSTRUCTION,
6296	024406	004537	003044			JSR	R5,,ROMCLK	:CLOCK INSTRUCTION
6297	024412	136500				136500		:WRITE TO MEM IT OWN ADDRESS
6298	024414	005202				INC	R2	:NEXT MEM ADDRESS
6299	024416	022702	001000			CMP	#1000,R2	:DONE YET?
6300	024422	001354				BNE	11\$	:BR IF NO
6301								
6302								
6303								:NOW GO BACK AND READ EVERYTHIN
6304	024424					ROMCLK		:NEXT WORD IS INSTRUCTION,
6305	024424	004537	003044			JSR	R5,,ROMCLK	:CLOCK INSTRUCTION
6306	024430	010000				010000		:MAR 0
6307	024432					ROMCLK		:NEXT WORD IS INSTRUCTION,
6308	024432	004537	003044			JSR	R5,,ROMCLK	:CLOCK INSTRUCTION
6309	024436	004000				4000		:MAR HI - 0 (M8200,4,7 ONLY)
6310								
6311	024440	005737	002432			:WOULD BE CRAM CODE		
6312	024444	001452				IST	TYPE	
6313	024446	005005				BEQ	40\$	
6314	024450	042737	000360	024512	12\$:	CLR	R5	:R5 IS INDEX REGISTER
6315	024456	116502	025100			BIC	#360,13\$	:CLEAR ADDRESS FIELD
6316	024462	010203				MOVB	30\$(R5),R2	:R2 = IBUS* ADDRESS
6317	024464	006303				MOV	R2,R3	:PUT IBUS* ADDRESS IN R3
6318	024466	006303				ASL	R3	:SHIFT ADDRESS TO BITS 4-7
6319	024470	006303				ASL	R3	
6320	024472	006303				ASL	R3	
6321	024474	050337	024512			BIS	R3,13\$	:ADD ADDRESS TO INSTRUCTION

CZDMQEO M8207 STATIC DIAG #2 MACY11 30A(1052) 18-OCT-82 15:30 PAGE 150
 CZDMQE.P11 30-SEP-82 15:35 HARDWARE TESTS

6322	024500	116537	025106	002452		MOVB	31\$(R5), \$GDDAT	;\$GDDAT = 'EXPECTED'
6323	024506					ROMCLK		;NEXT WORD IS INSTRUCTION,
6324	024506	004537	003044			JSR	R5, .ROMCLK	;CLOCK INSTRUCTION
6325	024512	121004			13\$:	121004		;PORT4 = IBUS* REGISTER
6326	024514	016104	000004			MOV	4(R1), R4	;R4 = 'FOUND'
6327	024520	123704	002452			CMPB	\$GDDAT, R4	;IBUS* CONTENTS OK?
6328	024524	001416				BEQ	20\$	;BR IF YES
6329	024526	010237	002434			MOV	R2, MRO	
6330	024532	105037	002453			CLRB	\$GDDAT+1	
6331	024536	013705	002452			MOV	\$GDDAT, R5	
6332	024542					ERROR	29	;IBUS* DATA ERROR
6333	024546	104455				TRAP	C\$ERDF	
6334	024550	000035				.WORD	29	
6335	024552	005055				.WORD	EMO	
6336	024554	010350				.WORD	ERR29	
6337	024556					ESCAPE	TST	
6338	024556	104410				TRAP	C\$ESCAPE	
6339	024560	000334				.WORD	L10103-	
6340	024562	005205			20\$:	INC	R5	;INC COUNTER
6341	024564	022705	000005			CMP	#5, R5	;DONE YET?
6342	024570	001327				BNE	12\$	;BR IF NO
6343								
6344	024572				40\$:			
6345						;END CRAM, GENERAL TESTS		
6346								
6347	024572	005002				CLR	R2	;R2 = IBUS REG ADDRESS
6348	024574	042737	000360	024630	14\$:	BIC	#360, 15\$	;CLEAR ADDRESS FIELD OF INSTRUCTION
6349	024602	010203				MOV	R2, R3	;R3 = IBUS ADDRESS
6350	024604	006303				ASL	R3	;SHIFT ADDRESS TO BITS 4-7
6351	024606	006303				ASL	R3	
6352	024610	006303				ASL	R3	
6353	024612	006303				ASL	R3	
6354	024614	050337	024630			BIS	R3, 15\$	;ADD ADDRESS TO INSTRUCTION
6355	024620	010237	002452			MOV	R2, \$GDDAT	; \$GDDAT = 'EXPECTED'
6356	024624					ROMCLK		;NEXT WORD IS INSTRUCTION,
6357	024624	004537	003044			JSR	R5, .ROMCLK	;CLOCK INSTRUCTION
6358	024630	021004			15\$:	021004		;PORT4 = IBUS REG
6359	024632	016104	000004			MOV	4(R1), R4	;IBUS = 'FOUND'
6360	024636	123704	002452			CMPB	\$GDDAT, R4	;IBUS CONTENTS OK?
6361	024642	001410				BEQ	21\$	;BR IF YES
6362	024644	013705	002452			MOV	\$GDDAT, R5	
6363	024650					ERROR	29	;IBUS DATA ERROR
6364	024654	104455				TRAP	C\$ERDF	
6365	024656	000035				.WORD	29	
6366	024660	005055				.WORD	EMO	
6367	024662	010350				.WORD	ERR29	
6368	024664	005202			21\$:	INC	R2	;NEXT IBUS REGISTER
6369	024666	022702	000010			CMP	#10, R2	;DONE YET?
6370	024672	001340				BNE	14\$	;BR IF NO
6371	024674	005002				CLR	R2	;R2 = SP ADDRESS
6372	024676	042737	000017	024714	16\$:	BIC	#17, 17\$	;CLEAR ADDRESS FIELD OF INSTRUCTION
6373	024704	050237	024714			BIS	R2, 17\$	;ADD ADDRESS TO INSTRUCTION
6374	024710					ROMCLK		;NEXT WORD IS INSTRUCTION,
6375	024710	004537	003044			JSR	R5, .ROMCLK	;CLOCK INSTRUCTION
6376	024714	040600			17\$:	040600		;BR - SP
6377	024716	010237	002452			MOV	R2, \$GDDAT	; \$GDDAT = 'EXPECTED'

MACV11 30A(1052) 18-OCT-82 15:30 PAGE 151
HARDWARE TESTS

PC	Instruction	PC+1	PC+2	PC+3	PC+4	PC+5	PC+6	PC+7	PC+8	PC+9	PC+10	PC+11	PC+12	PC+13	PC+14	PC+15	PC+16	PC+17	PC+18	PC+19	PC+20	PC+21	PC+22	PC+23	PC+24	PC+25	PC+26	PC+27	PC+28	PC+29	PC+30	PC+31	PC+32	PC+33	PC+34	PC+35	PC+36	PC+37	PC+38	PC+39	PC+40	PC+41	PC+42	PC+43	PC+44	PC+45	PC+46	PC+47	PC+48	PC+49	PC+50	PC+51	PC+52	PC+53	PC+54	PC+55	PC+56	PC+57	PC+58	PC+59	PC+60	PC+61	PC+62	PC+63	PC+64	PC+65	PC+66	PC+67	PC+68	PC+69	PC+70	PC+71	PC+72	PC+73	PC+74	PC+75	PC+76	PC+77	PC+78	PC+79	PC+80	PC+81	PC+82	PC+83	PC+84	PC+85	PC+86	PC+87	PC+88	PC+89	PC+90	PC+91	PC+92	PC+93	PC+94	PC+95	PC+96	PC+97	PC+98	PC+99	PC+100	PC+101	PC+102	PC+103	PC+104	PC+105	PC+106	PC+107	PC+108	PC+109	PC+110	PC+111	PC+112	PC+113	PC+114	PC+115	PC+116	PC+117	PC+118	PC+119	PC+120	PC+121	PC+122	PC+123	PC+124	PC+125	PC+126	PC+127	PC+128	PC+129	PC+130	PC+131	PC+132	PC+133	PC+134	PC+135	PC+136	PC+137	PC+138	PC+139	PC+140	PC+141	PC+142	PC+143	PC+144	PC+145	PC+146	PC+147	PC+148	PC+149	PC+150	PC+151	PC+152	PC+153	PC+154	PC+155	PC+156	PC+157	PC+158	PC+159	PC+160	PC+161	PC+162	PC+163	PC+164	PC+165	PC+166	PC+167	PC+168	PC+169	PC+170	PC+171	PC+172	PC+173	PC+174	PC+175	PC+176	PC+177	PC+178	PC+179	PC+180	PC+181	PC+182	PC+183	PC+184	PC+185	PC+186	PC+187	PC+188	PC+189	PC+190	PC+191	PC+192	PC+193	PC+194	PC+195	PC+196	PC+197	PC+198	PC+199	PC+200	PC+201	PC+202	PC+203	PC+204	PC+205	PC+206	PC+207	PC+208	PC+209	PC+210	PC+211	PC+212	PC+213	PC+214	PC+215	PC+216	PC+217	PC+218	PC+219	PC+220	PC+221	PC+222	PC+223	PC+224	PC+225	PC+226	PC+227	PC+228	PC+229	PC+230	PC+231	PC+232	PC+233	PC+234	PC+235	PC+236	PC+237	PC+238	PC+239	PC+240	PC+241	PC+242	PC+243	PC+244	PC+245	PC+246	PC+247	PC+248	PC+249	PC+250	PC+251	PC+252	PC+253	PC+254	PC+255	PC+256	PC+257	PC+258	PC+259	PC+260	PC+261	PC+262	PC+263	PC+264	PC+265	PC+266	PC+267	PC+268	PC+269	PC+270	PC+271	PC+272	PC+273	PC+274	PC+275	PC+276	PC+277	PC+278	PC+279	PC+280	PC+281	PC+282	PC+283	PC+284	PC+285	PC+286	PC+287	PC+288	PC+289	PC+290	PC+291	PC+292	PC+293	PC+294	PC+295	PC+296	PC+297	PC+298	PC+299	PC+300	PC+301	PC+302	PC+303	PC+304	PC+305	PC+306	PC+307	PC+308	PC+309	PC+310	PC+311	PC+312	PC+313	PC+314	PC+315	PC+316	PC+317	PC+318	PC+319	PC+320	PC+321	PC+322	PC+323	PC+324	PC+325	PC+326	PC+327	PC+328	PC+329	PC+330	PC+331	PC+332	PC+333	PC+334	PC+335	PC+336	PC+337	PC+338	PC+339	PC+340	PC+341	PC+342	PC+343	PC+344	PC+345	PC+346	PC+347	PC+348	PC+349	PC+350	PC+351	PC+352	PC+353	PC+354	PC+355	PC+356	PC+357	PC+358	PC+359	PC+360	PC+361	PC+362	PC+363	PC+364	PC+365	PC+366	PC+367	PC+368	PC+369	PC+370	PC+371	PC+372	PC+373	PC+374	PC+375	PC+376	PC+377	PC+378	PC+379	PC+380
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CZDMQEO M8207 STATIC DIAG #2
CZDMQE.P11 30-SEP-82 15:35

MACV11 30A(1052) 18-OCT-82 15:30 PAGE 152
HARDWARE TESTS

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6431
6432          025114          .EVEN
6433
6434          025114          ENDTST
6435          025114          L10103:
6436          025114 104401    TRAP    C$ETST
6437
6438          025116          BADHEAD
6439          :***** TEST 34 *****
6440          :* THIS TEST IS DESIGNED TO MAKE SURE THAT A NODST INSTRUCTION
6441          :* DOES NOT WRITE INTO PORT B OF THE MULTIPOINT RAM.
6442          :* TO DO THIS, WE'LL PUT A 125 INTO INDAT2, THEN WE'LL PUT A
6443          :* 125 INTO BOTH SP1 AND BR. LAST WE'LL DO A NODST BR, SUBOC, SP1
6444          :* IF THERE IS A WRITE INTO PORTB, INDAT2 WILL CONTAIN A 377.
6445          025116          BADHEAD
6446          :***** TEST 34 *****
6447
6448          025116          BGNSTST
6449          025116          T34::
6450          025116          MYINT
6451          025116 013701 002516    MOV    KMCSR, R1          ;RECORD DEVICE ADDR.
6452          025122          ROMCLK
6453          025122 004537 003044    JSR    R5, .ROMCLK        ;CLOCK INSTRUCTION
6454          025126 000525          00525          ;PUT A 125 INTO BRG.
6455          025130          ROMCLK
6456          025130 004537 003044    JSR    R5, .ROMCLK        ;CLOCK INSTRUCTION
6457          025134 062221          062221          ;NOW INTO 0IDAT2
6458          025136          ROMCLK
6459          025136 004537 003044    JSR    R5, .ROMCLK        ;CLOCK INSTRUCTION
6460          025142 063221          63221          ;NOW INTO SP1
6461          025144          ROMCLK
6462          025144 004537 003044    JSR    R5, .ROMCLK        ;CLOCK INSTRUCTION
6463          025150 060361          060361          ;NOW THE 'NODST BR, SUBOC, SP1'
6464          :THE NODST SHOULD NOT MODIFY INDAT2!
6465
6466          025152          ROMCLK
6467          025152 004537 003044    JSR    R5, .ROMCLK        ;CLOCK INSTRUCTION
6468          025156 020420          020420          ;PUT CONTENT OF INDAT2 IN BRG.
6469
6470          025160          ROMCLK
6471          025160 004537 003044    JSR    R5, .ROMCLK        ;CLOCK INSTRUCTION
6472          025164 061220          061220          ;PUT BRG INTO BSEL0
6473
6474          025166 111104          MOVB    (R1), R4          ;SEE WHAT CAME BACK.
6475          025170 012705 000125    MOV    #125, R5          ;SHOULD BE 125 IF 377 CAME BACK.
6476          :YOU CAN BET THAT THE 'NODST' WROTE
6477          :INTO THE MULTIPOINT RAM! WATCH SIGNAL
6478          : 'D1 WRITE OUT L'
6479
6480          025174 020405          CMP     R4, R5          ;NOW LOOK.
6481          025176 001406          BEQ     10$
6482
6483          025200          ERROR    7
6484          025204 104455          TRAP    C$ERDF
6485          025206 000007          .WORD    7
6486          025210 005055          .WORD    EMO

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CZDMQEO M8207 STATIC DIAG #2
CZDMQE.P11 30-SEP-82 15:35

MACY11 30A(1052) 18-OCT-82 15:30 PAGE 153
HARDWARE TESTS

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6487 025212 007026          .WORD  ERR7
6488
6489 025214          10$:
6490 025214          L10104:  ENDTST
6491 025214          TRAP  C$ETST
6492 025214 104401
6493
6494 025216          BADHEAD
6495          :***** TEST 35 *****
6496          :
6497          :* EXTENDED CRAM TEST FOR M8206. IN THIS TEST WE WILL LOAD DATA
6498          :* THROUGHOUT THE CRAM (TEST DATA IS JUST 4K OF DIAG. CODE) AND
6499          :* THEN READ IT BACK AND VERIFY THAT IT IS CORRECT.
6500 025216          BADHEAD
6501          :***** TEST 35 *****
6502
6503 025216          BGNTST
6504 025216          T35::
6505 025216          SKIP06 10$          ;DO TEST ONLY IF IT IS A M8206
6506          :GOTO 10$ IF M8206
6507 025226          EXIT  TST          ;OTHERWISE,SKIP TEST.
6508 025226 104432          TRAP  C$EXIT
6509 025230 000132          .WORD  L10105-.
6510
6511 025232          10$:  MYINT
6512 025232 013701 002516          MOV  KMCSR,R1          ;RECORD DEVICE ADDR.
6513
6514 025236 012702 012146          MOV  #ROMMAP,R2          ;GET ADDR. OF LIST.
6515
6516 025242 012711 002000          MOV  #2000,(R1)          ;SET TO WRITE DATA.
6517 025246 005003          CLR  R3          ;CRAM ADDR ZERO.
6518
6519 025250 010361 000004          15$:  MOV  R3,4(R1)          ;SET ADDR.
6520 025254 012261 000006          MOV  (R2)+,6(R1)          ;WRITE DATA.
6521
6522 025260 020337 002436          CMP  R3,MEMSZ          ;DONE WHOLE CRAM?
6523 025264 001402          BEQ  20$          ;YES,EXIT THIS LOOP.
6524 025266 005203          INC  R3          ;NO,UPDAT ADDR.
6525 025270 000767          BR  15$
6526 025272 005003          20$:  CLR  R3          ;NOW WE WILL READ BACK,STARTING AT
6527          :CRAM ADDR. ZERO.
6528 025274 012705 012146          MOV  #ROMMAP,R5          ;GET ADDR. LIST OF DATA
6529
6530 025300 010361 000004          30$:  MOV  R3,4(R1)          ;SET ADDR.
6531
6532 025304 011502          MOV  (R5),R2          ;PUT EXPECTED INTO R2
6533 025306 016104 000006          MOV  6(R1),R4          ;READ ACCUAL
6534 025312 020204          CMP  R2,R4          ;EQUAL?
6535 025314 001411          BEQ  40$          ;YES,CONTINUE.
6536 025316 010300          MOV  R3,R0
6537
6538 025320          ERROR  1          ;ERROR CRAM DATA TEST,DATA
6539 025324 104455          TRAP  C$ERDF
6540 025326 000001          .WORD  1
6541 025330 005055          .WORD  EMO
6542 025332 006032          .WORD  ERR1

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CZDMQEO M8207 STATIC DIAG #2
CZDMQE.P11 30-SEP-82 15:35

MACY11 30A(1052) 18-OCT-82 15:30 PAGE 154
HARDWARE TESTS

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6543                                     ;READ NOT DATA THAT WAS WRITTEN.
6544
6545 025334      ESCAPE TST
6546 025334 104410 TRAP C$ESCAPE
6547 025336 000024 .WORD L10105-.
6548 025340 020337 002436 40$: CMP R3, MEMS2
6549 025344 001002 BNE 50$                                     ;ALL DONE?
6550
6551 025346      EXIT TST
6552 025346 104432 TRAP C$EXIT
6553 025350 000012 .WORD L10105-.
6554
6555 025352 005203 50$: INC R3                                     ;UPDATE ADDR.
6556 025354 062705 000002 ADD #2, R5
6557 025360 000747 BR 30$
6558
6559 025362      ENDTST
6560 025362 L10105: TRAP C$ETST
6561 025362 104401
6562
6563
6564 025364      BADHEAD
6565      ;***** TEST 36 *****
6566      ;*
6567      ;* THIS TEST LOADS MICRO-CODE INTO A M8206 MCPU THEN EXECTUES IT.
6568      ;* THE MICRO CODE IS DESIGNED TO WRITE ALL ONES INTO THE SEL REGS.
6569      ;* THIS TEST IS ONLY PERFORMED ON AN M8206.
6570 025364      BADHEAD
6571      ;***** TEST 36 *****
6572
6573 025364      BGNTST
6574 025364 136::
6575
6576 025364      SKIP06 1$                                     ;ONLY DO THIS TEST IF M8206
6577      ;GOTO 1$ IF M8206
6578 025374      EXIT TST
6579 025374 104432 TRAP C$EXIT
6580 025376 000442 .WORD L10106-.
6581
6582 025400      1$: MYINT
6583 025400 013701 002516 MOV KMCSR, R1                                     ;RECORD DEVICE ADDR.
6584
6585 025404 004537 026006 JSR R5, LOADER                                     ;LOAD THE MICRO CODE
6586
6587 025410 000777 777                                     ;MOVE #377, BRG
6588 025412 061220 061220                                     ;MOVE BRG, BSEL0
6589 025414 061222 061222                                     ;MOVE BRG, BSEL2
6590 025416 061223 061223                                     ;MOVE BRG, BSEL3
6591 025420 061224 061224                                     ;MOVE BRG, BSEL4
6592 025422 061225 061225                                     ;MOVE BRG, BSEL5
6593 025424 061226 061226                                     ;MOVE BRG, BSEL6
6594 025426 061227 061227                                     ;MOVE BRG, BSEL7
6595 025430 123000 123000                                     ;MOVE BSEL0, SPO
6596 025432 101410 101410                                     ;BRANCH BACK ONE UNTIL <>377
6597
6598 025434 000400 400                                     ;MOVE #0, BRG

