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DMV 11 MICROTRAC STC P1
CYDMACO

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Made In USA

DMV 11

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The image shows a grid of 15 small, illegible data tables or charts arranged in two columns on the left side of the page. Each table appears to have a header and several rows of data, but the text is too small to read. The tables are separated by thin white lines.



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I D E N T I F I C A T I O N
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PRODUCT CODE: AC-F261C-MC
PRODUCT NAME: CVDMACO DMV-11 MICRO-CONTROLLER STATIC DIAGNOSTIC PART 1
PRODUCT DATE: JULY 1983
MAINTAINER: DIAGNOSTICS MERRIMACK CC:38P
AUTHORS: CHRIS BRIENEN
RAY MARSHALL
PURPOSE: THIS DIAGNOSTIC IS DESIGNED TO PERFORM STATIC LOGIC TESTS FOR
THE MB053 OR MB064 (HEREAFTER REFERRED TO AS THE DMV OR DMV-11)

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CVDMAC.P11 16 AUG 84 13:59

MACV11 30A(1052) 16 AUG 84 14:51 PAGE 3
PROGRAM DOCUMENT

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HISTORY

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14 JAN-81
11 JUL-83
29 JUL-84

INITIAL RELEASE
INSTALLED OUTSTANDING PATCHES
INCREASED TIMING PARAMETERS
TO ALLOW PROGRAM TO RUN ON
A J-11 PROCESSOR (ORION).
(NICK MCCAMY)

CVDMACO DMV11 MCTRL DIAG #1
CVDMAC.P11 16 AUG 84 13:59

MACY11 30A(1052) 16-AUG-84 14:51 PAGE 4
PROGRAM DOCUMENT

CONTENTS

2258	
2259	
2260	
2261	
2262	1.0 INTRODUCTION
2263	
2264	2.0 HARDWARE REQUIREMENTS
2265	
2266	3.0 PRELIMINARY PROGRAM REQUIREMENTS
2267	
2268	4.0 GENERAL PROGRAM CONSIDERATIONS
2269	4.1 DIAGNOSTIC SUPERVISOR
2270	4.2 EXECUTION TIME
2271	4.3 XXDP.
2272	4.4 ACT/SLIDE
2273	4.5 APT
2274	4.6 MEMORY MANAGEMENT
2275	4.7 ERROR LOGGING
2276	
2277	5.0 PROGRAM LOAD MEDIA
2278	
2279	6.0 OPERATING INSTRUCTIONS
2280	6.1 LOADING AND STARTING PROCEDURES
2281	6.1.1 LOADING PROCEDURES
2282	6.1.2 STARTING PROCEDURES
2283	6.1.3 ** STEPS FOR QUICK AND SIMPLE EXECUTION **
2284	6.2 INITIAL DIALOGUE
2285	6.3 PROGRAM OPTIONS
2286	6.3.1 START COMMAND
2287	6.3.2 RESTART COMMAND
2288	6.3.3 CONTINUE COMMAND
2289	6.3.4 PROCEED COMMAND
2290	6.3.5 ADD COMMAND
2291	6.3.6 DROP COMMAND
2292	6.3.7 PRINT COMMAND
2293	6.3.8 DISPLAY COMMAND
2294	6.3.9 FLAGS COMMAND
2295	6.3.10 ZFLAGS COMMAND
2296	6.3.11 CONTROL CHARACTERS
2297	6.3.12 HARDWARE PARAMETERS
2298	6.3.13 SOFTWARE PARAMETERS
2299	6.3.14 EXTENDED DISCUSSION OF P-TABLE DIALOGUE
2300	
2301	7.0 TEST DESCRIPTIONS
2302	
2303	8.0 ERROR INFORMATION
2304	8.1 ERROR REPORTING