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CZDMQEO M8207 STATIC DIAG #2
CZDMQE.P11 30-SEP-82 15:35

MACY11 30A(1052) 18-OCT-82 15:30 PAGE 155
HARDWARE TESTS

SEQ 154

6599	025436	061220		61220		:MOVE BRG,BSEL0
6600	025440	061222		61222		:MOVE BRG,BSEL2
6601	025442	061223		61223		:MOVE BRG,BSEL3
6602	025444	061224		61224		:MOVE BRG,BSEL4
6603	025446	061225		61225		:MOVE BRG,BSEL5
6604	025450	061226		61226		:MOVE BRG,BSEL6
6605	025452	061227		61227		:MOVE BRG,BSEL7
6606	025454	123000		123000		:MOVE BSEL0,SP0
6607	025456	104022		104022		:BRANCH BACK ONE LOCATION.
6608	025460	177777		177777		
6609						
6610	025462	012711	040000	MOV	#040000,(R1)	:INITIALIZE MCPU
6611	025466	012711	100000	MOV	#100000,(R1)	:START CPU.
6612						
6613	025472	012700	000062	MOV	#50.,R0	:THE CYCLE TIME ON THE M8206 IS
6614						:200NS. WE ARE ASKING THE MCPU TO
6615						:DO 8 INSTRUCTIONS. WE'LL DELAY
6616						:100 PDP11 INSTRUCTIONS
6617						:THIS REALLY SHOULD BE PLENTY OF TIME.
6618						
6619	025476	005300		20\$: DEC	R0	
6620	025500	001376		BNE	20\$	
6621						
6622	025502	005005		CLR	R5	:JUST FOR TYPEOUT.
6623	025504	012705	000377	MOV	#377,R5	:EXPECT 377
6624	025510	111104		MOVB	(R1),R4	:READ MCPU
6625	025512	120405		CMPB	R4,R5	:SEE IF OK.
6626	025514	001410		BEQ	30\$	
6627						
6628	025516			ERROR	29	:ERROR! MCPU WAS TO WRITE ALL
6629	025522	104455		TRAP	C\$ERDF	
6630	025524	000035		.WORD	29	
6631	025526	005055		.WORD	EM0	
6632	025530	010350		.WORD	ERR29	
6633						:ONES INTO BSEL0,BUT INSTEAD FAILED.
6634	025532			ESCAPE	TST	
6635	025532	104410		TRAP	C\$ESCAPE	
6636	025534	000304		.WORD	L10106-.	
6637						
6638	025536	012705	177777	30\$: MOV	#177777,R5	:EXPECT ALL ONES
6639	025542	016104	000002	MOV	2(R1),R4	:RECIEVED
6640	025546	020405		CMP	R4,R5	:RECIEVE OK?
6641	025550	001410		BEQ	40\$	
6642						
6643	025552			ERROR	29	:ERROR! MCPU WAS TO WRITE ALL ONES
6644	025556	104455		TRAP	C\$ERDF	
6645	025560	000035		.WORD	29	
6646	025562	005055		.WORD	EM0	
6647	025564	010350		.WORD	ERR29	
6648						:INTO BSEL 2&3
6649						
6650	025566			ESCAPE	TST	
6651	025566	104410		TRAP	C\$ESCAPE	
6652	025570	000250		.WORD	L10106-.	
6653						
6654	025572	016104	000004	40\$: MOV	4(R1),R4	:READ BSEL 4&5

CZDMQEO M8207 STATIC DIAG #2
CZDMQE.P11 30-SEP-82 15:35

MACY11 30A(1052) 18-OCT-82 15:30 PAGE 156
HARDWARE TESTS

SEQ 155

6655	025576	020405			CMP	R4,R5			
6656	025600	001410			BEQ	50\$			;READ OK?
6657									
6658	025602				ERROR	29			
6659	025606	104455			TRAP	C\$ERDF			;ERROR! FAILED TO WRITE BSEL \$85
6660	025610	000035			.WORD	29			
6661	025612	005055			.WORD	EMO			
6662	025614	010350			.WORD	ERR29			
6663									; TO ALL ONES.
6664	025616				ESCAPE	TST			
6665	025616	104410			TRAP	C\$ESCAPE			
6666	025620	000220			.WORD	L10106-			
6667									
6668	025622	016104	000006	50\$:	MOV	6(R1),R4			;READ BSEL 687
6669	025626	020405			CMP	R4,R5			;READ OK?
6670	025630	001410			BEQ	60\$			
6671									
6672	025632				ERROR	29			
6673	025636	104455			TRAP	C\$ERDF			;ERROR! FAILED TO WRITE BSEL 687
6674	025640	000035			.WORD	29			
6675	025642	005055			.WORD	EMO			
6676	025644	010350			.WORD	ERR29			
6677									; TO ALL ONES.
6678	025646				ESCAPE	TST			
6679	025646	104410			TRAP	C\$ESCAPE			
6680	025650	000170			.WORD	L10106-			
6681	025652	105011		60\$:	CLRB	(R1)			;SIGNAL MCPU TO WRITE ALL ZEROS.
6682	025654	005005			CLR	R5			;EXPECT TO READ ALL ZEROS.
6683									
6684	025656	005024			CLR	R4			
6685	025660	111104			MOVB	(R1),R4			;READ BSEL0
6686	025662	001410			BEQ	70\$			;EXPECT ZERO.
6687									
6688	025664				ERROR	29			;MCPU FAILED TO CLEAR BSEL0
6689	025670	104455			TRAP	C\$ERDF			
6690	025672	000035			.WORD	29			
6691	025674	005055			.WORD	EMO			
6692	025676	010350			.WORD	ERR29			
6693									
6694	025700				ESCAPE	TST			
6695	025700	104410			TRAP	C\$ESCAPE			
6696	025702	000136			.WORD	L10106-			
6697	025704	016104	000002	70\$:	MOV	2(R1),R4			;READ BSEL 283
6698	025710	001410			BEQ	80\$			;IF ZERO,OK
6699									
6700	025712				ERROR	29			;MCPU FAILED TO CLEAR BSEL 283
6701	025716	104455			TRAP	C\$ERDF			
6702	025720	000035			.WORD	29			
6703	025722	005055			.WORD	EMO			
6704	025724	010350			.WORD	ERR29			
6705	025726				ESCAPE	TST			
6706	025726	104410			TRAP	C\$ESCAPE			
6707	025730	000110			.WORD	L10106-			
6708	025732			80\$:					
6709	025732	016104	000004		MOV	4(R1),R4			;READ BSEL 485
6710	025736	001410			BEQ	90\$			

CZDMQEO M8207 STATIC DIAG #2
CZDMQE.P11 30-SEP-82 15:35

MACY11 30A(1052) 18-OCT-82 15:30 PAGE 157
HARDWARE TESTS

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6711
6712 025740          ERROR 29          ;MCPU FAILED TO CLEAR BSEL 485
6713 025744 104455   TRAP  C$ERDF
6714 025746 000035   .WORD 29
6715 025750 005055   .WORD EMO
6716 025752 010350   .WORD ERR29
6717 025754          ESCAPE TST
6718 025754 104410   TRAP  C$ESCAPE
6719 025756 000062   .WORD L10106-.
6720 025760
6721 025760 016104 000006 90$: MOV 6(R1),R4          ;READ BSEL 687
6722 025764 001406   BEQ 95$
6723
6724 025766          ERROR 29          ;MCPU FAILED TO CLEAR BSEL 687
6725 025772 104455   TRAP  C$ERDF
6726 025774 000035   .WORD 29
6727 025776 005055   .WORD EMO
6728 026000 010350   .WORD ERR29
6729
6730 026002          95$: EXIT TST
6731 026002 104432   TRAP  C$EXIT
6732 026004 000034   .WORD L10106-.
6733
6734
6735
6736
6737
6738
6739 026006 012711 002000  LOADER: MOV #2000,(R1)
6740
6741 026012 005000          CLR R0
6742
6743 026014 010061 000004 10$: MOV R0,4(R1)          ;SET ADDR.
6744 026020 005200          INC R0
6745 026022 011561 000006   MOV (R5),6(R1)          ;WRITE MICRO CODE.
6746 026026 022527 177777   CMP (R5)+,#177777      ;SEE IF TERM.
6747 026032 001370          BNE 10$
6748 026034 005011          CLR (R1)
6749 026036 000205          RTS R5
6750
6751 026040          ENDTST
6752 026040          L10106: TRAP C$ETST
6753 026040 104401
6754
6755 026042          BADHEAD
6756          ;***** TEST 37 *****
6757          ;*
6758          ;*NEGATIVE ADDRESS TEST.
6759          ;* IN THIS TEST, WE'LL MAKE SURE THAT THE M8207
6760          ;* DOES NOT RESPOND TO AN ADDRESS THAT ISN'T ASSIGNED
6761          ;* TO IT
6762          ;*
6763 026042          BADHEAD
6764          ;***** TEST 37 *****
6765
6766 026042          BGN1ST

```

CZDMQEO M8207 STATIC DIAG #2
CZDMQE.P11 30-SEP-82 15:35

MACV11 30A(1052) 18-OCT-82 15:30 PAGE 158
HARDWARE TESTS

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6767 026042
6768 026042
6769 026042 013701 002516
6770
6771 026046 012711 000641
6772 026052 012737 026130 000004
6773 026060 005037 000006
6774 026064 012702 160000
6775
6776 026070 022712 000641 10$: CMP #641,(R2) ;SEE IF CONTENTS OF THE ADDRESS
6777 ;POINTED TO BY R2 EQUALS THE CONTENTS
6778 ;OF THE MCPU CSR
6779 026074 001420 BEQ 40$
6780
6781 026076 062702 000002 15$: ADD #2,R2 ;UPDATE ADDRESS.
6782 026102 020227 177700 CMP R2,#17770C ;DONE? ;80
6783 026106 001370 BNE 10$ ;NO-LOOP
6784
6785 026110 013737 002464 000004 17$: MOV SAVE4,@#4 ;RESTORE TRAP CATCHER
6786 026116 013737 002466 000006 MOV SAVE6,@#6 ;FROM VALUES SAVED BY INIT SECTION
6787 026124 EXIT TST ;EXIT, ALL DONE
6788 026124 104432 TRAP C$EXIT
6789 026126 000052 .WORD L10107-
6790
6791 026130 062706 000004 20$: ADD #4,SP ;SAVE FROM TRAP
6792 026134 000760 BR 15$ ;LOOP
6793
6794 026136 40$: ;*OH NO, WE MAY HAVE A DUAL ADDRESS PROBLEM!
6795
6796 026136 012711 000174 MOV #174,(R1) ;WRITE NEW PATTERN IN MCPU CSR
6797 026142 022712 000174 CMP #174,(R2) ;DID NEW PATTERN SHOW UP IN ADDR?
6798 026146 001403 BEQ 60$
6799
6800 026150 012711 000641 50$: MOV #641,(R1) ;PUT OLD PATTERN BACK IN MCPU CSR.
6801 026154 000750 BR 15$ ;LOOP
6802
6803 026156 020102 60$: CMP R1,R2 ;IS THIS THE MCPU ADDRESS?
6804 026160 001773 BEQ 50$ ;YES-NO ERROR
6805
6806 026162 ERROR 40 ;DUAL ADDRESS ERROR
6807 026166 104455 TRAP C$ERDF
6808 026170 000050 .WORD 40
6809 026172 005055 .WORD EMO
6810 026174 010636 .WORD ERR40
6811 026176 000744 BR 17$
6812
6813 026200
6814 026200 L10107: ENDTST
6815 026200 104401 TRAP C$ETST
6816
6817 026202 BADHEAD
6818 ;***** TEST 38 *****
6819 ;
6820 ;*BYTE ADDRESSING TEST
6821 ;* HERE, WE'RE GOING TO MAKE SURE THAT WE CAN
6822 ;* WRITE INTO ONLY A HIGH OR LOW BYTE OF THE MCPU.

```

CZDMQEO M8207 STATIC DIAG #2
CZDMQE.P11 30-SEP-82 15:35

MACV11 30A(1052) 18-OCT-82 15:30 PAGE 159
HARDWARE TESTS

```

6823
6824 026202
6825
6826
6827 026202
6828 026202
6829 026202
6830 026202 013701 002516
6831 026206 005061 000002
6832 026212 112761 177777 000002
6833
6834 026220 032761 177400 000002
6835 026226 001410
6836
6837 026230
6838 026234 104455
6839 026236 000051
6840 026240 005055
6841 026242 010702
6842 026244
6843 026244 104410
6844 026246 000040
6845
6846 026250 005051 000002
6847 026254 112761 177777 000003
6848 026262 032761 000377 000002
6849 026270 001406
6850
6851 026272
6852 026276 104455
6853 026300 000052
6854 026302 005055
6855 026304 010744
6856
6857
6858 026306
6859 026306
6860 026306
6861 026306 104401
6862
6863 026310
6864
6865
6866
6867
6868
6869
6870 026310
6871
6872
6873 026310
6874 026310
6875 026310
6876
6877 026320
6878 026320 104432

:
:
:
:***** TEST 38 *****
:
:
:
T38::
BGNTST
MYINT
MOV KMCSR,R1 ;RECORD DEVICE ADDR.
CLR 2(R1) ;CLEAR CSR
MOVB #-1,2(R1) ;WRITE ALL ONES INTO LOW BYTE
;OF CSR
BIT #177400,2(R1) ;SEE IF HIGH BYTE GOT WRITTEN
BEQ 10$
ERROR 41 ;HIGH BYTE GOT WRITTEN INTO ON A LOW BYTE
TRAP C$ERDF
.WORD 41
.WORD EMO
.WORD ERR41
ESCAPE TST ;OPERATION
TRAP C$ESCAPE
.WORD L10110-.
10$:
CLR 2(R1)
MOVB #-1,3(R1) ;WRITE INTO HIGH BYTE
BIT #377,2(R1) ;SEE IF LOW BYTE GOT WRITTEN
BEQ 20$
ERROR 42 ;LOW BYTE GOT WRITTEN INTO ON A
TRAP C$ERDF
.WORD 42
.WORD EMO
.WORD ERR42
;HIGH BYTE OPERATION.
20$:
ENDTST
L10110:
TRAP C$ETST
:
:
:
:***** TEST 39 *****
:
:
:
:IN THIS TEST WE'RE GOING TO MAKE SURE THAT THE PC
:REG COUNTS UP PROPERLY. THE PC REG SHOULD INCREMENT
:ONCE AFTER EACH INSTRUCTION.
:
:
:
:***** TEST 39 *****
:
:
:
T39::
BGNTST
SKIP07 10$ ;ONLY DO IF M8207
GOTO 10$ IF M8207
EXIT TST
TRAP C$EXIT

```

CZDMQEO MB207 STATIC DIAG #2
CZDMQE.P11 30-SEP-82 15:35

MACY11 30A(1052) 18-OCT-82 15:30 PAGE 160
HARDWARE TESTS

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6879 026322 000122 .WORD L10111-.
6880
6881 026324 10$: MYINT
6882 026324 013701 002516 MOV KMCSR,R1 ;RECORD DEVICE ADDR.
6883 026330 MSTCLR
6884 026334 ROMCLK
6885 026334 004537 003044 JSR R5,.ROMCLK ;CLOCK INSTRUCTION
6886 026340 000400 400
6887 026342 ROMCLK
6888 026342 004537 003044 JSR R5,.ROMCLK ;CLOCK INSTRUCTION
6889 026346 061233 61233
6890 026350 SROMCLK
6891 026350 004537 003100 JSR R5,.SROMCLK
6892 026354 100000 100000
6893 026356 012705 000001 MOV #1,R5 ;START AT ZERO
6894
6895 026362 20$: ROMCLK ;READ PC HIGH REG.
6896 026362 004537 003044 JSR R5,.ROMCLK ;CLOCK INSTRUCTION
6897 026366 121265 121265
6898
6899 026370 ROMCLK ;READ PC LOW REG.
6900 026370 004537 003044 JSR R5,.ROMCLK ;CLOCK INSTRUCTION
6901 026374 121244 121244
6902 026376 016104 000004 MOV 4(R1),R4 ;GET WHOLE PICTURE
6903 026402 042704 170000 BIC #170000,R4
6904 026406 020405 CMP R4,R5 ;INCREMENT OK?
6905 026410 001410 BEQ 30$
6906
6907 026412 ERROR 47 ;PC FAILED TO INCREMENT PROPERLY
6908 026416 104455 TRAP C$ERDF
6909 026420 000057 .WORD 47
6910 026422 005055 .WORD EMO
6911 026424 011264 .WORD ERR47
6912
6913 ;SHOULD INCREMENT BY ONE
6914 026426 ;FOR EACH INSTRUCTION.
6915 026426 104410 ESCAPE TST
6916 026430 000014 TRAP C$ESCAPE
6917 .WORD L10111-.
6918 026432 062705 000002 30$: ADD #2,R5 ;UPDATE EXPECTED ADDRESS BY 2.
6919 026436 020527 000777 CMP R5,#777
6920 026442 001347 BNE 20$
6921
6922 026444 L10111: ENDIST
6923 026444 TRAP C$ETST
6924 026444 104401
6925
6926 026446 BADHEAD
6927 ;***** TEST 40 *****
6928 ;
6929 ;*IN THIS TEST WE'LL MAKE SURE THAT 'BRANCH FIELD H' DOESN'T
6930 ;*GET SUCH HIGH.
6931 ;*FIRST WE'LL CLEAR THE PC HIGH REG. THEN WE'LL DO A BRANCH INSTR
6932 ;*WITH BAB BITS 11&12 SET. IF PCR BITS 8&9 SET THEN WE'LL KNOW
6933 ;*WE WERE SUCCESSFUL IF PCR BITS 8&9 FAIL TO SET, WE'LL KNOW
6934 ;*THAT THE MUX SELECTED THE WRONG INPUT TO BE CLOCKED INTO THE PCR.

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CZDMQEO M8207 STATIC DIAG #4
CZDMQE.P11 30-SEP-82 15:35

MACV11 30A(1052) 18-OCT-82 15:30 PAGE 161
HARDWARE TESTS

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6935
6936 026446
6937
6938
6939 026446
6940 026446
6941 026446
6942
6943 026456
6944 026456 104432
6945 026460 000062
6946
6947 026462
6948 026462 013701 002516
6949 026466
6950
6951 026472
6952 026472 004537 003044
6953 026476 114400
6954
6955 026500
6956 026500 004537 003044
6957 026504 121265
6958
6959 026506 116105 000005
6960 026512 112704 000003
6961 026516 042705 177774
6962 026522 020405
6963 026524 001406
6964
6965 026526
6966 026532 104455
6967 026534 000017
6968 026536 005055
6969 026540 010006
6970
6971
6972 026542
6973 026542
6974 026542
6975 026542 104401
6976
6977 026544
6978
6979
6980
6981
6982
6983
6984
6985
6986
6987 026544
6988
6989
6990 026544

; *
; BADHEAD
; ***** TEST 40 *****
;
T40:: BGN!ST
SKIP07 10$ ; ONLY DO IF M8207
; GOTO 10$ IF M8207
EXIT TST
TRAP C$EX!T
; .WORD L10112-.

10$: MYINT ; INITIALIZE PARAMETERS
MOV KMCSR,R1 ; RECORD DEVICE ADDR.
MSTCLR ; CLEAR DEVICE.

ROMCLK ; DO A 'BRANCH ALWAYS' WITH
JSR R5,.ROMCLK ; CLOCK INSTRUCTION
114400 ; BAB BITS 11&12 SET THIS SHOULD CLOCK
; THESE BITS INTO BITS 8&9 OF THE PCR.
; NOW READ THE PCR HIGH
ROMCLK
JSR R5,.ROMCLK ; CLOCK INSTRUCTION
121265 ; AND PUT INTO PORTS.
; REG. BR NO CLK OF BAB BITS
; READ THE PCR.
; EXPECT BITS 8,9 TO BE SET.
; STRIP ANY JUNK
; OK?
;
MOV8 5(R1),R5
MOV8 #3,R4
BIC #177774,R5
CMP R4,R5
BEQ 20$

ERROR 15 ; 'BRANCH FIELD H' STUCK HIGH OR
TRAP C$ERDF
; .WORD 15
; .WORD EMO
; .WORD ERR15

; OTHER PROBLEM IN THIS AREA.

20$:
L10112: ENDTST
TRAP C$ETST

; *
; BADHEAD
; ***** TEST 41 *****
;
; IN THIS TEST WE'RE GOING TO MAKE SURE THAT ONLY SPO
; IS SELECTED FOR SOURCE WHEN THE DESTINATION
; IS THE OUTBUS
; FIRST WE'LL WRITE EACH SP ADDRS INTO ITSELF THEN WE'LL
; MOV SP TO OBUS4. THAT SHOULD SELECT
; SP ADDRESS 0. IF ANY OTHER DATA SHOWS UP, WE'LL
; BLAME IT ON THE SELECTION OF A DIFFERENT SCRATCH PAD.
; BADHEAD
; ***** TEST 41 *****
;
BGN!ST

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CZDMQEO M8207 STATIC DIAG #2
CZDMQE.P11 30-SEP-82 15:35

MACV11 30A(1052) 18-OCT-82 15:30 PAGE 162
HARDWARE TESTS

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6991 026544          T41::
6992 026544          MYINT
6993 026544 013701 002516  MOV    KMCSR,R1          ;RECORD DEVICE ADDR.
6994 026550 005005          CLR    R5          ;START WITH ADDR-ZERO
6995
6996 026552 042737 000017 026574 10$: BIC    #17,20$          ;STRIP SP ADDR FIELD FROM INSTR
6997 026560 010551 000004          MOV    R5,4(R1)          ;PUT SP ADDR INTO PORT4.
6998 026564 050537 026574          BIS    R5,20$          ;ADD SP ADDR TO INSTR.
6999 026570          ROMCLK
7000 026570 004537 003044          JSR    R5,.ROMCLK          ;CLOCK INSTRUCTION
7001 026574 123100          20$: 123100          ;WRITE TO SP
7002 026576 005205          INC    R5          ;UPDATE ADDRESS
7003 026600 120527 000020          CMPB   R5,#20          ;IF NOT THROUGH, REPEAT.
7004 026604 001362          BNE    10$
7005
7006 026606          ROMCLK          ;NOW MOV SPO TO OBUS* PORT4
7007 026606 004537 003044          JSR    R5,.ROMCLK          ;CLOCK INSTRUCTION
7008 026612 061204          061204          ;
7009 026614 116104 000004          MOVB   4(R1),R4          ;READ PORT4 IT S/B ZERO
7010 026620 001410          BEQ    30$
7011 026622 012705 000000          MOV    #0,R5
7012 026626          ERROR    43          ;SPO NOT SELECTED FOR SOURCE-SEE
7013 026632 104455          TRAP   C$ERDF
7014 026634 000053          .WORD   43
7015 026636 005055          .WORD   EMO
7016 026640 011006          .WORD   ERR43
7017
7018
7019 026642          30$:  ENDTST
7020 026642          L10113:
7021 026642 104401          TPAP   C$ETST
7022
7023 026644          BADHEAD
7024          ;***** TEST 42 *****
7025          ;
7026          ;*IN THIS TEST WE ARE GOING TO MAKE SURE THAT THE
7027          ;*SIGNAL 'MOV INST H' (AND ITS ASSOC. TRIBS) DOESN'T GET
7028          ;*STUCK HIGH. IN ORDER TO DO THIS WE'LL CLEAR THE PC HIGH REG
7029          ;*PUT KNOWN DATA IN THE BREG AND SP1 THEN WE'LL A BRANCH
7030          ;*WITH CROM BITS 0-3 SET AS WELL AS CROM BIT 9 WITH CROM BITS 8 AND 11 CLEAR.
7031          ;*IF 'MOV INST H' GETS STUCK HIGH, THE PC REG HIGH WILL GET LOADED
7032          ;*WITH THE CONTENTS OF THE ALU
7033 026644          BADHEAD
7034          ;***** TEST 42 *****
7035
7036 026644          BGNTST
7037 026644          T42::
7038 026644          SKIP07 10$          ;ONLY DO IF M8207
7039          ;GOTO 10$ IF M8207
7040 026654          EXIT TST          ;ELSE EXIT
7041 026654 104432          TRAP   C$EXIT
7042 026656 000110          .WORD   L10114-.
7043
7044 026660          10$:  MYINT
7045 026660 013701 002516  MOV    KMCSR,R1          ;DO INITIAL TEST SET-UP.
7046 026664          MSTCLR          ;RECORD DEVICE ADDR.
                          ;DO A MASTER CLEAR.

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CZDMQEO M8207 STATIC DIAG #2 MACV11 30A(1052) 18-OCT-82 15:30 PAGE 163
 CZDMQE.P11 30-SEP-82 15:35 HARDWARE TESTS

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7047 026670 005737 002470      1ST      RUNB
7048 026674 001034              BNE      20$
7049
7050      :TO RUN THIS SECTION OF CODE YOU MUST TURN SW7 OF SWITCH PACK #E28
7051      :OFF SO THAT M8207 NOT SELFSTARTING.
7052
7053 026676 012761 000002 000004      MOV      #2,4(R1)      :PUT A 2 INTO SP1
7054 026704      ROMCLK      :PORT4 TO SCRATCH PAD 1
7055 026704 004537 003044      JSR      R5,.ROMCLK      :CLOCK INSTRUCTION
7056 026710 123101      123101
7057 026712 012761 000004 000004      MOV      #4,4(R1)
7058 026720      ROMCLK
7059 026720 004537 003044      JSR      R5,.ROMCLK      :CLOCK INSTRUCTION
7060 026724 123100      123100
7061 026726      ROMCLK      :NOW DO A BRANCH ON C-BIT SET
7062 026726 004537 003044      JSR      R5,.ROMCLK      :CLOCK INSTRUCTION
7063 026732 141201      141201      :BASED ON SP CONTENTS
7064      :OK-WHAT WE ARE REALLY
7065      :INTERESTED IN IS SEEING IF THE
7066      :PC HIGH REG GETS LOADED WITH
7067      :THE CONTENTS OF THE ALU (2)
7068      :IF THIS OCCURS, WE CAN PROBABLY
7069      :SAY THAT 'MOV INSTR' REMAINED
7070      :HIGH.
7071 026734      ROMCLK      :READ PC HIGH, PUT INTO PORTS
7072 026734 004537 003044      JSR      R5,.ROMCLK      :CLOCK INSTRUCTION
7073 026740 121265      121265
7074 026742 116104 000005      MOV      5(R1),R4      :READ PC REG HIGH FROM PORT
7075 026746 001407      BEQ      20$      :SHOULD BE CLEAR
7076 026750 005005      CLR      R5
7077
7078 026752      ERROR      15      :ERROR-PC REG HIGH S/B CLEAR-SEE HEADER
7079 026756 104455      TRAP      C$ERDF
7080 026760 000017      .WORD      15
7081 026762 005055      .WORD      EMO
7082 026764 010006      .WORD      ERR15
7083
7084      :DISCUSSION.
7085 026766      20$:
7086 026766      L10114:      ENDTST
7087 026766
7088 026766 104401      TRAP      C$ETST
7089
7090 026770      BADHEAD
7091      :***** TEST 43 *****
7092      :*TEST THAT MASTER CLEAR, CLEARS BITS IN THE NPR CONTROL REGISTER AND
7093      :*MICROPROCESSOR MISCELLANEOUS REGISTER-FIRST WE'LL SET THE
7094      :*PRIORITY UP SO THAT WHEN WE SET THE BUS REQUEST BIT THAT IT WON'T BUG US
7095      :*THEN WE'LL SET ALL THE BITS IN BOTH REGS EXCEPT THE
7096      :*NPR REQUEST. WE'LL LOOK TO SEE THAT ALL GOT SET, NEXT
7097      :*WE'LL DO A MASTER CLEAR AND BE SURE THAT THEY ALL
7098      :*CLEAR.
7099 026770      BADHEAD
7100      :***** TEST 43 *****
7101
7102 026770      BGN1ST
  
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CZDMQEO M8207 STATIC DIAG #2
CZDMQEO.P11 30-SEP-82 15:35

MACY11 30A(1052) 18-OCT-82 15:30 PAGE 164
HARDWARE TESTS

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7103 026770          T43::
7104 026770
7105 026770 013701 002516      MYINT
7106 026774          MOV      KMCSR,R1          ;RECORD DEVICE ADDR.
7107 027000          MSTCLR
7108 027000 012700 000340      SETPRI #PRI07          ;DON'T ALLOW INTERRUPTS.
7109 027004 104441          MOV      #PRI07,R0
7110 027006 012761 177777 000004 TRAP      C$SPRI
7111 027014 042761 000002 000004 MOV      #-1,4(R1)          ;DATA TO BE SET
7112 027022          BIC      #2,4(R1)          ;DON'T SET AC LOW!
7113 027022 004537 003044      ROMCLK
7114 027026 121111          JSR      R5,.ROMCLK          ;CLOCK INSTRUCTION
7115 027030 042761 000400 000004 BIC      #400,4(R1)          ;PUT INTO MISC REG.
7116 027036          ROMCLK          ;DON'T SET NPR BIT
7117 027036 004537 003044      JSR      R5,.ROMCLK          ;CLOCK INSTRUCTION
7118 027042 121130          ROMCLK          ;PUT INTO NPR REG
7119 027044          ROMCLK
7120 027044 004537 003044      JSR      R5,.ROMCLK          ;CLOCK INSTRUCTION
7121 027050 121225          ROMCLK          ;MOV MISC REG (11) TO PORT5
7122 027052          ROMCLK
7123 027052 004537 003044      JSR      R5,.ROMCLK          ;CLOCK INSTRUCTION
7124 027056 121204          ROMCLK          ;MOVE NPR REG (10) TO PORT4
7125 027060 012737 146636 002452 MOV      #146636,$GDDAT          ;EXPECT ALL TO SET
7126 027066 016104 000004          MOV      4(R1),R4          ;READ WHAT HAPPEN
7127 027072 042704 030140          BIC      #030140,R4          ;MASK UNUSED BITS
7128 027076 023704 002452          CMP      $GDDAT,R4          ;DID ALL BITS GET SET?
7129 027102 001410          BEQ      10$          ;YES CONTINUE.
7130 027104          BRESET
7131 027104 104433          TRAP      C$RESET
7132 027106          ERROR 46          ;SO SORT OF PROBLEM SETTING BITS
7133 027112 104455          TRAP      C$ERDF
7134 027114 000056          .WORD 46
7135 027116 005055          .WORD EMO
7136 027120 011214          .WORD ERR46
7137 027122          CKLOOP
7138 027122 104406          TRAP      C$CLP1
7139 027124 152761 000100 000001 10$: BISB   #100,1(R1)          ;SET MASTER CLEAR
7140 027132 142761 000300 000001 BICB   #300,1(R1)          ;CLEAR MASTER CLEAR
7141 027140          ROMCLK
7142 027140 004537 003044      JSR      R5,.ROMCLK          ;CLOCK INSTRUCTION
7143 027144 121225          ROMCLK          ;MOV MISC REG (11) TO PORT5
7144 027146          ROMCLK
7145 027146 004537 003044      JSR      R5,.ROMCLK          ;CLOCK INSTRUCTION
7146 027152 121204          ROMCLK          ;MOVE NPR REG (10) TO PORT4
7147 027154 016104 000004          MOV      4(R1),R4          ;READ RESULTS
7148 027160 005037 002452          CLR      $GDDAT          ;EXPECT ZERO
7149 027164 042704 010140          BIC      #010140,R4          ;MASK UNUSED BITS
7150 027170 001407          BEQ      20$          ;IF ALL ZERO, EVERYTHING COOL.
7151 027172          ERROR 46          ;MASTER CLEAR FAILED TO CLEAR
7152 027176 104455          TRAP      C$ERDF

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CZDMQEO M8207 STATIC DIAG #2
CZDMQE.P11 30-SEP-82 15:35

MACY11 30A(1052) 18-OCT-82 15:30 PAGE 165
HARDWARE TESTS

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7159 027200 000056      .WORD 46
7160 027202 005055      .WORD EMO
7161 027204 011214      .WORD ERR46
7162                                     ;SOME BITS IN THE NPR AND/OR MISC REGS.
7163 027206      CKLOOP
7164 027206 104406      TRAP C$CLP1
7165
7166 027210      20$:
7167 027210 012761 000014 000004      MOV #14,4(R1)      ;NOW WE ARE GOING TO TRY TO
7168 027216      ROMCLK      ;SET THE EXT BITS (16&17) IN THE NPR REG.
7169 027216 004537 003044      JSR R5,ROMCLK      ;CLOCK INSTRUCTION
7170 027222 121110      121110      ;IF MASTER CLEAR FAILED TO CLEAR ITSELF
7171 027224      ROMCLK      ;THEN WE WILL BE UNABLE TO SET
7172 027224 004537 003044      JSR R5,ROMCLK      ;CLOCK INSTRUCTION
7173 027230 121205      121205      ;THESE BITS
7174 027232 116104 000005      MOVB 5(R1),R4      ;READ REG
7175 027236 042704 000140      BIC #140,R4      ;MASK UNUSED BITS
7176 027242 012737 000014 002452      MOV #14,$GDDAT      ;STORE GOOD
7177 027250 023704 002452      CMP $GDDAT,R4      ;DID BITS SET?
7178 027254 001407      BEQ 30$      ;YES-CONTINUE
7179
7180 027256      ERROR 46      ;MASTER CLEAR FAILED TO CLEAR
7181 027262 104455      TRAP C$ERDF
7182 027264 000056      .WORD 46
7183 027266 005055      .WORD EMO
7184 027270 011214      .WORD ERR46
7185                                     ;ITSELF, THUS PROHIBITING US FROM
7186                                     ;FURTHER SETTING BITS IN THE NPR REG.
7187
7188 027272      CKLOOP
7189 027272 104406      TRAP C$CLP1
7190
7191 027274      30$:
7192 027274 104433      BRESET
7193 027276 005737 002470      TRAP C$RESET      ;NOW WE'LL SEE IF A BUS RESET CLEARS
7194 027302 001016      TST RUNB      ;THESE BITS.
7195 027304      BNE 40$      ;CAN'T DO THIS
7196 027304 004537 003044      ROMCLK      ;TEST IF RUN SW SET.
7197 027310 121204      JSR R5,ROMCLK      ;CLOCK INSTRUCTION
7198 027312 116104 000004      121204      ;READ MISC REG
7199 027316 001410      MOVB 4(R1),R4
7200      BEQ 40$      ;IF ZERO-END TST
7201 027320 005037 002452      CLR $GDDAT      ;S/B ZERO
7202
7203 027324      ERROR 46      ;BUS RESET FAILED TO CLEAR NPR REG
7204 027330 104455      TRAP C$ERDF
7205 027332 000056      .WORD 46
7206 027334 005055      .WORD EMO
7207 027336 011214      .WORD ERR46
7208                                     ;MASTER CLEAR WAS ABLE TO LOOK TO THE
7209                                     ;CIRCUITRY THAT CONVERTS BUS INIT
7210                                     ;TO "CLEAR"
7211
7212 027340      40$:
7213 027340      L10115:      ENDTST
7214 027340

```

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CZDMQEO M8207 STATIC DIAG #2
CZDMQE.P11 30-SEP-82 15:35 MACV11 30A(1052) 18-OCT-82 15:30 PAGE 166
HARDWARE TESTS

SEQ 165

7215 027340 104401

TRAP C\$ETST

CZDMQEO M8207 STATIC DIAG #2
CZDMQE.P11 30-SEP-82 15:35

MACY11 30A(1052) 18-OCT-82 15:30 PAGE 167
HARDWARE PARAMETER CODING SECTION

.SBTTL HARDWARE PARAMETER CODING SECTION

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027342
027342 000016
027344
027344
027344 000032
027346 027400
027350 000007
027352 000000
027354 000007
027356
027356 001031
027360 027452
027362 160000
027364 177776

027366
027366 012032
027370 030050
027372 000007
027374 000000
027376 000001
027400
027400
027400 044127 041511 020110
027406 044515 051103 026517
027414 050103 037525 024040
027422 036460 034115 030062
027430 026060 036464 034115
027436 030062 026064 036467
027444 034115 030062 000067
027452 044515 051103 026517
027460 050103 020125 041440
027466 051123 040440 042104
027474 042522 051523 035040
027502 000040

:/ THE HARDWARE PARAMETER CODING SECTION CONTAINS MACROS
:/ THAT ARE USED BY THE SUPERVISOR TO BUILD P-TABLES. THE
:/ MACROS ARE NOT EXECUTED AS MACHINE INSTRUCTIONS BUT ARE
:/ INTERPRETED BY THE SUPERVISOR AS DATA STRUCTURES. THE
:/ MACROS ALLOW THE SUPERVISOR TO ESTABLISH COMMUNICATIONS
:/ WITH THE OPERATOR.
:/

BGNHRD
.WORD L10116-L\$HARD/2
L\$HARD::

GPRMD WPM,0,0,7,0,7,YES
.WORD T\$CODE
.WORD WPM
.WORD 7
.WORD T\$LOLIM
.WORD T\$HILIM
GPRMA ADDRES,2,0,160000,177776,YES
.WORD T\$CODE
.WORD ADDRES
.WORD T\$LOLIM
.WORD T\$HILIM
GPRMA VECTOR,4,0,0,674,YES
GPRMD PRIRTY,6,0,7000,4,7,YES
GPRMD LNUNIT,10,0,3,0,3,YES
GPRMD SWPAC1,12,0,377,0,377,YES
GPRMD SWPAC2,14,0,377,0,377,YES
GPRMD LOOPBK,16,0,40000,0,1,YES
GPRMD ISRUN,24,0,7,0,1,YES
.WORD T\$CODE
.WORD ISRUN
.WORD 7
.WORD T\$LOLIM
.WORD T\$HILIM
ENDHRD
.EVEN
L10116:
WPM: .ASCIZ 'WHICH MICRO-CPU? (0=M8200,4=M8204,7=M8207'

ADDRES: .ASCIZ /MICRO-CPU CSR ADDRESS : /

CZDMQEO M8207 STATIC DIAG #2
CZDMQE.P11 30-SEP-82 15:35

MACY11 30A(1052) 18-OCT-82 15:30 PAGE 168
HARDWARE PARAMETER CODING SECTION

7272	027504	044515	051103	026517	VECTOR: .ASCIIZ /MICRO-CPU VECTOR ADDRESS : /
7273	027512	050103	020125	042526	
7274	027520	052103	051117	040440	
7275	027526	042104	042522	051523	
7276	027534	035040	000040		
7277	027540	044515	051103	026517	PRIPTY: .ASCIIZ /MICRO-CPU PRIORITY LEVEL : /
7278	027546	050103	020125	051120	
7279	027554	047511	044522	054524	
7280	027562	046040	053105	046105	
7281	027570	035040	000040		
7282	027574	044127	041511	020110	LNUNIT: .ASCIIZ /WHICH LINE UNIT (0-3)? 0=NONE,1=M8201,2=M8202,3=M8203 : /
7283	027602	044514	042516	052440	
7284	027610	044516	020124	030050	
7285	027616	031455	037451	030040	
7286	027624	047075	047117	026105	
7287	027632	036461	034115	030062	
7288	027640	026061	036462	034115	
7289	027646	030062	026062	036463	
7290	027654	034115	030062	020063	
7291	027662	020072	000		
7292	027665	123	044527	041524	SWPAC1: .ASCIIZ /SWITCH PACK #1 (DDCMP LINE #) : /
7293	027672	020110	040520	045503	
7294	027700	021440	020061	042050	
7295	027706	041504	050115	046040	
7296	027714	047111	020105	024443	
7297	027722	035040	000040		
7298	027726	053523	052111	044103	SWPAC2: .ASCIIZ /SWITCH PACK #2 (BM873 BOOT ADR) : /
7299	027734	050040	041501	020113	
7300	027742	031043	024040	046502	
7301	027750	033470	020063	047502	
7302	027756	052117	040440	051104	
7303	027764	020051	020072	000	
7304	027771	127	046111	020114	LOOPBK: .ASCIIZ /WILL TEST CONNECTOR(S) BE USED ? 0=NO,1=YES : /
7305	027776	042524	052123	041440	
7306	030004	047117	042516	052103	
7307	030012	051117	051450	020051	
7308	030020	042502	052440	042523	
7309	030026	020104	020077	036460	
7310	030034	047516	030454	054475	
7311	030042	051505	035040	000040	
7312	030050	044515	051103	026517	ISRUN: .ASCIIZ 'MICRO-PROCESSOR RUN SWITCH TYPE 0 IF OFF, 1 IF ON :'
7313	030056	051120	041517	051505	
7314	030064	047523	020122	052522	
7315	030072	020116	053523	052111	
7316	030100	044103	020040	054524	
7317	030106	042520	030040	044440	
7318	030114	020106	043117	026106	
7319	030122	030440	044440	020106	
7320	030130	047117	035040	000	
7321					
7322		030136			.EVEN
7323					
7324					
7325					
7326					
7327					

M 13

CZDMQEO M8207 STATIC DIAG #2
CZDMQE.P11 30-SEP-82 15:35 MACY11 30A(1052) 18-OCT-82 15:30 PAGE 169
HARDWARE PARAMETER CODING SECTION

SEQ 168

7328

CZDMQEO M8207 STATIC DIAG #2
CZDMQE.P11 30-SEP-82 15:35

MACY11 30A(1052) 18-OCT-82 15:30 PAGE 170
SOFTWARE PARAMETER CODING SECTION