CVDMA0 DMV11 MCTRL DIAG #1
CVDMA0.P11 16-AUG-84 13:59

MACY11 30A(1052) 16-AUG-84 14:51 PAGE 5
PROGRAM DOCUMENT

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1.0 INTRODUCTION

THE M8053 AND M8064 ARE SINGLE-LINE SYNCHRONOUS, MICRO-PROCESSOR BASED COMMUNICATIONS INTERFACES WHICH CAN SUPPORT BOTH CHARACTER-ORIENTED (DDCMP, BSC, ETC.) AND BIT-ORIENTED (SDLC, HDLC, ETC.) PROTOCOLS. THE PURPOSE OF THIS PROGRAM IS TO PERFORM DIAGNOSTIC TESTING OF THE CSRS, RAM, AND BASIC MICRO-PROCESSOR LOGIC ON THESE BOARDS. THE FOLLOWING FUNCTIONS WILL BE PERFORMED: DMV RESIDENT U-DIAG EXECUTION CSR ADDRESSING, VIA REGISTER STATIC BIT INTERACTION AND READ/WRITE TESTING, AND ON-BOARD RAM TESTING.

THE STATIC LOGIC TESTS WILL PROVIDE EXTENSIVE TROUBLESHOOTING CAPABILITIES, SUCH AS TIGHT SCOPE LOOPS, SWITCH OPTIONS, AND ABILITY TO "LOCK" ONTO INTERMITTENT ERRORS. IN ADDITION TESTS ARE DESIGNED AND STRUCTURED TO ACHIEVE MAXIMUM FAULT RESOLUTION AND FACILITATE REPLACEMENT OF THE SMALLEST FIELD REPLACEABLE UNIT.

THIS PROGRAM IS IMPLEMENTED USING THE DIAGNOSTIC SUPERVISOR AND A STRUCTURED PROGRAMMING APPROACH. BECAUSE THE DESIGN CONFORMS TO THE SUPERVISOR (STANDALONE VERSION) THE PROGRAM IS COMPATIBLE WITH ACT, APT, XXDP., AND SLIDE.

THROUGH DIALOGUE WITH THE OPERATOR, THE PROGRAM ALLOWS MODIFICATION OF DEVICE PARAMETERS, SUCH AS LSI-BUS ADDRESS, VECTOR ADDRESSES AND DEVICE PRIORITY. IN ADDITION, THE OPERATOR CAN SPECIFY PARTICULAR TESTS TO BE RUN AND A VARIETY OF LOOPING, RUNNING, AND REPORTING MODES.

DEVICE ERRORS WILL BE REPORTED AS THEY OCCUR. THE REPORT WILL INCLUDE A TEST NUMBER AND DESCRIPTION OF THE ERROR, GOOD AND BAD TEST DATA, AND APPLICABLE DEVICE REGISTER CONTENTS.

2.0 HARDWARE REQUIREMENTS

THE FOLLOWING HARDWARE IS REQUIRED TO RUN THE M8053/8064 STATIC LOGIC TESTS:

PDP-11/03 OR PDP-11/23
16K WORDS OF MEMORY
CONSOLE TERMINAL
M8053 OR M8064 COMMUNICATIONS INTERFACE

3.0 PRELIMINARY PROGRAM REQUIREMENTS

THIS PROGRAM (CVDMA) SHOULD BE THE FIRST OF THE FIVE DMV-11 STATIC DIAGNOSTICS TO BE RUN. ERRORS FOUND IN THIS PROGRAM SHOULD BE CORRECTED BEFORE RUNNING THE OTHERS.

CVDMAC0 DMV11 MCTRL DIAG #1
CVDMAC.P11 16-AUG-84 13:59

MACY11 30A(1052) 16-AUG 84 14:51 PAGE 6
PROGRAM DOCUMENT

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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 MAXIMUM TIME REQUIRED TO RUN THIS PROGRAM PER PASS FOR EACH UNIT IS AS FOLLOWS: 11/03 = 100 SEC, 11/23 = 50 SECONDS.

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.

4.7 ERROR LOGGING

AT THE END OF EACH PASS ON ALL UNITS, THE PROGRAM PRINTS OUT THE CUMULATIVE TOTAL NUMBER OF ERRORS SINCE THE LAST START OR RESTART COMMAND.