```

7329      .SBTTL  SOFTWARE PARAMETER CODING SECTION
7330
7331
7332      ://////////
7333      :// THE SOFTWARE PARAMETER CODING SECTION CONTAINS MACROS
7334      :// THAT ARE USED BY THE SUPERVISOR TO BUILD P-TABLES.  THE
7335      :// MACROS ARE NOT EXECUTED AS MACHINE INSTRUCTIONS BUT ARE
7336      :// INTERPRETED BY THE SUPERVISOR AS DATA STRUCTURES.  THE
7337      :// MACROS ALLOW THE SUPERVISOR TO ESTABLISH COMMUNICATIONS
7338      :// WITH THE OPERATOR.
7339      ://////////
7340
7341      030136      BGNSFT
7342      030136      .WORD L10117-L$SOFT/2
7343      030140      L$SOFT::
7344
7345
7346      030140      ENDSFT
7347      030140      .EVEN
7348
7349      L10117:
7350      .EVEN
7351
7352
7353
7354
7355
7356
7357      030140      LASTAD
7358      030140      .EVEN
7359      030140      .WORD 0
7360      030142      .WORD 0
7361      030144      L$LAST::
7362
7363      000001      .END

```

MACV11 30A(1052) 18-OCT-82 15:30 PAGE 172
CROSS REFERENCE TABLE -- USER SYMBOLS

[illegible]

C\$DU = 000053	1250#	3240											
C\$EDIT= 000003	1250#	1327											
C\$ERDF= 000055	1250#	3297	3345	3365	3404	3455	3511	3534	3594	3656	3718	3751	3816
	3841	3888	3933	3956	3975	4025	4049	4073	4124	4147	4170	4222	4247
	4272	4324	4348	4372	4425	4449	4473	4526	4550	4574	4626	4650	4674
	4726	4750	4774	4826	4852	4876	4928	4954	4978	5029	5055	5079	5130
	5156	5180	5232	5258	5282	5333	5359	5383	5456	5527	5645	5728	5833
	5908	5927	5944	5982	6000	6017	6054	6071	6087	6130	6152	6165	6182
	6195	6333	6364	6386	6412	6484	6539	6629	6644	6659	6673	6689	6701
	6713	6725	6807	6838	6852	6908	6966	7013	7079	7134	7158	7181	7204
C\$ERHR= 000056	1250#												
C\$ERRO= 000060	1250#												
C\$ERSF= 000054	1250#												
C\$ERSO= 000057	1250#												
C\$ESCA= 000010	1250#	3288	3305	3351	3409	3460	3516	3539	3599	3661	3723	3756	3849
	3938	4030	4054	4078	4129	4152	4175	4228	4253	4277	4329	4353	4377
	4430	4454	4478	4531	4555	4579	4631	4655	4679	4731	4755	4779	4831
	4857	4881	4933	4959	4983	5034	5060	5084	5135	5161	5185	5237	5263
	5287	5338	5364	5388	5465	5535	5680	5868	5914	5933	5988	6006	6338
	6391	6417	6546	6635	6651	6665	6679	6695	6706	6718	6843	6915	
C\$ESEG= 000005	1250#	3413	3464	3520	3543	4034	4058	4082	4133	4156	4179	4232	4257
	4281	4333	4357	4381	4434	4458	4482	4535	4559	4583	4635	4659	4683
	4735	4759	4783	4835	4861	4885	4937	4963	4987	5038	5064	5088	5139
	5165	5189	5241	5267	5291	5342	5368	5392					
C\$ESUB= 000003	1250#												
C\$ETST= 000001	1250#	3310	3373	3423	3475	3551	3613	3675	3766	3895	3982	4085	4182
	4284	4384	4485	4586	4686	4786	4888	4990	5091	5192	5294	5395	5473
	5545	5736	5878	5951	6024	6097	6207	6436	6492	6561	6753	6815	6861
	6924	6975	7021	7088	7215								
C\$EXIT= 000032	1250#	3386	3436	3489	3780	3910	4002	4104	4201	4303	4403	4504	4605
	4705	4805	4907	5009	5110	5212	5313	5412	5493	5588	5776	5893	5967
	6173	6423	6508	6552	6579	6731	6788	6878	6944	7041			
C\$GETB= 000026	1250#												
C\$GETW= 000027	1250#												
C\$GMAN= 000043	1250#												
C\$GPHR= 000042	1250#	3093											
C\$GPLO= 000030	1250#												
C\$GPRI= 000040	1250#												

[illegible]

CZDMQEO M8207 STATIC DIAG #2 MACY11 30A(1052) 18-OCT-82 15:30 PAGE 175
 CZDMQE.P11 30-SEP-82 15:35 CROSS REFERENCE TABLE -- USER SYMBOLS

ERR15	010006	G	2704#	5648	5836	6969	7082										
ERR16	010134	G	2733#	5911	5930	5947	5985	6003	6020								
ERR17	010256	G	2763#	6133	6155	6198											
ERR2	006160	G	2392#	3537													
ERR29	010350	G	2784#	6336	6367	6632	6647	6662	6676	6692	6704	6716	6728				
ERR3	006306	G	2421#														
ERR35	010472	G	2812#	6168	6185												
ERR36	010614	G	2841#	3300													
ERR4	006434	G	2450#														
ERR40	010636	G	2853#	6810													
ERR41	010702	G	2871#	6841													
ERR42	010744	G	2888#	6855													
ERR43	011006	G	2906#	7016													
ERR44	011054	G	2925#	3891													
ERR45	011124	G	2944#	5731													
ERR46	011214	G	2969#	7137	7161	7184	7207										
ERR47	011264	G	2989#	6911													
ERR5	006556	G	2478#	4028	4052	4076	4127	4150	4173	4225	4250	4275	4327	4351	4375		
			4428	4452	4476	4529	4553	4577	4629	4653	4677	4729	4753	4777	4829		
			4855	4879	4931	4957	4981	5032	5058	5082	5133	5159	5183	5235	5261		
			5285	5336	5362	5386											
ERR6	006700	G	2506#	3597	3659	3721	3754	6415									
ERR7	007026	G	2535#	3936	3959	3978	6389	6487									
EVL =	000004	G	1559#														
ESEND =	002100		1250#														
ESLOAD =	000035		1250#	1350													
FADR	002412		1630#	2719	5599*	5682*	5787*	5870*									
FLAG	002436		1628#	2519	3567*	3571	3572	3607*	3608	3628*	3633	3634	3669*	3670	3691*		
			3692	3695	3696	3725*	3726	3729*	3730	3733	3760*	3761	5592*	5604	5683*		
			5780*	5792	5871*												
FM1	005046		2199#	2365	2371	2394	2400	2423	2429	2452	2458	2480	2486	2508	2514		
			2537	2543	2566	2572	2594	2600	2622	2628	2650	2656	2678	2684	2706		
			2712	2735	2741	2765	2771	2786	2792	2814	2820						
FTIME	002462		1650#	3047	3051*												
F\$AU =	000015		1250#	3255	3257												
F\$AUTO =	000020		1250#	3182	3203												
F\$BGN =	000040		1250#	1256	1370	2363	2392	2421	2450	2478	2506	2535	2564	2592	2620		
			2648	2676	2704	2733	2763	2784	2812	2841	2853	2871	2888	2906	2925		
			2944	2969	2989	3017	3023	3041	3182	3214	3234	3255	3280	3288	3305		
			3309	3323	3351	3372	3383	3386	3395	3409	3422	3433	3436	3445	3460		
			3474	3486	3489	3497	3516	3522	3539	3550	3562	3599	3612	3623	3661		
			3674	3686	3723	3756	3765	3777	3780	3849	3894	3907	3910	3938	3981		
			3998	4002	4010	4030	4036	4054	4060	4078	4084	4101	4104	4112	4129		
			4135	4152	4158	4175	4181	4198	4201	4209	4228	4234	4253	4259	4277		
			4283	4300	4303	4311	4329	4335	4353	4359	4377	4383	4400	4403	4412		
			4430	4436	4454	4460	4478	4484	4501	4504	4513	4531	4537	4555	4561		
			4579	4585	4602	4605	4613	4631	4637	4655	4661	4679	4685	4702	4705		
			4713	4731	4737	4755	4761	4779	4785	4802	4805	4812	4831	4837	4857		
			4863	4881	4887	4904	4907	4914	4933	4939	4959	4965	4983	4989	5006		
			5009	5016	5034	5040	5060	5066	5084	5090	5107	5110	5117	5135	5141		
			5161	5167	5185	5191	5209	5212	5219	5237	5243	5263	5269	5287	5293		
			5310	5313	5320	5338	5344	5364	5370	5388	5394	5409	5412	5465	5472		
			5490	5493	5535	5544	5583	5588	5620	5735	5771	5776	5868	5877	5890		
			5893	5914	5933	5950	5964	5967	5988	6006	6023	6035	6096	6111	6173		
			6206	6221	6338	6391	6417	6423	6435	6449	6491	6504	6508	6546	6552		
			6560	6574	6579	6635	6651	6665	6679	6695	6706	6718	6731	6752	6767		

MACY11 30A(1052) 18-OCT-82 15:30 PAGE 176
CROSS REFERENCE TABLE -- USER SYMBOLS

6788	6814	6828	6843	6860	6874	6878	6915	6923	6940	6944	6974	6991
7020	7037	7041	7087	7103	7214	7230	7342					
1250#	3214	3219										
1250#	3234	3239										
1250#	1256	2391	2420	2449	2477	2505	2534	2563	2591	2619	2647	2675
2703	2732	2760	2783	2811	2839	2851	2870	2887	2904	2924	2943	2968
2987	3007	3021	3028	3179	3205	3221	3241	3259	3280	3288	3305	3309
3311	3323	3351	3372	3374	3383	3386	3409	3414	3422	3424	3433	3436
3460	3465	3474	3476	3486	3489	3516	3521	3539	3544	3550	3552	3562
3599	3612	3614	3623	3661	3674	3676	3686	3723	3756	3765	3767	3777
3780	3849	3894	3896	3907	3910	3938	3981	3983	3998	4002	4030	4035
4054	4059	4078	4083	4084	4086	4101	4104	4129	4134	4152	4157	4175
4180	4181	4183	4198	4201	4228	4233	4253	4258	4277	4282	4283	4285
4300	4303	4329	4334	4353	4358	4377	4382	4383	4385	4400	4403	4430
4435	4454	4459	4478	4483	4484	4486	4501	4504	4531	4536	4555	4560
4579	4584	4585	4587	4602	4605	4631	4636	4655	4660	4679	4684	4685
4687	4702	4705	4731	4736	4755	4760	4779	4784	4785	4787	4802	4805
4831	4836	4857	4862	4881	4886	4887	4889	4904	4907	4933	4938	4959
4964	4983	4988	4989	4991	5006	5009	5034	5039	5060	5065	5084	5089
5090	5092	5107	5110	5135	5140	5161	5166	5185	5190	5191	5193	5209
5212	5237	5242	5263	5268	5287	5292	5293	5295	5310	5313	5338	5343
5364	5369	5388	5393	5394	5396	5409	5412	5465	5472	5474	5490	5493
5535	5544	5546	5583	5588	5680	5735	5737	5771	5776	5868	5877	5879
5890	5893	5914	5933	5950	5952	5964	5967	5988	6006	6023	6025	6035
6096	6098	6111	6173	6206	6208	6221	6338	6391	6417	6423	6435	6437
6449	6491	6493	6504	6508	6546	6552	6560	6562	6574	6579	6635	6651
6665	6679	6695	6706	6718	6731	6752	6754	6767	6788	6814	6816	6828
6843	6860	6862	6874	6878	6915	6923	6925	6940	6944	6974	6976	6991
7020	7022	7037	7041	7087	7089	7103	7214	7216	7259	7349		
1250#	7230	7257										
1250#	1445	1463										
1250#	3041	3177										
1250#	3021	3386	3436	3489	3780	3910	4002	4104	4201	4303	4403	4504
4605	4705	4805	4907	5009	5110	5212	5313	5412	5493	5588	5776	5893
5967	6173	6423	6508	6552	6579	6731	6788	6878	6944	7041		
1250#	1256											
1250#	2363	2389	2392	2418	2421	2447	2450	247				

CZDMQEO MB207 STATIC DIAG #2
CZDMQE.P11 30-SEP-82 15:35

MACY11 30A(1052) 18-OCT-82 15:30 PAGE 177
CRCSS REFERENCE TABLE -- USER SYMBOLS

FSTEST= 000001	1250#	3281	3309	3324	3372	3384	3422	3434	3474	3487	3550	3563	3612
	3624	3674	3687	3765	3778	3894	3908	3981	3999	4084	4102	4181	4199
	4283	4301	4383	4401	4484	4502	4585	4603	4685	4703	4785	4803	4887
	4905	4989	5007	5090	5108	5191	5210	5293	5311	5394	5410	5472	5491
	5544	5584	5735	5772	5877	5891	5950	5965	6023	6036	6096	6112	6206
	6222	6435	6450	6491	6505	6560	6575	6752	6768	6814	6829	6860	6875
	6923	6941	6974	6992	7020	7038	7087	7104	7214				
	3078	3087#	3096										
GETPRM 011462	1250#												
GSCNTO= 000200	1250#												
GSDLM= 000372	1250#												
GSDISP= 000003	1250#												
GSEXCP= 000400	1250#												
GSMILI= 000002	1250#												
GSLOLI= 000001	1250#												
GSNO = 000000	1250#												
GSOFFS= 000400	1250#	7234	7240	7251									
GSOFSI= 000376	1250#	7234	7240	7251									
GSPRMA= 000001	1250#	7240											
GSPRMD= 000002	1250#	7234	7251										
GSPRML= 000000	1250#												
GSRADA= 000140	1250#												
GSRADB= 000000	1250#												
GSRADD= 000040	1250#												
GSRADL= 000120	1250#												
GSRADO= 000020	1250#	7234	7240	7251									
GSXFER= 000004	1250#												
GSYES = 000010	1250#	7234	7240	7251									
HELP = 000000	1241#	1280	1369	1430	1739	3019	3024						
HUL = 100000 G	1572#												
IBE = 010000 G	1569#												
IDU = 000040 G	1562#												
IER = 020000 G	1570#												
INIFLG 002474	1659#												
INSTU 003616	2044	2055#											
ISR = 000100 G	1563#												
ISRUN 030050	7252	7312#											
IXE = 004000 G	1568#												
ISAU = 000041	1250#	3255#	3259#										
ISAUTO= 000041	1250#	3182#	3205#										
ISCLN = 000041	1250#	3214#	3221#										
ISDU = 000041	1250#	3234#	3241#										
ISHRD = 000041	7230#	7259#											
ISINIT= 000041	1250#	3041#	3179#										
ISMOD = 000040	1250#	1256#											
ISMSG = 000041	1250#	2363#	2391#	2392#	2420#	2421#	2449#	2450#	2477#	2478#	2505#	2506#	2534#
	2535#	2563#	2564#	2591#	2592#	2619#	2670#	2647#	2648#	2675#	2676#	2703#	2704#
	2732#	2733#	2760#	2763#	2783#	2784#	2811#	2812#	2839#	2841#	2851#	2853#	2870#
	2871#	2881#	2888#	2904#	2906#	2924#	2925#	2943#	2944#	2968#	2969#	2987#	2989#
	3007#												
ISPROT= 000040	1250#	1370#											
ISP*AB= 000041	1250#												
ISPR = 000041	1250#												
ISRP1 = 000041	1250#	3017#	3028#										
ISSEG = 000041	1250#	3280	3323	3383	3395#	3409	3414#	3433	3445#	3460	3465#	3486	3497#
	3516	3521#	3522#	3539	3544#	3562	3623	3686	3777	3907	3998	4010#	4030
	4035#	4036#	4054	4057#	4060#	4078	4083#	4101	4112#	4129	4134#	4135#	4152

MACV11 30A(1052) 18-OCT-82 15:30 PAGE 178
CRCS REFERENCE TABLE -- USER SYMBOLS

KMCSRH	002520	
KMCTL	002522	
KMNUM	002400	
KMPO4	002524	
KMPO6	002526	
KMRLVL	002510	
KMRVEC	002506	
KMTLVL	002514	
KMTVEC	002512	
LNUNIT	027574	
LOADER	026006	
LOCK	002340	
LOE =	040000	G
LOGDEV	002342	
LOKFLG	002476	
LOOPBK	027771	
LOT =	000010	G

[illegible]

CZDMQEO MB207 STATIC DIAG #2
 CZDMQE.P11 30-SEP-82 15:35 MACY11 30A(1052) 18-OCT-82 15:30 PAGE 179
 CROSS REFERENCE TABLE -- USER SYMBOLS

LSACP	002110	G	1357#		
LSAPT	002036	G	1315#		
LSAU	012144	G	1342	3255#	
LSAUT	002070	G	1341#		
LSAUTO	012042	G	1358	3182#	
LSCCP	002106	G	1355#		
LSCLEA	012134	G	1356	3214#	
LSCO	002032	G	1311#		
LSDEPO	002011	G	1293#		
LSDESC	002312	G	1348	1594#	
LSDESP	002076	G	1347#		
LSDEVP	002060	G	1333#		
LSDISP	002132	G	1318	1385#	
LSDLY	002116	G	1363#		
LSDTP	002040	G	1317#		
LSDTYP	002034	G	1313#		
LSDU	012140	G	1344	3234#	
LSDUT	002072	G	1343#		
LSDVTY	002730	G	1334	1727#	
LSEF	002052	G	1328#		
LSENVI	002044	G	1321#		
LSETP	002102	G	1351#		
LSEXP1	002046	G	1323#		
LSEXP4	002064	G	1337#		
LSEXP5	002066	G	1339#		
LSHARD	027344	G	1300	7230	7231#
LSHIME	002120	G	1365#		
LSHPCP	002016	G	1299#		
LSHPTP	002022	G	1303#		
LSHW	002262	G	1304	1445	1446#
LSICP	002104	G	1353#		
LSINIT	011340	G	1354	3041#	
LSLADP	002026	G	1307#		
LSLAST	030144	G	1308	7361#	
LSLOAD	002100	G	1349#		
LSLUN	002074	G	1345#		
LSMREV	002050	G	1325#		
LSNAME	002000	G	1282#		
LSPRIO	002042	G	1319#		
LSPROT	002122	G	1360	1370#	
LSPRT	002112	G	1359#		
LSREPP	002062	G	1335#		
LSREV	002010	G	1291#		
LSRPT	011332	G	3017#		
LSOFT	030140	G	7342	7343#	
LSSPC	002056	G	1331#		
LSSPCP	002020	G	1301#		
LSPTP	002024	G	1305#		
LSSTA	002030	G	1309#		
LSW	002312	G	1472	1473#	
LSTEST	002114	G	1361#		
LSTIML	002014	G	1297#		
LSUNIT	002012	G	1295#	3089	
L10001	002310		1445	1463#	
L10002	002312		1472	1478#	
L10003	006156		2389#		

CZDMQEO M8207 STATIC DIAG #2
CZDMQE.P11 30-SEP-82 15:35

MACY11 30A(1052) 18-OCT-82 15:30 PAGE 180
CROSS REFERENCE TABLE -- USER SYMBOLS

L10004	006304	2418#		
L10005	006432	2447#		
L10006	006554	2475#		
L10007	006676	2503#		
L10010	007024	2532#		
L10011	007152	2561#		
L10012	007274	2589#		
L10013	007416	2617#		
L10014	007540	2645#		
L10015	007662	2673#		
L10016	010004	2701#		
L10017	010132	2730#		
L10020	010254	2758#		
L10021	010346	2781#		
L10022	010470	2809#		
L10023	010612	2837#		
L10024	010634	2849#		
L10025	010700	2868#		
L10026	010742	2885#		
L10027	011004	2902#		
L10030	011052	2922#		
L10031	011122	2941#		
L10032	011212	2966#		
L10033	011262	2985#		
L10034	011330	3005#		
L10035	011336	3022	3026#	
L10036	012040	3177#		
L10037	012132	3203#		
L10040	012136	3219#		
L10041	012142	3239#		
L10042	012144	3257#		
L10043	012254	3289	3304	3309#
L10044	012420	3352	3372#	
L10045	012550	3387	3422#	
L10046	012710	3437	3474#	
L10047	013152	3490	3550#	
L10050	013354	3600	3612#	
L10051	013566	3662	3674#	
L10052	014110	3724	3757	3765#
L10053	014466	3781	3850	3894#
L10054	014734	3911	3939	3981#
L10055	015200	4003	4084#	
L10056	015430	4105	4181#	
L10057	015674	4202	4283#	
L10060	016140	4304	4383#	
L10061	016404	4404	4484#	
L10062	016650	4505	4585#	
L10063	017114	4606	4685#	
L10064	017360	4706	4785#	
L10065	017640	4806	4887#	
L10066	020120	4908	4989#	
L10067	020374	5010	5090#	
L10070	020650	5111	5191#	
L10071	021126	5213	5293#	
L10072	021402	5314	5394#	
L10073	021574	5413	5466	5472#

L10074	021742	5494	5536	5544#															
L10075	022320	5589	5681	5735#															
L10076	022556	5777	5869	5877#															
L10077	022772	5894	5915	5934	5950#														
L10100	023206	5968	5989	6007	6023#														
L10101	023450	6096#																	
L10102	024042	6174	6206#																
L10103	025114	6339	6392	6418	6424	6435#													
L10104	025214	6491#																	
L10105	025362	6509	6547	6553	6560#														
L10106	026040	6580	6636	6652	6666	6680	6696	6707	6719	6732	6752#								
L10107	026200	6789	6814#																
L10110	026306	6844	6860#																
L10111	026444	6879	6916	6923#															
L10112	026542	6945	6974#																
L10113	026642	7020#																	
L10114	026766	7042	7087#																
L10115	027340	7214#																	
L10116	027400	7230	7258#																
L10117	030140	7342	7348#																
MASKX	002362	1618#																	
MEM LIM	002374	1623#																	
MEMSET	003474	2023#	4011	4110	4207	4309	4409	4510	4610	4711	4810	4912	5014	5115					
		5217	5318																
MEMSZ	002436	1640#	2018	2039	3161*	3169*	3418	3470	3524	3546	3608	3670	3726	3761					
		3780	3787	3834	5412	5493	5588	5776	5893	5967	6522	6548							
MRO	002434	1639#	2070	3391*	3397	3417*	3418	3441*	3448	3469*	3470	3495*	3498	3500					
		3501	3508	3523*	3524	3526*	3527	3529	3531	3545*	3546	3568*	3579	3589					
		3603*	3629*	3630*	3641	3651	3663*	3665*	6329*										
		3060	3066	3080#	3090														
NEWST	011454	1604#																	
NEXT	002336	1622#																	
ONE	002372	1250#	1309																
OSAPTS=	000000	1250#	1279#	1341															
OSAU =	000001	1250#	1335																
OSBGNR=	000000	1250#	130																

CZDMQEO M8207 STATIC DIAG #2 MACY11 30A(1052) 18-OCT-82 15:30 PAGE 182
 CZDMQE.P11 30-SEP-82 15:35 CROSS REFERENCE TABLE -- USER SYMBOLS

		4420	4444	4468	4521	4545	4569	4621	4645	4669	4721	4745	4769	4821
		4847	4871	4923	4949	4973	5024	5050	5074	5125	5151	5175	5227	5253
		5277	5328	5354	5378									
REGADR	002530	1703#												
RETADR	002352	1614#												
ROMMAP	012146	2012	3270#	6514	6528									
RUN	002410	1629#												
RUNB	002470	1653#	3173*	3862	5693	6160	7047	7193						
RUNINH	002472	1654#	3124*	3173	3864	5695								
SAVACT	002402	1626#												
SAVE4	002464	1651#	3049*	3052	3200	3302	6785							
SAVE6	002466	1652#	5050*	3053	3201	3303	6786							
SAVNUM	002404	1627#												
SAVPC	002366	1620#												
SAVSP	002364	1619#												
SETBRO	003220	1918#	4413	4437	4461									
SETBR1	003230	1925#	4514	4538	4562									
SETBR4	003240	1933#	4614	4638	4662									
SETBR7	003250	1941#	4714	4738	4762									
SETC	003260	1949#	4210	4235	4260	4813	5990							
SETZ	003312	1966#	4312	4336	4360	4915	5916							
SFPTBL	002312	1474#												
SSTACK	002730	1707#	3044											
STAT	002356	1616#												
STAT1	002500	1684#	3125*	3127*	3131*	3142*	3146*	3149*						
STAT2	002502	1685#	3152*	3154*										
STAT3	002504	1686#												
STM	005627	2276#	2384	2413	2442	2470	2498	2527	2556	2584	2612	2640	2668	2696
		2725	2753	2776	2804	2832	2843	2862	2879	2896	2916	2935	2960	2979
		2999												
STRISW	002354	1615#												
SUBRPC	002346	1612#												
SVCGBL=	000000	1250#	1256	1263#	1282	1283	1291	1292	1293	1294	1295	1296	1297	1298
		1299	1300	1301	1302	1303	1304	1305	1306	1307	1308	1309	1310	1311
		1312	1313	1314	1315	1316	1317	1318	1319	1320	1321	1322	1323	1324
		1325	1326	1328	1329	1331	1332	1333	1334	1335	1336	1337	1338	1339
		1340	1341	1342	1343	1344	1345	1346	1347	1348	1349	1350	1351	1352
		1353	1354	1355	1356	1357	1358	1359	1360	1361	1362	1363	1364	1365
		1366	1370	1371	1385	1386	1446	1447	1448	1473	1474	1475	1594	1595
		1727	1728	2363	2364	2392	2393	2421	2422	2450	2451	2478	2479	2506
		2507	2535	2536	2564	2565	2592	2593	2620	2621	2648	2649	2676	2677
		2704	2705	2733	2734	2763	2764	2784	2785	2812	2813	2841	2842	2853
		2854	2871	2872	2888	2889	2906	2907	2925	2926	2944	2945	2969	2970
		2989	2990	3017	3018	3041	3042	3182	3183	3214	3215	3234	3235	3255
		3256	7231	7232	7343	7344	7361#	7362						
SVCINS=	000000	1250#	1260#	1283	1284	1285	1286	1287	1288	1289	1290	1291	1292	1293
		1294	1295	1296	1297	1298	1299	1300	1301	1302	1303	1304	1305	1306
		1307	1308	1309	1310	1311	1312	1313	1314	1315	1316	1317	1318	1319
		1320	1321	1322	1323	1324	1325	1326	1327	1328	1329	1330	1331	1332
		1333	1334	1335	1336	1337	1338	1339	1340	1341	1342	1343	1344	1345
		1346	1347	1348	1349	1350	1351	1352	1353	1354	1355	1356	1357	1358
		1359	1360	1361	1362	1363	1364	1365	1366	1367	1384	1385	1386	1387
		1388	1389	1390	1391	1392	1393	1394	1395	1396	1397	1398	1399	1400
		1401	1402	1403	1404	1405	1406	1407	1408	1409	1410	1411	1412	1413
		1414	1415	1416	1417	1418	1419	1420	1421	1422	1423	1424	1425	1426
		1427	1428	1429	1445	1446	1472	1473	1595	1599	1600	1728	1732	1733

CZDMQEO M8207 STATIC DIAG #2
CZDMQE.P11 30-SEP-82 15:35

MACY11 30A(1052) 18-OCT-82 15:30 PAGE 183
CROSS REFERENCE TABLE -- USER SYMBOLS

SEQ 181

2364	2365	2366	2367	2368	2369	2370	2371	2372	2373	2374	2375	2376
2377	2378	2379	2380	2381	2382	2383	2384	2385	2386	2387	2388	2389
2390	2391	2393	2394	2395	2396	2397	2398	2399	2400	2401	2402	2403
2404	2405	2406	2407	2408	2409	2410	2411	2412	2413	2414	2415	2416
2417	2418	2419	2420	2422	2423	2424	2425	2426	2427	2428	2429	2430
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2444	2445	2446	2447	2448	2449	2451	2452	2453	2454	2455	2456	2457
2458	2459	2460	2461	2462	2463	2464	2465	2466	2467	2468	2469	2470
2471	2472	2473	2474	2475	2476	2477	2479	2480	2481	2482	2483	2484
2485	2486	2487	2488	2489	2490	2491	2492	2493	2494	2495	2496	2497
2498	2499	2500	2501	2502	2503	2504	2505	2507	2508	2509	2510	2511
2512	2513	2514	2515	2516	2517	2518	2519	2520	2521	2522	2523	2524
2525	2526	2527	2528	2529	2530	2531	2532	2533	2534	2536	2537	2538
2539	2540	2541	2542	2543	2544	2545	2546	2547	2548	2549	2550	2551
2552	2553	2554	2555	2556	2557	2558	2559	2560	2561	2562	2563	2565
2566	2567	2568	2569	2570	2571	2572	2573	2574	2575	2576	2577	2578
2579	2580	2581	2582	2583	2584	2585	2586	2587	2588	2589	2590	2591
2593	2594	2595	2596	2597	2598	2599	2600	2601	2602	2603	2604	2605
2606	2607	2608	2609	2610	2611	2612	2613	2614	2615	2616	2617	2618
2619	2621	2622	2623	2624	2625	2626	2627	2628	2629	2630	2631	2632
2633	2634	2635	2636	2637	2638	2639	2640	2641	2642	2643	2644	2645
2646	2647	2649	2650	2651	2652	2653	2654	2655	2656	2657	2658	2659
2660	2661	2662	2663	2664	2665	2666	2667	2668	2669	2670	2671	2672
2673	2674	2675	2677	2678	2679	2680	2681	2682	2683	2684	2685	2686
2687	2688	2689	2690	2691	2692	2693	2694	2695	2696	2697	2698	2699
2700	2701	2702	2703	2705	2706	2707	2708	2709	2710	2711	2712	2713
2714	2715	2716	2717	2718	2719	2720	2721	2722	2723	2724	2725	2726
2727	2728	2729	2730	2731	2732	2734	2735	2736	2737	2738	2739	2740
2741	2742	2743	2744	2745	2746	2747	2748	2749	2750	2751	2752	2753
2754	2755	2756	2757	2758	2759	2760	2764	2765	2766	2767	2768	2769
2770	2771	2772	2773	2774	2775	2776	2777	2778	2779	2780	2781	2782
2783	2785	2786	2787	2788	2789	2790	2791	2792	2793	2794	2795	2796
2797	2798	2799	2800	2801	2802	2803	2804	2805	2806	2807	2808	2809
2810	2811	2813	2814	2815	2816	2817	2818	2819	2820	2821	2822	2823
2824	2825	2826	2827	2828	2829	2830	2831	2832	2833	2834	2835	2836
2837	2838	2839	2843	2844	2845	2846	2847	2848	2850	2851	2855	2856
2857	2858	2859	2860	2861	2862	2863	2864	2865	2866	2867	2869	2870
2873	2874	2875	2876	2877	2878	2879	2880	2881	2882	2883	2884	2886
2887	2890	2891	2892	2893	2894	2895	2896	2897	2898	2899	2900	2901
2903	2904	2908	2909	2910	2911	2912	2913	2914	2915	2916	2917	2918
2919	2920	2921	2923	2924	2927	2928	2929	2930	2931	2932	2933	2934
2935	2936	2937	2938	2939	2940	2942	2943	2946	2947	2948	2949	2950
2951	2952	2953	2954	2955	2956	2957	2958	2959	2960	2961	2962	2963
2964	2965	2967	2968	2971	2972	2973	2974	2975	2976	2977	2978	2979
2980	2981	2982	2983	2984	2986	2987	2991	2992	2993	2994	2995	2996
2997	2998	2999	3000	3001	3002	3003	3004	3006	3007	3021	3022	3023
3027	3028	3057	3058	3059	3060	3061	3063	3064	3065	3066	3067	3069
3070	3071	3072	3073	3075	3076	3077	3078	3079	3092	3093	3094	3095
3096	3097	3178	3179	3197	3198	3199	3204	3205	3216	3217	3220	3221
3237	3238	3240	3241	3258	3259	3288	3289	3290	3297	3298	3299	3300
3301	3305	3306	3307	3310	3311	3345	3346	3347	3348	3349	3351	3352
3353	3365	3366	3367	3368	3369	3373	3374	3386	3387	3388	3395	3396
3404	3405	3406	3407	3408	3409	3410	3411	3413	3414	3423	3424	3436
3437	3438	3445	3446	3455	3456	3457	3458	3459	3460	3461	3462	3464
3465	3475	3476	3489	3490	3491	3497	3498	3511	3512	3513	3514	3515
3516	3517	3518	3520	3521	3522	3523	3534	3535	3536	3537	3538	3539

CZDMQEO M8207 STATIC DIAG #2
CZDMQE.P11 30-SEP-82 15:35

MACY11 30A(1052) 18-OCT-82 15:30 PAGE 184
CROSS REFERENCE TABLE -- USER SYMBOLS

3540	3541	3543	3544	3551	3552	3594	3595	3596	3597	3598	3599	3600
3601	3606	3607	3613	3614	3656	3657	3658	3659	3660	3661	3662	3663
3668	3669	3675	3676	3718	3719	3720	3721	3722	3723	3724	3725	3751
3752	3753	3754	3755	3756	3757	3758	3759	3760	3766	3767	3780	3781
3782	3816	3817	3818	3819	3820	3841	3842	3843	3844	3845	3849	3850
3851	3852	3853	3888	3889	3890	3891	3892	3895	3896	3910	3911	3912
3933	3934	3935	3936	3937	3938	3939	3940	3956	3957	3958	3959	3960
3975	3976	3977	3978	3979	3982	3983	4002	4003	4004	4010	4011	4025
4026	4027	4028	4029	4030	4031	4032	4034	4035	4036	4037	4049	4050
4051	4052	4053	4054	4055	4056	4058	4059	4060	4061	4073	4074	4075
4076	4077	4078	4079	4080	4082	4083	4085	4086	4104	4105	4106	4112
4113	4124	4125	4126	4127	4128	4129	4130	4131	4133	4134	4135	4136
4147	4148	4149	4150	4151	4152	4153	4154	4156	4157	4158	4159	4170
4171	4172	4173	4174	4175	4176	4177	4179	4180	4182	4183	4201	4202
4203	4209	4210	4222	4223	4224	4225	4226	4228	4229	4230	4232	4233
4234	4235	4247	4248	4249	4250	4251	4253	4254	4255	4257	4258	4259
4260	4272	4273	4274	4275	4276	4277	4278	4279	4281	4282	4284	4285
4303	4304	4305	4311	4312	4324	4325	4326	4327	4328	4329	4330	4331
4333	4334	4335	4336	4348	4349	4350	4351	4352	4353	4354	4355	4357
4358	4359	4360	4372	4373	4374	4375	4376	4377	4378	4379	4381	4382
4384	4385	4403	4404	4405	4412	4413	4425	4426	4427	4428	4429	4430
4431	4432	4434	4435	4436	4437	4449	4450	4451	4452	4453	4454	4455
4456	4458	4459	4460	4461	4473	4474	4475	4476	4477	4478	4479	4480
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4530	4531	4532	4533	4535	4536	4537	4538	4550	4551	4552	4553	4554
4555	4556	4557	4559	4560	4561	4562	4574	4575	4576	4577	4578	4579
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4653	4654	4655	4656	4657	4659	4660	4661	4662	4674	4675	4676	4677
4678	4679	4680	4681	4683	4684	4686	4687	4705	4706	4707	4713	4714
4726	4727	4728	4729	4730	4731	4732	4733	4735	4736	4737	4738	4750
4751	4752	4753	4754	4755	4756	4757	4759	4760	4761	4762	4774	4775
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4876	4877	4878	4879	4880	4881	4882	4883	4885	4886	4888	4889	4907
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4938	4939	4940	4954	4955	4956	4957	4958	4959	4960	4961	4963	4964
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5036	5038	5039	5040	5041	5055	5056	5057	5058	5059	5060	5061	5062
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5089	5091	5092	5110	5111	5112	5117	5118	5130	5131	5132	5133	5134
5135	5136	5137	5139	5140	5141	5142	5156	5157	5158	5159	5160	5161
5162	5163	5165	5166	5167	5168	5180	5181	5182	5183	5184	5185	5186
5187	5189	5190	5192	5193	5212	5213	5214	5219	5220	5232	5233	5234
5235	5236	5237	5238	5239	5241	5242	5243	5244	5258	5259	5260	5261
5262	5263	5264	5265	5267	5268	5269	5270	5282	5283	5284	5285	5286
5287	5288	5289	5291	5292	5294	5295	5313	5314	5315	5320	5321	5333
5334	5335	5336	5337	5338	5339	5340	5342	5343	5344	5345	5359	5360
5361	5362	5363	5364	5365	5366	5368	5369	5370	5371	5383	5384	5385
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5457	5458	5459	5460	5465	5466	5467	5473	5474	5493	5494	5495	5527
5528	5529	5530	5531	5535	5536	5537	5545	5546	5588	5589	5590	5645