5.0 PROGRAM LOAD MEDIA

THIS PROGRAM CAN BE LOADED FROM PAPER TAPE USING THE

CVDMAC0 DMV11 MCTRL DIAG #1
CVDMAC.P11 16-AUG-84 13:59

MACY11 30A(1052) 16-AUG-84 14:51 PAGE 6 1
PROGRAM DOCUMENT

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2417
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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.

CVDMA0 DMV11 MCTRL DIAG #1
CVDMA0.P11 16-AUG-84 13:59

MACY11 30A(1052) 16-AUG-84 14:51 PAGE 7
PROGRAM DOCUMENT

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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 IDENTIFICATION AND PROMPT (DRS-C>)
- 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 :

```
DRS LOADED  
DIAG. RUN-TIME SERVICES  
CVDMA-C-0  
DMV-11 U-CONTRL LOGIC DIAG - PART 1 OF 2  
UNIT IS M8053 OR M8064  
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

CVDMACO DMV11 MCTRL DIAG #1
CVDMAC.P11 16-AUG-84 13:59

MACY11 30A(1052) 16-AUG-84 14:51 PAGE 7-1
PROGRAM DOCUMENT

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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:

- MOE 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) CONTAINING 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

CVDMACO DMV11 MCTRL DIAG #1
CVDMAC.P11 16-AUG 84 13:59

MACY11 30A(1052) 16-AUG-84 14:51 PAGE 7-2
PROGRAM DOCUMENT

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 "# 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 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

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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

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. 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>)

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<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 DIALOG'IE 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 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.

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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 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.

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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- HARD CORE QUESTIONS (SEE 6.2), HARDWARE DIALOGUE (SEE 6.3.1.5), OR SOFTWARE DIALOGUE (SEE 6.3.1.5) CAUSES THE 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 REMAINDER OF THE DIAGNOSTIC OR UNTIL ANOTHER O IS TYPED, WHICH STORES NORMAL TELETYPE OUTPUT.

6.3.12 HARDWARE PARAMETERS

THE FOLLOWING 3 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.

CYDMACO DMV11 MCTRL DIAG #1
CYDMAC.P11 16-AUG 84 13:59

MACY11 30A(1052) 16-AUG-84 14:51 PAGE 7 7
PROGRAM DOCUMENT

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1. DEVICE CSR ADDRESS : (0) 160020?

THIS IS THE ADDRESS AT WHICH THE CSR REGISTERS (SELO) RESIDE ON THE LSI-BUS. THE ALLOWABLE RANGE IS 160020-177760 (OCTAL), AND THE DEFAULT VALUE IS 160020.

2. DEVICE VECTOR ADDRESS : (0) 300 ?

THIS IS THE ADDRESS OF THE INPUT INTERRUPT VECTOR FOR THIS DEVICE. THE ALLOWABLE RANGE IS 000-674 (OCTAL), AND THE DEFAULT VALUE IS 300.

3. DEVICE PRIORITY LEVEL : (0) 4 ?