5646	5647	5648	5649	5680	5681	5682	5728	5729	5730	5731	5732	5736
5737	5776	5777	5778	5833	5834	5835	5836	5837	5868	5869	5870	5878

CZDMQEO M8207 STATIC DIAG #2
CZDMQE.P11 30-SEP-82 15:35

MACY11 30A(1052) 18-OCT-82 15:30 PAGE 185
CROSS REFERENCE TABLE -- USER SYMBOLS

5879	5893	5894	5895	5908	5909	5910	5911	5912	5914	5915	5916	5927
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6153	6154	6155	6156	6165	6166	6167	6168	6169	6173	6174	6175	6182
6183	6184	6185	6186	6195	6196	6197	6198	6199	6207	6208	6333	6334
6335	6336	6337	6338	6339	6340	6364	6365	6366	6367	6368	6386	6387
6388	6389	6390	6391	6392	6393	6412	6413	6414	6415	6416	6417	6418
6419	6423	6424	6425	6436	6437	6484	6485	6486	6487	6488	6492	6493
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6637	6644	6645	6646	6647	6648	6651	6652	6653	6659	6660	6661	6662
6663	6665	6666	6667	6673	6674	6675	6676	6677	6679	6680	6681	6689
6690	6691	6692	6693	6695	6696	6697	6701	6702	6703	6704	6705	6706
6707	6708	6713	6714	6715	6716	6717	6718	6719	6720	6725	6726	6727
6728	6729	6731	6732	6733	6753	6754	6788	6789	6790	6807	6808	6809
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7135	7136	7137	7138	7140	7141	7158	7159	7160	7161	7162	7164	7165
7181	7182	7183	7184	7185	7188	7189	7191	7192	7204	7205	7206	7207
7208	7215	7216	7230	7231	7234	7235	7236	7237	7238	7239	7240	7241
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1250#	1262#											
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2673	2674	2701	2702	2730	2731	2758	2759	2781	2782	2809	2810	2837
2838	2847	2850	2868	2869	2885	2886	2902	2903	2922	2923	2941	2942
2966	2967	2985	2986	3005	3006	3026	3027	3177	3178	3203	3204	3219
3220	3234	3240	3257	3258	3309	3310	3372	3373	3412	3413	3422	3423
3463	3464	3474	3475	3519	3520	3542	3543	3550	3551	3612	3613	3674
3675	3765	3766	3894	3895	3981	3982	4033	4034	4057	4058	4081	4082
4084	4085	4132	4133	4155	4156	4178	4179	4181	4182	4231	4232	4256
4257	4280	4281	4283	4284	4332	4333	4356	4357	4380	4381	4383	4384
4433	4434	4457	4458	4481	4482	4484	4485	4534	4535	4558	4559	4582
4583	4585	4586	4634	4635	4658	4659	4682	4683	4685	4686	4734	4735
4758	4759	4782	4783	4785	4786	4834	4835	4860	4861	4884	4885	4887
4888	4936	4937	4962	4963	4986	4987	4989	4990	5037	5038	5063	5064
5087	5088	5090	5091	5138	5139	5164	5165	5188	5189	5191	5192	5240
5241	5266	5267	5290	5291	5293	5294	5341	5342	5367	5368	5391	5392
5394	5395	5472	5473	5544	5545	5735	5736	5877	5878	5950	5951	6023
6024	6096	6097	6206	6207	6435	6436	6491	6492	6560	6561	6752	6753
6814	6815	6860	6861	6923	6924	6974	6975	7020	7021	7087	7088	7214
7215	7258	7259	7348	7349								
1250#	1261#	3280	3281	3323	3324	3383	3384	3433	3434	3486	3487	3562
3563	3623	3624	3686	3687	3777	3778	3907	3908	3998	3999	4101	4102
4198	4199	4300	4301	4400	4401	4501	4502	4602	4603	4702	4703	4802
4803	4904	4905	5006	5007	5107	5108	5209	5210	5310	5311	5409	5410
5490	5491	5583	5584	5771	5772	5890	5891	5964	5965	6035	6036	6111
6112	6221	6222	6449	6450	6504	6505	6574	6575	6767	6768	6828	6829
6874	6875	6940	6941	6991	6992	7037	7038	7103	7104			

SVC SUB= 000C00
SVC TAG= 000000

SVC IST= 000000

CZDMQEO MB207 STATIC DIAG #2 MACV11 30A(1052) 18-OCT-82 15:30 PAGE 186
 CZDMQE.P11 30-SEP-82 15:35 CROSS REFERENCE TABLE -- USER SYMBOLS

SV05	003632	2065#	3297	3345	3365	3404	3455	3511	3534	3594	3656	3718	3751	3816
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		4272	4324	4348	4372	4425	4449	4473	4526	4550	4574	4626	4650	4674
		4726	4750	4774	4826	4852	4876	4928	4954	4978	5029	5055	5079	5130
		5156	5180	5232	5258	5282	5333	5359	5383	5456	5527	5645	5728	5833
		5908	5927	5944	5982	6000	6017	6130	6152	6165	6182	6195	6333	6364
		6386	6412	6484	6539	6629	6644	6659	6673	6689	6701	6713	6725	6807
		6838	6852	6908	6966	7013	7079	7134	7158	7181	7204			
SWPAC1	027665	7292#												
SWPAC2	027726	7298#												
S\$LSYM=	010000	1250#	1464#	1479#	2390#	2419#	2448#	2476#	2504#	2533#	2562#	2590#	2618#	2646#
		2674#	2702#	2731#	2759#	2782#	2810#	2838#	2850#	2869#	2886#	2903#	2923#	2942#
		2967#	2986#	3006#	3027#	3178#	3204#	3220#	3240#	3258#	3310#	3373#	3395#	3423#
		3445#	3475#	3497#	3522#	3551#	3613#	3675#	3766#	3895#	3982#	4010#	4036#	4060#
		4085#	4112#	4135#	4158#	4182#	4209#	4234#	4259#	4284#	4311#	4335#	4359#	4384#
		4412#	4436#	4460#	4485#	4513#	4537#	4561#	4586#	4613#	4637#	4661#	4686#	4713#
		4737#	4761#	4786#	4812#	4837#	4863#	4888#	4914#	4939#	4965#	4990#	5016#	5040#
		5066#	5091#	5117#	5141#	5167#	5192#	5219#	5243#	5269#	5294#	5320#	5344#	5370#
		5395#	5473#	5545#	5736#	5878#	5951#	6024#	6097#	6207#	6436#	6492#	6561#	6753#
		6815#	6861#	6924#	6975#	7021#	7088#	7215#	7259#	7349#				
TEMP	002440	1641#	6039*	6064*	6083*	6118*	6126*							
TFM1	003666	2085#	2379	2408	2437									
TFM2	003712	2089#	2465	2493	2579	2663	2799	2827						
TFM3	003730	2092#	2522	2551										
TFM36	004017	2103#												
TFM4	003755	2096#	2607	2635	2691	2748								
TFM40	004263	2133#	2856											
TFM41	004105	2113#	2873											
TFM42	004174	2123#	2890											
TFM43	004344	2142#	2910											
TFM44	004427	2151#	2929											
TFM45	004466	2157#	2948											
TFM45A	004524	2162#	2954											
TFM46	004647	2177#	2973											
TFM47	004733	2186#	2993											
TFM5	003773	2099#	2720											
TMMC	005010	2194#	2928	2947										
TYPE	002432	1638#	3162*	3167*	3172*	3386	3436	3489	3910	6311				
T\$ARGC=	000001	1283#	1284#	1285#	1286#	1287#	1288#	2364#	2369	2370#	2375	2376#	2383	2384#
		2388	2393#	2398	2399#	2404	2405#	2412	2413#	2417	2422#	2427	2428#	2433
		2434#	2441	2442#	2446	2451#	2456	2457#	2462	2463#	2469	2470#	2474	2479#
		2484	2485#	2490	2491#	2497	2498#	2502	2507#	2512	2513#	2518	2519#	2526
		2527#	2531	2536#	2541	2542#	2547	2548#	2555	2556#	2560	2565#	2570	2571#
		2576	2577#	2583	2584#	2588	2593#	2598	2599#	2604	2605#	2611	2612#	2616
		2621#	2626	2627#	2632	2633#	2639	2640#	2644	2649#	2654	2655#	2660	2661#
		2667	2668#	2672	2677#	2682	2683#	2688	2689#	2695	2696#	2700	2705#	2710
		2711#	2716	2717#	2724	2725#	2729	2734#	2739	2740#	2745	2746#	2752	2753#
		2757	2764#	2769	2770#	2775	2776#	2780	2785#	2790	2791#	2796	2797#	2803
		2804#	2808	2813#	2818	2819#	2824	2825#	2831	2832#	2836	2843#	2847	2855#
		2860	2862#	2866	2873#	2877	2879#	2883	2890#	2894	2896#	2900	2908#	2914
		2916#	2920	2927#	2933	2935#	2939	2946#	2952	2954#	2958	2960#	2964	2971#
		2977	2979#	2983	2991#	2997	2999#	3003						
		7234#	7240#	7251#										
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T\$ERRN=	000056	3842#	3889#	3934#	3957#	3976#	4026#	4050#	4074#	4125#	4148#	4171#	4223#	4248#
		4273#	4325#	4349#	4373#	4426#	4450#	4474#	4527#	4551#	4575#	4627#	4651#	4675#

CZDMQEO M8207 STATIC DIAG #2
CZDMQE.P11 30-SEP-82 15:35

MACY11 30A(1052) 18-OCT-82 15:30 PAGE 187
CROSS REFERENCE TABLE -- USER SYMBOLS

	4727#	4751#	4775#	4827#	4853#	4877#	4929#	4955#	4979#	5030#	5056#	5080#	5131#
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	5909#	5928#	5945#	5983#	6001#	6018#	6055#	6072#	6088#	6131#	6153#	6166#	6183#
	6196#	6334#	6365#	6387#	6413#	6485#	6540#	6630#	6645#	6660#	6674#	6690#	6702#
	6714#	6726#	6808#	6839#	6853#	6909#	6967#	7014#	7080#	7135#	7159#	7182#	7205#
TSEXCP= 000000	7234#	7239	7240#	7244	7251#	7256							
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	3661#	3723#	3756#	3787#	3849#	3910#	3938#	4002#	4030#	4054#	4078#	4104#	4129#
	4152#	4175#	4201#	4228#	4253#	4277#	4303#	4329#	4353#	4377#	4403#	4430#	4454#
	4478#	4504#	4531#	4555#	4579#	4605#	4631#	4655#	4679#	4705#	4731#	4755#	4779#
	4805#	4831#	4857#	4881#	4907#	4933#	4959#	4983#	5009#	5034#	5060#	5084#	5110#
	5135#	5161#	5185#	5212#	5237#	5263#	5287#	5313#	5338#	5364#	5388#	5412#	5465#
	5493#	5535#	5588#	5680#	5776#	5868#	5893#	5914#	5933#	5967#	5988#	6006#	6173#
	6338#	6391#	6417#	6423#	6508#	6546#	6552#	6579#	6635#	6651#	6665#	6679#	6695#
	6706#	6718#	6731#	6788#	6843#	6878#	6915#	6944#	7041#				
TSGMAN= 000000	1250#												
TSNILI= 000001	7234#	7238	7240#	7243	7251#	7255							
TSLAST= 000001	1250#	7359#											
TSLOLI= 000000	7234#	7237	7240#	7242	7251#	7254							
TSLSYM= 010000	1250#	1464	1479	2390	2419	2448	2476	2504	2533	2562	2590	2618	2646
	2674	2702	2731	2759	2782	2810	2838	2850	2869	2886	2903	2923	2942
	2967	2986	3006	3027	3178	3204	3220	3240	3258	3310	3373	3423	3475
	3551	3613	3675	3766	3895	3982	4085	4182	4284	4384	4485	4586	4686
	4786	4888	4990	5091	5192	5294	5395	5473	5545	5736	5878	5951	6024
	6097	6207	6436	6492	6561	6753	6815	6861	6924	6975	7021	7088	7215
	7259	7349											
TSLTNO= 000053	7362#												
TSNEST= 000000	1250#	1256#	1370#	1375#	1445#	1463#	1472#	1478#	2363#	2389#	2392#	2418#	2421#
	2447#	2450#	2475#	2478#	2503#	2506#	2532#	2535#	2561#	2564#	2589	2592#	2617#
	2620#	2645#	2648#	2673#	2676#	2701#	2704#	2730#	2733#	2758	2763#	2781	2784#
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	3612#	3624#	3674#	3687#	3765#	3778#	3894#	3908#	3981#	3999#	4010#	4033#	4036#
	4057#	4060#	4081#	4084#	4102#	4112#	4132#	4135#	4155#	4158#	4178#	4181#	4199#
	4209#	4231#	4234#	4256#	4259#	4280#	4283#	4301#	4311#	4332#	4335#	4356#	4359#
	4380#	4383#	4401#	4412#	4433#	4436#	4457#	4460#	4481#	4484#	4502#	4513#	4534#
	4537#	4558#	4561#	4582#	4585#	4603#	4613#	4634#	4637#	4658#	4661#	4682#	4685#
	4703#	4713#	4734#	4737#	4758#	4761#	4782#	4785#	4803#	4812#	4834#	4837#	4860#
	4863#	4884#	4887#	4905#	4914#	4936#	4939#	4962#	4965#	4986#	4989#	5007#	5016#
	5037#	5040#	5063#	5066#	5087#	5090#	5108#	5117#	5138#	5141#	5164#	5167#	5188#
	5191#	5210#	5219#	5240#	5243#	5266#	5269#	5290#	5293#	5311#	5320#	5341#	5344#
	5367#	5370#	5391#	5394#	5410#	5472#	5491#	5544#	5584#	5735#	5772#	5877#	5891#
	5950#	5965#	6023#	6036#	6096#	6112#	6206#	6222#	6435#	6450#	6491#	6505#	6560#
	6575#	6752#	6768#	6814#	6829#	6860#	6875#	6923#	6941#	6974#	6992#	7020#	7038#
	7087#	7104#	7214#	7230#	7257#	7342#	7347#						
TSNSO = 000000	1256#												
TSNS1 = 000005	1370#	1375	1445#	1463	1472#	1478	2363#	2389	2392#	2418	2421#	2447	2450#
	2475	2478#	2503	2506#	2532	2535#	2561	2564#	2589	2592#	2617	2620#	2645
	2648#	2673	2676#	2701	2704#	2730	2733#	2758	2763#	2781	2784#	2809	2812#
	2837	2841#	2849	2853#	2868	2871#	2885	2888#	2902	2906#	2922	2925#	2941
	2944#	2966	2969#	2985	2989#	3005	3017#	3026	3041#	3177	3182#	3203	3214#
	3219	3234#	3239	3255#	3257	3281#	3309	3324#	3372	3384#	3422	3434#	3474
	3487#	3550	3563#	3612	3624#	3674	3687#	3765	3778#	3894	3908#	3981	3999#
	4084	4102#	4181	4199#	4283	4301#	4383	4401#	4484	4502#	4585	4603#	4685

CZDMQEO M8207 STATIC DIAG #2
CZDMQE.P11 30-SEP-82 15:35

MACY11 30A(1052) 18-OCT-82 15:30 PAGE 188
CROSS REFERENCE TABLE -- USER SYMBOLS

	4703#	4785	4803#	4887	4905#	4989	5007#	5090	5108#	5191	5210#	5293	5311#
	5394	5410#	5472	5491#	5544	5584#	5735	5772#	5877	5891#	5950	5965#	6023
	6036#	6096	6112#	6206	6222#	6435	6450#	6491	6505#	6560	6575#	6752	6768#
	6814	6829#	6860	6875#	6923	6941#	6974	6992#	7020	7038#	7087	7104#	7214
T\$NS2 = 000003	7230#	7257	7342#	7347									
	3395#	3412	3445#	3463	3497#	3519	3522#	3542	4010#	4033	4036#	4057	4060#
	4081	4112#	4132	4135#	4155	4158#	4178	4209#	4231	4234#	4256	4259#	4280
	4311#	4332	4335#	4356	4359#	4380	4412#	4433	4436#	4457	4460#	4481	4513#
	4534	4537#	4558	4561#	4582	4613#	4634	4637#	4658	4661#	4682	4713#	4734
	4737#	4758	4761#	4782	4812#	4834	4837#	4860	4863#	4884	4914#	4936	4939#
	4962	4965#	4986	5016#	5037	5040#	5063	5066#	5087	5117#	5138	5141#	5164
	5167#	5188	5219#	5240	5243#	5266	5269#	5290	5320#	5341	5344#	5367	5370#
	5391												
T\$PTNU= 000000	1250#												
T\$SAVL= 177777	1250#												
T\$SEGL= 177777	1250#	3395#	3410	3412#	3414	3445#	3461	3463#	3465	3497#	3517	3519#	3521
	3522#	3540	3542#	3544	4010#	4031	4033#	4035	4036#	4055	4057#	4059	4060#
	4079	4081#	4083	4112#	4130	4132#	4134	4135#	4153	4155#	4157	4158#	4176
	4178#	4180	4209#	4229	4231#	4233	4234#	4254	4256#	4258	4259#	4278	4280#
	4282	4311#	4330	4332#	4334	4335#	4354	4356#	4358	4359#	4378	4380#	4382
	4412#	4431	4433#	4435	4436#	4455	4457#	4459	4460#	4479	4481#	4483	4513#
	4532	4534#	4536	4537#	4556	4558#	4560	4561#	4580	4582#	4584	4613#	4632
	4634#	4636	4637#	4656	4658#	4660	4661#	4680	4682#	4684	4713#	4732	4734#
	4736	4737#	4756	4758#	4760	4761#	4780	4782#	4784	4812#	4832	4834#	4836
	4837#	4858	4860#	4862	4863#	4882	4884#	4886	4914#	4934	4936#	4938	4939#
	4960	4962#	4964	4965#	4984	4986#	4988	5016#	5035	5037#	5039	5040#	5061
	5063#	5065	5066#	5085	5087#	5089	5117#	5136	5138#	5140	5141#	5162	5164#
	5166	5167#	5186	5188#	5190	5219#	5238	5240#	5242	5243#	5264	5266#	5268
	5269#	5288	5290#	5292	5320#	5339	5341#	5343	5344#	5365	5367#	5369	5370#
	5389	5391#	5393										
T\$SEK0= 010002	3395#	3410	3412#	3445#	3461	3463#	3497#	3517	3519	3522#	3540	3542	4010#
	4031	4033	4036#	4055	4057	4060#	4079	4081	4112#	4170	4132	4135#	4153
	4155	4158#	4176	4178	4209#	4229	4231	4234#	4254	4256#	4259#	4278	4280#
	4311#	4330	4332#	4335#	4354	4356#	4359#	4378	4380	4412#	4431	4433	4436#
	4455	4457	4460#	4479	4481	4513#	4532	4534	4537#	4556	4558#	4561#	4580
	4582	4613#	4632	4634	4637#	4656	4658	4661#	4680	4682#	4713#	4732	4734#
	4737#	4756	4758	4761#	4780	4782	4812#	4832	4834	4837#	4851	4860	4863#
	4882	4884	4914#	4934	4936	4939#	4960	4962	4965#	4984	4986	5016#	5035
	5037	5040#	5061	5063	5066#	5085	5087	5117#	5136	5138#	5141#	5162	5164#
	5167#	5186	5188	5219#	5238	5240	5243#	5264	5266	5269#	5288	5290	5320#
	5339	5341	5344#	5365	5367	5370#	5389	5391					
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	4198#	4300#	4400#	4501#	4602#	4702#	4802#	4904#	5006#	5107#	5209#	5310#	5409#
	5490#	5583#	5771#	5890#	5964#	6035#	6111#	6221#	6449#	6504#	6574#	6767#	6828#
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	2620#	2648#	2676#	2704#	2733#	2763#	2784#	2812#	2841#	2853#	2871#	2888#	2906#
	2925#	2944#	2969#	2989#	3017#	3041#	3182#	3214#	3234#	3255#	3281#	3324#	3384#
	3434#	3487#	3563#	3624#	3687#	3778#	3908#	3999#	4102#	4199#	4301#	4401#	4502#
	4603#	4703#	4803#	4905#	5007#	5108#	5210#	5311#	5410#	5491#	5584#	5772#	5891#
	5965#	6036#	6112#	6222#	6450#	6505#	6575#	6768#	6829#	6875#	6941#	6992#	7038#
	7104#	7230#	7342#										
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CZDMQEO M8207 STATIC DIAG #2
CZDMQE.P11 30-SEP-82 15:35

MACY11 30A(1052) 18-OCT-82 15:30 PAGE 189
CROSS REFERENCE TABLE -- USER SYMBOLS

1424#	1425#	1426#	1427#	1428#	1429#	1463#	1478#	2389#	2418#	2447#	2475#	2503#
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3409#	3410#	3412#	3422#	3436#	3437#	3460#	3461#	3463#	3474#	3489#	3490#	3516#
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3724#	3756#	3757#	3765#	3780#	3781#	3849#	3850#	3894#	3910#	3911#	3938#	3939#
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4104#	4105#	4129#	4130#	4132#	4152#	4153#	4155#	4175#	4176#	4178#	4181#	4201#
4202#	4228#	4229#	4231#	4253#	4254#	4256#	4277#	4278#	4280#	4283#	4303#	4304#
4329#	4330#	4332#	4353#	4354#	4356#	4377#	4378#	4380#	4383#	4403#	4404#	4430#
4431#	4433#	4454#	4455#	4457#	4478#	4479#	4481#	4484#	4504#	4505#	4531#	4532#
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2587#	2590#	2597#	2603#	2610#	2615#	2618#	2625#	2631#	2638#	2643#	2646#	2653#
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4082#	4085#	4104#	4112#	4124#	4129#	4133#	4135#	4147#	4152#	4156#	4158#	4170#
4175#	4179#	4182#	4201#	4209#	4222#	4228#	4232#	4234#	4247#	4253#	4257#	4259#

TEST= 000053

TEST= 177777

CZDMQEO MB207 STATIC DIAG #2
CZDMQE.P11 30-SEP-82 15:35

MACY11 30A(1052) 18-OCT-82 15:30 PAGE 190
CROSS REFERENCE TABLE -- USER SYMBOLS

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4359	4372	4377	4381	4384	4403	4412	4425	4430	4434	4436	4449	4454
4458	4460	4473	4478	4482	4485	4504	4513	4526	4531	4535	4537	4550
4555	4559	4561	4574	4579	4583	4586	4605	4613	4626	4631	4635	4637
4650	4655	4659	4661	4674	4679	4683	4686	4705	4713	4726	4731	4735
4737	4750	4755	4759	4761	4774	4779	4783	4786	4805	4812	4826	4831
4835	4837	4852	4857	4861	4863	4876	4881	4885	4888	4907	4914	4928
4933	4937	4939	4954	4959	4963	4965	4978	4983	4987	4990	5009	5016
5029	5034	5038	5040	5055	5060	5064	5066	5079	5084	5088	5091	5110
5117	5130	5135	5139	5141	5156	5161	5165	5167	5180	5185	5189	5192
5212	5219	5232	5237	5241	5243	5258	5263	5267	5269	5282	5287	5291
5294	5313	5320	5333	5338	5342	5344	5359	5364	5368	5370	5383	5388
5392	5395	5412	5456	5465	5473	5493	5527	5535	5545	5588	5645	5680
5728	5736	5776	5833	5868	5878	5893	5908	5914	5927	5933	5944	5951
5967	5982	5988	6000	6006	6017	6024	6054	6071	6087	6097	6113	6130
6152	6165	6173	6182	6195	6207	6333	6338	6364	6386	6391	6412	6417
6423	6436	6484	6492	6508	6539	6546	6552	6561	6579	6629	6635	6644
6651	6659	6665	6673	6679	6689	6695	6701	6706	6713	6718	6725	6731
6753	6788	6807	6815	6838	6843	6852	6861	6878	6908	6915	6924	6944
6966	6975	7013	7021	7041	7079	7088	7109	7132	7134	7140	7158	7164
7181	7188	7191	7204	7215								
1250#	3281#	3324#	3384#	3434#	3487#	3563#	3624#	3687#	3778#	3908#	3999#	4102#
4199#	4301#	4401#	4502#	4603#	4703#	4803#	4905#	5007#	5108#	5210#	5311#	5410#
5491#	5584#	5772#	5891#	5965#	6036#	6112#	6222#	6450#	6505#	6575#	6768#	6829#
6875#	6941#	6992#	7038#	7104#								
3255#	3257											
3182#	3203											
3214#	3219											
3234#	3239											
7230#	7258											
1445#	1463											
3041#	3177											
2363#	2389	2392#	2418	2421#	2447	2450#	2475	2478#	2503	2506#	2532	2535#
2561	2564#	2589	2592#	2617	2620#	2645	2648#	2673	2676#	2701	2704#	2730
2733#	2758	2763#	2781	2784#	2809	2812#	2837	2841#	2849	2853#	2868	2871#
2E	2888#	2902	2906#	2922	2925#	2941	2944#	2966	2969#	2985	2989#	3005
1370#												
3017#	3021	3026										
3395#	3409	3412#	3445#	3460	3463#	3497#	3516	3519#	3522#	3539	3542#	4010#
4030	4033#	4036#	4054	4057#	4060#	4078	4081#	4112#	4129	4132#	4135#	4152
4155#	4158#	4175	4178#	4209#	4228	4231#	4234#	4253	4256#	4259#	4277	4280#
4311#	4329	4332#	4335#	4353	4356#	4359#	4377	4380#	4412#	4430	4433#	4436#
4454	4457#	4460#	4478	4481#	4513#	4531	4534#	4537#	4555	4558#	4561#	4579
4582#	4613#	4631	4634#	4637#	4655	4658#	4661#	4679	4682#	4713#	4731	4734#
4737#	4755	4758#	4761#	4779	4782#	4812#	4831	4834#	4837#	4857	4860#	4863#
4881	4884#	4914#	4933	4936#	4939#	4959	4962#	4965#	4983	4986#	5016#	5034
5037#	5040#	5060	5063#	5066#	5084	5087#	5117#	5135	5138#	5141#	5161	5164#
5167#	5185	5188#	5219#	5237	5240#	5243#	5263	5266#	5269#	5287	5290#	5320#
5338	5341#	5344#	5364	5367#	5370#	5388	5391#					
7342#	7348											
1472#	1478											
3281#	3288	3305	3309	3324#	3351	3372	3384#	3386	3422	3434#	3436	3474
3487#	3489	3550	3563#	3599	3612	3624#	3661	3674	3687#	3723	3756	3765
3778#	3780	3849	3894	3908#	3910	3938	3981	3999#	4002	4084	4102#	4104
4181	4199#	4201	4283	4301#	4303	4383	4401#	4403	4484	4502#	4504	4585
4603#	4605	4685	4703#	4705	4785	4803#	4805	4887	4905#	4907	4989	5007#

TSTSTS= 000001

 TSSAU = 010042
 TSSAUT= 010037
 TSSCLE= 010040
 TSSDU = 010041
 TSSHAR= 010116
 TSSHW = 010001
 TSSINI= 010036
 TSSMSG= 010034

 TSSPRO= 010000
 TSSRPT= 010035
 TSSSEG= 010002

 TSSSOF= 010117
 TSSSW = 010002
 TSSTES= 010115

CZDMGEO MB207 STATIC DIAG #2
CZDMGE.P11 30-SEP-82 15:35

MACY11 30A(1052) 18-OCT-82 15:30 PAGE 191
CRCSS REFERENCE TABLE -- USER SYMBOLS

		5009	5090	5108#	5110	5191	5210#	5212	5293	5311#	5313	5394	5410#	5412
		5465	5472	5491#	5493	5535	5544	5584#	5588	5680	5735	5772#	5776	5868
		5877	5891#	5893	5914	5933	5950	5965#	5967	5988	6006	6023	6036#	6096
		6112#	6173	6206	6222#	6338	6391	6417	6423	6435	6450#	6491	6505#	6508
		6546	6552	6560	6575#	6579	6635	6651	6665	6679	6695	6706	6718	6731
		6752	6768#	6788	6814	6829#	6843	6860	6875#	6878	6915	6923	6941#	6944
		6974	6992#	7020	7038#	7041	7087	7104#	7214					
T1	012146 G	1386	3280#											
T10	014470 G	1395	3907#											
T11	014736 G	1396	3998#											
T12	015202 G	1397	4101#											
T13	015432 G	1398	4198#											
T14	015676 G	1399	4300#											
T15	016142 G	1400	4400#											
T16	016406 G	1401	4501#											
T17	016652 G	1402	4602#											
T18	017116 G	1403	4702#											
T19	017362 G	1404	4802#											
T2	012256 G	1387	3323#											
T20	017642 G	1405	4904#											
T21	020122 G	1406	5006#											
T22	020376 G	1407	5107#											
T23	020654 G	1408	5209#											
T24	021130 G	1409	5310#											
T25	021404 G	1410	5409#											
T26	021576 G	1411	5490#											
T27	021744 G	1412	5583#											
T28	022322 G	1413	5771#											
T29	022560 G	1414	5890#											
T3	012422 G	1388	3383#											
T30	022774 G	1415	5964#											
T31	023210 G	1416	6035#											
T32	023452 G	1417	6111#											
T33	024044 G	1418	6221#											
T34	025116 G	1419	6449#											
T35	025216 G	1420	6504#											
T36	025364 G	1421	6574#											
T37	026042 G	1422	6767#											
T38	026202 G	1423	6828#											
T39	026310 G	1424	6874#											
T4	012552 G	1389	3433#											
T40	026446 G	1425	6940#											
T41	026544 G	1426	6991#											
T42	026644 G	1427	7037#											
T43	026770 G	1428	7103#											
T5	012712 G	1390	3486#											
T6	013154 G	1391	3562#											
T7	013356 G	1392	3623#											
T8	013570 G	1393	3686#											
T9	014112 G	1394	3777#											
UAM	= 000200 G	1564#												
VECTOR	027504	7272#												
WPM	027400	7235	7260#											
WROM	003422	2004#												
WTYPE	002414	1631#	1887	1986	1988	2011	2033	3097*	3163	3165	3170	3505	3862	4001
		4104	4201	4303	4403	4504	4605	4705	4805	4840	4907	4942	5009	5043

CZDMQEO M8207 STATIC DIAG #2 MACY11 30A(1052) 18-OCT-82 15:30 PAGE 192
 CZDMQE.P11 30-SEP-82 15:35 CRSS REFERENCE TABLE -- USER SYMBOLS

	5110	5144	5212	5246	5313	5347	5638	5693	5826	6077	6507	6578	6877
	5110	5144											
	6943	7040											
XSALWA= 000000	1250#												
XSALS= 000040	1250#												
XSOFFS= 000400	1250#												
XSTRUE= 000020	1250#												
ZERO 002370	1621#												
\$BDADR 002450	1645#												
\$BDDAT 002454	1647#												
\$GDADR 002446	1644#												
\$GDDAT 002452	1646#	2972	6049*	6050	6052	6322*	6327	6330*	6331	6355*	6360	6362	6377*
	6382	6384	6403*	6408	6410	7126*	7129	7153*	7176*	7177*	7201*		
\$LSTIN= 000000	1258#												
\$LSTIA= 000000	1259#												
\$REG0 002430	1637#	2070*	2376	2405									
\$REG1 002426	1636#	2069*											
\$REG2 002424	1635#	2068*	2378	2407	2434	2548	2606	2690					
\$REG3 002422	1634#	2067*											
\$REG4 002420	1633#	2066*	2377	2406	2435	2463	2491	2520	2549	2577	2605	2633	2661
	2689	2717	2746	2797	2825								
\$REG5 002416	1632#	2065*	2436	2464	2492	2521	2550	2578	2634	2662	2718	2747	2798
	2826												
\$TEMPO 002442	1642#												
\$TMPO 002444	1643#	6040*	6065*	6066	6069	6080	6119*	6149	6156				
. = 030144	1241#	1624#	1625#	1626#	1627#	1660#	1706#	1732#	1870#	3022	3289	3306	3352
	3387	3410	3437	3461	3490	3517	3540	3600	3662	3724	3757	3781	3850
	3911	3926	3939	4003	4031	4055	4079	4105	4130	4153	4176	4202	4229
	4254	4278	4304	4330	4354	4378	4404	4431	4455	4479	4505	4532	4556
	4580	4606	4632	4656	4680	4706	4732	4756	4780	4806	4832	4858	4882
	4908	4934	4960	4984	5010	5035	5061	5085	5111	5136	5162	5186	5202
	5213	5238	5264	5288	5314	5339	5365	5389	5413	5466	5494	5536	5589
	5681	5777	5869	5894	5915	5934	5968	5989	6007	6174	6339	6392	6418
	6424	6428#	6432#	6509	6547	6553	6580	6636	6652	6666	6680	6696	6707
	6719	6732	6789	6844	6879	6916	6945	7042	7322#				
.MSTCL 002756	1865#	3326	3441	3495	3567	3628	3691	3786	3916	4009	4110	4207	4309
	4409	4510	4610	4711	4810	4912	5014	5115	5217	5318	5417	5498	5591
	5779	5896	5970	6039	6118	6129	6181	6194	6204	6225	6884	6950	7047
	7107												
.REGT 003050	1879#	1888											
.ROMCL 003044	1876#	1905	1908	1911	1921	1929	1937	1945	1953	1956	1959	1970	1993
	1999	3331	3334	3337	3355	3358	3574	3577	3581	3584	3587	3636	3639
	3643	3646	3649	3698	3701	3705	3708	3711	3735	3738	3741	3744	3790
	3793	3796	3803	3806	3825	3829	3869	3872	3875	3878	3918	3922	3942
	3948	3961	3964	3967	5421	5424	5429	5445	5448	5507	5510	5519	5613
	5616	5623	5626	5705	5708	5711	5715	5801	5804	5811	5814	5900	5918
	5937	5974	5992	6010	6060	6230	6244	6248	6252	6266	6270	6274	6281
	6284	6288	6292	6296	6305	6308	6324	6357	6375	6379	6398	6401	6405
	6453	6456	6459	6462	6467	6471	6885	6888	6896	6900	6952	6956	7000
	7007	7055	7059	7062	7072	7113	7117	7120	7124	7146	7150	7169	7172
	7196												
.SROMC 003100	1885#	1914	1962	1973	3809	3821	4015	4018	4039	4042	4063	4066	4114
	4117	4137	4140	4160	4163	4212	4215	4237	4240	4262	4265	4314	4317
	4338	4341	4362	4365	4415	4418	4439	4442	4463	4466	4516	4519	4540
	4543	4564	4567	4616	4619	4640	4643	4664	4667	4716	4719	4740	4743
	4764	4767	4816	4819	4842	4845	4866	4869	4918	4921	4944	4947	4968
	4971	5019	5022	5045	5048	5069	5072	5120	5123	5146	5149	5170	5173

CZDMQEO M8207 STATIC DIAG #2
CZDMQE.P11 30-SEP-82 15:35

MACY11

30A(1052)

18-OCT-82

15:30

PAGE 193

CROSS REFERENCE TABLE -- USER SYMBOLS

SEO 191

5222
5619

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CZDMQEO MB207 STATIC DIAG #2
CZDMQE.P11 30-SEP-82 15:35

MACY11 30A(1052) 18-OCT-82 15:30 PAGE 195
CROSS REFERENCE TABLE -- MACRO NAMES

BADHEA	1785#	3272	3276	3314	3319	3375	3379	3425	3429	3477	3482	3554	3558	3615	3619
	3677	3682	3768	3773	3897	3903	3984	3994	4087	4097	4184	4194	4286	4296	4386
	4396	4487	4497	4588	4598	4688	4698	4788	4798	4890	4900	4992	5002	5093	5103
	5194	5205	5296	5306	5397	5405	5476	5486	5547	5579	5737	5767	5879	5886	5953
	5960	6025	6031	6099	6107	6209	6217	6438	6445	6494	6500	6564	6570	6755	6763
	6817	6824	6863	6870	6926	6936	6977	6987	7023	7033	7090	7099			
BCOMPL	1#	1250#	3059	3065	3071										
BERROR	1#	1250#													
BGNAU	1#	1250#													
BGNAUT	1#	1250#	3254												
BGNCLN	1#	1250#	3181												
BGNDU	1#	1250#	3213												
BGNHRD	1#	1250#	3233												
BGNHRD	1#	1250#	7229												
BGNHW	1#	1250#	1444												
BGNINI	1#	1250#	3040												
BGNMOD	1#	1250#	1255												
BGNMSG	1#	1250#	2363	2392	2421	2450	2478	2506	2535	2564	2592	2620	2648	2676	2704
	2733	2763	2784	2812	2840	2852	2870	2887	2905	2924	2943	2968	2988		
BGNPRO	1#	1250#	1369												
BGNPTA	1#	1250#													
BGNRPT	1#	1250#	3016												
BGNSEG	1#	1250#	3394	3444	3496	3521	4009	4035	4059	4111	4134	4157	4208	4233	4258
	4310	4334	4358	4411	4435	4459	4512	4536	4560	4612	4636	4660	4712	4736	4760
	4811	4836	4862	4913	4938	4964	5015	5039	5065	5116	5140	5166	5218	5242	5268
	5319	5343	5369												
BGNSET	1#	1250#													
BGNSFT	1#	1250#	7341												
BGNSRV	1#	1250#													
BGNSUB	1#	1250#													
BGNSW	1#	1250#	1471												
BGNTST	1#	1250#	3279	3322	3382	3432	3485	3561	3622	3685	3776	3906	3997	4100	4197
	4299	4399	4500	4601	4701	4801	4903	5005	5106	5208	5309	5408	5489	5582	5770
	5889	5963	6034	6110	6220	6448	6503	6573	6766	6827	6873	6939	6990	7036	7102
BNCOMP	1#	1250#	3077	3095											
BNERRO	1#	1250#													
BREAK	1#	1250#	3605	3667	3758	3851									
BRESET	1#	1250#	3215	3236	6112	7131	7190								