THIS IS THE CPU PRIORITY AT WHICH THE INTERRUPT HANDLERS OF THIS DEVICE WILL BE EXECUTED. THE ALLOWABLE RANGE IS 0-7, AND THE DEFAULT VALUE IS 4.

6.3.13 SOFTWARE PARAMETERS

NO SOFTWARE PARAMETER QUESTIONS ARE ASKED BY PART 1 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 "0 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. 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.

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

UNIT 7
<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 7 THRU THE END ARE GOING TO BE AFFECTED (NOTE THAT THIS PIECE OF INFORMATION IS PRINTED OUT FOR THE THE OPERATOR IN THE FORM "UNIT XX" AT THE BEGINNING OF EACH SERIES). QUESTION 1 IS RESPONDED TO 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 AN 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).

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7.0 TEST DESCRIPTIONS

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;.....
;* TEST 1 <DMV-11 AVAILABILITY>
;*
;* EACH NORMALLY USED CSR IS ACCESSED WITH A "TST" OR "TSTB" INSTRUCTION AND IF
;* A BUS TIMEOUT OCCURS (INTERRUPT @ VECTOR ADDR 4) A FLAG WILL BE SET SHOWING
;* WHICH CSR ADDR AND INSTRUCTION FAILED. "T1.HSW" REFLECTS "TST" INSTRUCTIONS
;* AND "T1.HSB" REFLECTS "TSTB" INSTRUCTIONS.
;*
;* EXAMPLES:
;*
;* IF "TSTB BSEL1" FAILS, BIT # 1 OF "T1.HSB" WILL BE SET.
;* IF "TST BSEL4" FAILS, BIT # 4 OF "T1.HSW" WILL BE SET
;* (NOTE: ONLY EVEN BITS IN "T1.HSW" CAN BE SET).
;*
;* THE FLAG WORDS ARE OUTPUT IN BINARY AS "EXTENDED ERROR INFORMATION".
;.....

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;.....
;* TEST 2 <MASTER CLEAR, RUN MICRODIAGNOSTICS>
;*
;* A MASTER CLEAR IS ISSUED TO THE DMV-11, AND THE PRI RAM ALLOWS SUFFICIENT
;* TIME FOR THE MICRODIAGNOSTICS TO BE PERFORMED. THESE MICRODIAGNOSTICS RESIDE
;* IN 6502 PROGRAM MEMORY, AND THOROUGHLY VERIFY THE OPERATION OF THE 6502
;* MICROPROCESSOR CHIP. THEN, THEY CHECK OUT THE DATA RAM, THE 6502'S ACCESS TO
;* THE CSR'S, AND PERFORM A SIMPLE MESSAGE TEST USING THE 6522 CHIP AND THE
;* USYRT, WITH INTERNAL LOOPBACK.
;*
;* NEXT, THE LSI-11 PROGRAM READS THE THE CSR'S (SELO-SEL6) AND CHECKS THEM FOR
;* THEIR EXPECTED INITIALIZED STATES. IF AN ERROR HAS OCCURRED IN THE MICRO-
;* DIAGNOSTICS THE NUMBER OF THE FAILING TEST WILL BE FOUND IN SEL4, AND RUN
;* (BIT 7) WILL NOT BE SET IN BSEL1.
;.....

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;.....
;* TEST 3 <CSR ADDRESSING>
;*
;* FIRST, HALT THE 6502 UP BY CLEARING ALL CSRS. THEN, WRITE A DIFFERENT WORD
;* OF DATA PATTERN A INTO EACH OF BSEL0-17, AND AFTER EACH WRITE, READ AND
;* COMPARE ALL REGS TO EXPECTED VALUES.
;*
;* DATA PATTERN A = 001, 002, 004, 010, 020, 040, 100, 200, 052, 300, 140,
;*                   060, 030, 014, 006, 003
;.....

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;.....
;* TEST 4 <CSR REGISTERS DATA READ/WRITE>
;*
;* WRITE, READ, AND COMPARE EACH BYTE OF DATA PATTERN B INTO REGISTER BSEL0.

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CVDMACO DMV11 MCTRL DIAG #1
CVDMAC.P11 16-AUG-84 13:59

MACY11 30A(1052) 16-AUG-84 14:51 PAGE 8-1
PROGRAM DOCUMENT