CKLOOP	1#	1250#	7139	7163	7187										
CLOCK	1#	1250#													
CLOSE	1#	1250#													
CLRMAR	1825#	3792	3805												
CLRVEC	1#	1250#													
COMMEN	1#	1250#													
DELAY	1#	1250#													
DESCRI	1#	1250#	1593												
DEVTYP	1#	1250#	1726												
DISPAT	1#	1250#	1383												
DISPLA	1#	1250#													
DOCLN	1#	1250#													
DODU	1#	1250#	3196												
DORPT	1#	1250#													
EDSCAL	1780#	3273	3277	3315	3320	3376	3380	3426	3430	3478	3483	3555	3559	3616	3620
	3678	3683	3769	3774	3898	3904	3985	3995	4088	4098	4185	4195	4287	4297	4387
	4397	4488	4498	4589	4599	4689	4699	4789	4799	4891	4901	4993	5003	5094	5104
	5195	5206	5297	5307	5398	5406	5477	5487	5548	5580	5738	5768	5880	5887	5954
	5961	6026	6032	6100	6108	6210	6218	6439	6446	6495	6501	6565	6571	6756	6764

	6818	6825	6864	6871	6927	6937	6978	6988	7024	7034	7091	7100				
ENDAU	1#	1250#	3256													
ENDAUT	1#	1250#	3202													
ENDCLN	1#	1250#	3218													
ENDCOM	1#	1250#														
ENDDU	1#	1250#	3238													
ENDHRD	1#	1250#	7256													
ENDHW	1#	1250#	1462													
ENDINI	1#	1250#	3176													
ENDMOD	1#	1250#														
ENDMSG	1#	1250#	2389	2418	2447	2475	2503	2532	2561	2589	2617	2645	2673	2701	2730	
	2758	2781	2809	2837	2848	2867	2884	2901	2921	2940	2965	2984	3004			
ENDPRO	1#	1250#	1374													
ENDPTA	1#	1250#														
ENDRPT	1#	1250#	3025													
ENDSEG	1#	1250#	3411	3462	3518	3541	4032	4056	4080	4131	4154	4177	4230	4255	4279	
	4331	4355	4379	4432	4456	4480	4533	4557	4581	4633	4657	4681	4733	4757	4781	
	4833	4859	4883	4935	4961	4985	5036	5062	5086	5137	5163	5187	5239	5265	5289	
	5340	5366	5390													
ENDSET	1#	1250#														
ENDSFT	1#	1250#	7346													
ENDSRV	1#	1250#														
ENDSUB	1#	1250#														
ENDSW	1#	1250#	1477													
ENDTST	1#	1250#	3308	3371	3421	3473	3549	3611	3673	3764	3893	3980	4083	4180	4282	
	4382	4483	4584	4684	4784	4886	4988	5089	5190	5292	5393	5471	5543	5734	5876	
	5949	6022	6095	6205	6434	6490	6559	6751	6813	6859	6922	6973	7019	7086	7213	
EQUALS	1#	1250#	1504													
ERRDF	1#	1250#	3297	3345	3365	3404	3455	3511	3534	3594	3656	3718	3751	3816	3841	
	3888	3933	3956	3975	4025	4049	4073	4124	4147	4170	4222	4247	4272	4324	4348	
	4372	4425	4449	4473	4526	4550	4574	4626	4650	4674	4726	4750	4774	4826	4852	
	4876	4928	4954	4978	5029	5055	5079	5130	5156	5180	5232	5258	5282	5333	5359	
	5383	5456	5527	5645	5728	5833	5908	5927	5944	5982	6000	6017	6053	6070	6086	
	6130	6152	6165	6182	6195	6333	6364	6386	6412	6484	6539	6629	6644	6659	6673	
	6689	6701	6713	6725	6807	6838	6852	6908	6966	7013	7079	7134	7158	7181	7204	
ERRHRD	1#	1250#														

CZDMQEO M8207 STATIC DIAG #2
CZDMQE.P11 30-SEP-82 15:35

MACY11 30A(1052) 18-OCT-82 15:30 PAGE 197
CROSS REFERENCE TABLE -- MACRO NAMES

GETBYT	1#	1250#														
GETPRI	1#	1250#														
GETWOR	1#	1250#														
GMANIA	1#	1250#														
GMANID	1#	1250#														
GMANIL	1#	1250#														
GPARD	1#	1250#	3091													
GPRMA	1#	1250#	7239													
GPRMD	1#	1250#	7233	7250												
GPRML	1#	1250#														
HEADER	1#	1250#	1281													
INLOOP	1#	1250#														
IOSETU	1#	1250#														
IOSTAR	1#	1250#														
KT11	1#	1250#														
K4ONLY	1775#	1814#	3778	5410	5491	5586	5774	5891	5965							
LASTAD	1#	1250#	7357													
MACEX	1796#	3384	3434	3487	3908											
MACEX2	1805#	4102	4199	4301	4401	4502	4603	4703	4803	4905	5007	5108	5210	5311		
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CZDMQEO M8207 STATIC DIAG #2
CZDMQE.P11 30-SEP-82 15:35MACY11 30A(1052) 18-OCT-82 15:30 PAGE 198
CROSS REFERENCE TABLE -- MACRO NAMES

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CZDMQEO M8207 STATIC DIAG #2
CZDMQE.P11 30-SEP-82 15:35

MACY11 30A(1052) 18-OCT-82 15:30 PAGE 199
CROSS REFERENCE TABLE -- MACRO NAMES

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CZDMQEO MB207 STATIC DIAG #2
CZDMQE.P11 30-SEP-82 15:35

MACY11 30A(1052) 18-OCT-82 15:30 PAGE 200
CROSS REFERENCE TABLE -- MACRO NAMES

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CZDMQEO M8207 STATIC DIAG #2
CZDMQE.P11 30-SEP-82 15:35

MACY11 30A(1052) 18-OCT-82 15:30 PAGE 201
CROSS REFERENCE TABLE -- MACRO NAMES

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CZDMQEO M8207 STATIC DIAG #2 MACV11 30A(1052) 18-OCT-82 15:30 PAGE 202
CZDMQE.P11 30-SEP-82 15:35 CROSS REFERENCE TABLE -- MACRO NAMES

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CZDMQEO M8207 STATIC DIAG #2 MACY11 30A(1052) 18-OCT-82 15:30 PAGE 203
 CZDMQE.P11 30-SEP-82 15:35 CROSS REFERENCE TABLE -- MACRO NAMES

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CZDMQEO M8207 STATIC DIAG #2 MACY11 30A(1052) 18-OCT-82 15:30 PAGE 204
 CZDMQE.P11 30-SEP-82 15:35 CROSS REFERENCE TABLE -- MACRO NAMES

MSTLAB

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CZDMQEO M8207 STATIC DIAG #2
CZDMQE.P11 30-SEP-82 15:35

MACY11 30A(1052) 18-OCT-82 15:30 PAGE 205
CRCS REFERENCE TABLE -- MACRO NAMES

	5055#	5060#	5064#	5066#	5079#	5084#	5088#	5091#	5110#	5117#	5130#	5135#	5139#	5141#	5156#
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	5267#	5269#	5282#	5287#	5291#	5294#	5313#	5320#	5333#	5338#	5342#	5344#	5359#	5364#	5368#
	5370#	5383#	5388#	5392#	5395#	5412#	5456#	5465#	5473#	5493#	5527#	5535#	5545#	5588#	5645#
	5680#	5728#	5736#	5776#	5833#	5868#	5878#	5893#	5908#	5914#	5927#	5933#	5944#	5951#	5967#
	5932#	5988#	6000#	6006#	6017#	6024#	6054#	6071#	6087#	6097#	6113#	6130#	6152#	6165#	6173#
	6182#	6195#	6207#	6333#	6338#	6364#	6386#	6391#	6412#	6417#	6423#	6436#	6484#	6492#	6508#
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	6701#	6706#	6713#	6718#	6725#	6731#	6753#	6788#	6807#	6815#	6838#	6843#	6852#	6861#	6878#
	6908#	6915#	6924#	6944#	6966#	6975#	7013#	7021#	7041#	7079#	7088#	7109#	7132#	7134#	7140#
	7158#	7164#	7181#	7188#	7191#	7204#	7215#								
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	4179#	4182#	4201#	4209#	4222#	4228#	4232#	4234#	4247#	4253#	4257#	4259#	4272#	4277#	4281#
	4284#	4303#	4311#	4324#	4329#	4333#	4335#	4348#	4353#	4357#	4359#	4372#	4377#	4381#	4384#
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	4513#	4526#	4531#	4535#	4537#	4550#	4555#	4559#	4561#	4574#	4579#	4583#	4586#	4605#	4613#
	4626#	4631#	4635#	4637#	4650#	4655#	4659#	4661#	4674#	4679#	4683#	4686#	4705#	4713#	4726#
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	4835#	4837#	4852#	4857#	4861#	4863#	4876#	4881#	4885#	4888#	4907#	4914#	4928#	4933#	4937#
	4939#	4954#	4959#	4963#	4965#	4978#	4983#	4987#	4990#	5009#	5016#	5029#	5034#	5038#	5040#
	5055#	5060#	5064#	5066#	5079#	5084#	5088#	5091#	5110#	5117#	5130#	5135#	5139#	5141#	5156#
	5161#	5165#	5167#	5180#	5185#	5189#	5192#	5212#	5219#	5232#	5237#	5241#	5243#	5258#	5263#
	5267#	5269#	5282#	5287#	5291#	5294#	5313#	5320#	5333#	5338#	5342#	5344#	5359#	5364#	5368#
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	5680#	5728#	5736#	5776#	5833#	5868#	5878#	5893#	5908#	5914#	5927#	5933#	5944#	5951#	5967#
	5982#	5988#	6000#	6006#	6017#	6024#	6054#	6071#	6087#	6097#	6113#	6130#	6152#	6165#	6173#
	6182#	6195#	6207#	6333#	6338#	6364#	6386#	6391#	6412#	6417#	6423#	6436#	6484#	6492#	6508#
	6539#	6546#	6552#	6561#	6579#	6629#	6635#	6644#	6651#	6659#	6665#	6673#	6679#	6689#	6695#
	6701#	6706#	6713#	6718#	6725#	6731#	6753#	6788#	6807#	6815#	6838#	6843#	6852#	6861#	6878#
	6908#	6915#	6924#	6944#	6966#	6975#	7013#	7021#	7041#	7079#	7088#	7109#	7132#	7134#	7140#
	7158#	7164#	7181#	7188#	7191#	7204#	7215#								
MSWORD	1#	1250#	1321#	1330	1384#	1386	1387	1388	1389	1390	1391	1392	1393	1394	1395
	1396	1397	1398	1399	1400	1401	1402	1403	1404	1405	1406	1407	1408	1409	1410
	1411	1412	1413	1414	1415	1416	1417	1418	1419	1420	1421	1422	1423	1424	1425
	1426	1427	1428	3021#	3297#	3298	3299	3300	3345#	3346	3347	3348	3365#	3366	3367
	3368	3386#	3404#	3405	3406	3407	3436#	3455#	3456	3457	3458	3489#	3511#	3512	3513
	3514	3534#	3535	3536	3537	3594#	3595	3596	3597	3656#	3657	3658	3659	3718#	3719
	3720	3721	3751#	3752	3753	3754	3780#	3816#	3817	3818	3819	3841#	3842	3843	3844
	3888#	3889	3890	3891	3910#	3933#	3934	3935	3936	3956#	3957	3958	3959	3975#	3976
	3977	3978	4002#	4025#	4026	4027	4028	4049#	4050	4051	4052	4073#	4074	4075	4076
	4104#	4124#	4125	4126	4127	4147#	4148	4149	4150	4170#	4171	4172	4173	4201#	4222#
	4223	4224	4225	4247#	4248	4249	4250	4272#	4273	4274	4275	4303#	4324#	4325	4326
	4327	4348#	4349	4350	4351	4372#	4373	4374	4375	4403#	4425#	4426	4427	4428	4449#

CZDMQEO M8207 STATIC DIAG #2 MACY11 30A(1052) 18-OCT-82 15:30 PAGE 206
 CZDMQE.P11 30-SEP-82 15:35 CROSS REFERENCE TABLE -- MACRO NAMES

	4450	4451	4452	4473#	4474	4475	4476	4504#	4526#	4527	4528	4529	4550#	4551	4552
	4553	4574#	4575	4576	4577	4605#	4626#	4627	4628	4629	4650#	4651	4652	4653	4674#
	4675	4676	4677	4705#	4726#	4727	4728	4729	4750#	4751	4752	4753	4774#	4775	4776
	4777	4805#	4826#	4827	4828	4829	4852#	4853	4854	4855	4876#	4877	4878	4879	4907#
	4928#	4929	4930	4931	4954#	4955	4956	4957	4978#	4979	4980	4981	5009#	5029#	5030
	5031	5032	5055#	5056	5057	5058	5079#	5080	5081	5082	5110#	5130#	5131	5132	5133
	5156#	5157	5158	5159	5180#	5181	5182	5183	5212#	5232#	5233	5234	5235	5258#	5259
	5260	5261	5282#	5283	5284	5285	5313#	5333#	5334	5335	5336	5359#	5360	5361	5362
	5383#	5384	5385	5386	5412#	5456#	5457	5458	5459	5493#	5527#	5528	5529	5530	5588#
	5645#	5646	5647	5648	5728#	5729	5730	5731	5776#	5833#	5834	5835	5836	5893#	5908#
	5909	5910	5911	5927#	5928	5929	5930	5944#	5945	5946	5947	5967#	5982#	5983	5984
	5985	6000#	6001	6002	6003	6017#	6018	6019	6020	6054#	6055	6056	6057	6071#	6072
	6073	6074	6087#	6088	6089	6090	6130#	6131	6132	6133	6152#	6153	6154	6155	6165#
	6166	6167	6168	6173#	6182#	6183	6184	6185	6195#	6196	6197	6198	6333#	6334	6335
	6336	6364#	6365	6366	6367	6386#	6387	6388	6389	6412#	6413	6414	6415	6423#	6484#
	6485	6486	6487	6508#	6539#	6540	6541	6542	6552#	6579#	6629#	6630	6631	6632	6644#
	6645	6646	6647	6659#	6660	6661	6662	6673#	6674	6675	6676	6689#	6690	6691	6692
	6701#	6702	6703	6704	6713#	6714	6715	6716	6725#	6726	6727	6728	6731#	6788#	6807#
	6808	6809	6810	6838#	6839	6840	6841	6852#	6853	6854	6855	6878#	6908#	6909	6910
	6911	6944#	6966#	6967	6968	6969	7013#	7014	7015	7016	7041#	7079#	7080	7081	7082
	7134#	7135	7136	7137	7158#	7159	7160	7161	7181#	7182	7183	7184	7204#	7205	7206
	7207	7234#	7240#	7251#	7359	7360									
MSXFER	1#	1250#													
OPEN	1#	1250#													
POINTE	1#	1250#	1278												
POPSP2	1756#	6146													
PRINTB	1#	1250#	2364	2370	2376	2384	2393	2399	2405	2413	2422	2428	2434	2442	2451
	2457	2463	2470	2479	2485	2491	2498	2507	2513	2519	2527	2536	2542	2548	2556
	2565	2571	2577	2584	2593	2599	2605	2612	2621	2627	2633	2640	2649	2655	2661
	2668	2677	2683	2689	2696	2705	2711	2717	2725	2734	2740	2746	2753	2764	2770
	2776	2785	2791	2797	2804	2813	2819	2825	2832	2842	2861	2878	2895	2915	2934
	2953	2959	2978	2998											
	2953	2959	2978	2998											
PRINTF	1#	1250#	2854	2872	2889	2907	2926	2945	2970	2990					
PRINTS	1#	1250#													
PRINTX	1#	1250#													
READBU	1#	1250#													
READEF	1#	1250#	3056	3062	3068	3074									
RFLAGS	1#	1250#													
ROMCLK	1829#	1904	1907	1910	1920	1928	1936	1944	1952	1955	1958	1969	1992	1998	3330
	3333	3336	3354	3357	3573	3576	3580	3583	3586	3635	3638	3642	3645	3648	3697
	3700	3704	3707	3710	3734	3737	3740	3743	3789	3793	3795	3802	3806	3824	3828
	3868	3871	3874	3877	3917	3921	3941	3947	3960	3963	3966	5420	5423	5428	5444
	544X	5506	5509	5518	5612	5615	5622	5625	5704	5707	5710	5714	5800	5803	5810
	5813	5899	5917	5936	5973	5991	6009	6059	6229	6243	6247	6251	6265	6269	6273
	6280	6283	6287	6291	6295	6304	6307	6323	6356	6374	6378	6397	6400	6404	6452
	6455	6458	6461	6466	6470	6884	6887	6895	6899	6951	6955	6999	7006	7054	7058
	7061	7071	7112	7116	7119	7123	7145	7149	7168	7171	7195				
SETPRI	1#	1250#	7107												
SETVEC	1#	1250#													
SKIP04	1854#	3999													
SKIP06	1840#	1984	3503	3860	4838	4940	5041	5142	5244	5345	5636	5691	5824	6505	6576
SKIP07	1847#	1986	2009	2031	6875	6941	7038								
SLASH	1#	1250#													
SR0MCL	1835#	1913	1961	1972	3808	3820	4014	4017	4038	4041	4062	4065	4113	4116	4136
	4139	4159	4162	4211	4214	4236	4239	4261	4264	4313	4316	4337	4340	4361	4364
	4414	4417	4438	4441	4462	4465	4515	4518	4539	4542	4563	4566	4615	4618	4639

CZDMQEO M8207 STATIC DIAG #2 MACV11 70A(1052) 18-OCT-82 15:30 PAGE 207
 CZDMQE.P11 30-SEP-82 15:35 CROSS REFERENCE TABLE -- MACRO NAMES

	4642	4663	4666	4715	4718	4739	4742	4763	4766	4815	4818	4841	4844	4865	4868
	4917	4920	4943	4946	4967	4970	5018	5021	5044	5047	5068	5071	5119	5122	5145
	5148	5169	5172	5221	5224	5247	5250	5271	5274	5322	5325	5348	5351	5372	5375
	5512	5618	5806	6890											
STARS	1#	1250#													
SVC	1#	1248#	1249												
XFER	1#	1250#	3021#	3386#	3436#	3489#	3780#	3910#	4002#	4104#	4201#	4303#	4403#	4504#	4605#
	4705#	4805#	4907#	5009#	5110#	5212#	5313#	5412#	5493#	5588#	5776#	5893#	5967#	6173#	6423#
	6508#	6552#	6579#	6731#	6788#	6878#	6944#	7041#							
XFERF	1#	1250#													
XFERT	1#	1250#													
\$MD	2346#	2362	2391	2420	2449	2477	2505	2534	2563	2591	2619	2647	2675	2703	2732
	2762	2783	2811												

. ABS. 030144 000

ERRORS DETECTED: 0

CZDMQE.BIN,CZDMQE.SEQ/SOL/CRF/NL:TOC=SVC34R.MLB,CZDMQE.P11
 RUN-TIME: 40 49 5 SECONDS
 RUN-TIME RATIO: 300/95=3.1
 CORE USED: 21K (41 PAGES)