```

2980 ;* THEN, REPEAT THIS USING EACH OF THE REMAINING CSR'S, BSEL1-BSEL17. WHEN BSEL1
2981 ;* IS BEING TESTED, THE PROGRAM ALWAYS SETS BIT 7 IN THE DATA PATTERN SO THAT
2982 ;* RUN WILL NOT BE CLEARED, AND IT ALWAYS CLEARS BIT6 SO THAT MCLR WILL NOT BE
2983 ;* SET.
2984 ;*
2985 ;* DATA PATTERN B = 125, 252, 000, 377, 001, 002, 004, 010, 020, 040, 100,
2986 ;*                   200, 376, 375, 373, 367, 357, 337, 277, 177, 000
2987 ;*.....
2988
2989
2990 ;.....
2991 ;* TEST 5 <BASIC MASTER CLEAR>
2992 ;*
2993 ;* PERFORM AN INITIAL MASTER CLEAR. WRITE 356 INTO BSEL0 AND READ AND CHECK IT.
2994 ;* THEN, ISSUE A MASTER CLEAR AND READ AND CHECK BSEL0 FOR 000.
2995 ;*.....
2996
2997
2998 ;.....
2999 ;* TEST 6 <BUS RESET>
3000 ;*
3001 ;* PERFORM AN INITIAL MASTER CLEAR. WRITE 377 INTO BSEL0 AND READ AND CHECK
3002 ;* IT. THEN, ISSUE A RESET INSTRUCTION, STALL FOR COMPLETION, AND READ AND
3003 ;* CHECK BSEL0 FOR 000.
3004 ;*.....
3005
3006
3007 ;.....
3008 ;* TEST 7 <CSR, MAINTENANCE MICROCODE INTERACTION>
3009 ;*
3010 ;* THIS TEST INVOKES THE MAINTENANCE REQUEST MECHANISM THROUGH WHICH THE LSI-11
3011 ;* AND 6502 CAN COMMUNICATE. FIRST, A MASTER CLEAR IS DONE WITH ONLY BIT 0
3012 ;* (MREQ) SET IN BSEL1. THE PROGRAM THEN CHECKS FOR THE SETTING OF BSEL2 BIT 7
3013 ;* (MRDY) BY THE MAINTENANCE MICROCODE WITHIN ABOUT 50 MICRO-SEC., AND IF MRDY
3014 ;* DOES NOT GET SET, AN ERROR IS REPORTED.
3015 ;*
3016 ;* NEXT, THE PROGRAM LOADS SEL4 WITH 000010 AND BSEL6 WITH 125. THEN, ALL CSR'S
3017 ;* ARE READ AND CHECKED FOR EXPECTED CONTENTS.
3018 ;*
3019 ;* BSEL2 IS THEN LOADED WITH A WRITE COMMAND, WHICH SHOULD CAUSE THE MICROCODE
3020 ;* TO TRANSFER THE 125 INTO BSEL0. ALL CSR'S ARE THEN READ AND CHECKED FOR
3021 ;* EXPECTED CONTENTS.
3022 ;*
3023 ;* THEN, THE PROGRAM LOADS 252 INTO BSEL0 AND READS AND CHECKS ALL CSR'S. BSEL2
3024 ;* IS THEN LOADED WITH A READ COMMAND, WHICH SHOULD CAUSE THE MICROCODE TO
3025 ;* TRANSFER THE 252 INTO BSEL6. ALL CSR'S ARE READ AND CHECKED.
3026 ;*.....
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3029 ;.....
3030 ;* TEST 8 <RUN FLIP-FLOP>
3031 ;*
3032 ;* THE PROGRAM PUTS THE MICROCODE INTO THE MAINTENANCE LOOP. A 125 CHARACTER
3033 ;* IS LOADED INTO BSEL6 AND A REQUEST IS MADE TO WRITE THE CONTENTS OF BSEL6
3034 ;* INTO BSEL0. THE PROGRAM THEN READS AND CHECKS BSEL0 TO CONTAIN 125.
3035 ;* NEXT, THE RUN FLIP-FLOP IS CLEARED BY LOADING A 0 INTO RUN (BSEL1 BIT 7).

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CVDMACO DMV11 MCTRL DIAG #1
CVDMAC.P11 16-AUG-84 13:59

MACY11 30A(1052) 16-AUG-84 14:51 PAGE 8-2
PROGRAM DOCUMENT

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3036 ;* BSEL0 IS THEN CLEARED AND THE REQUEST IS MADE AGAIN TO WRITE THE CONTENTS
3037 ;* OF BSEL6 INTO BSEL0. THE PROGRAM STALLS FOR 50 MICRO-SEC. AND CHECKS FOR
3038 ;* MRDY (BSEL2 BIT 7) NOT SET, AND BSEL0 STILL CLEARED.
3039 ;* THEN, THE PROGRAM SETS THE RUN FLIP-FLOP AGAIN BY LOADING A 1 INTO RUN,
3040 ;* AND CHECKS FOR MRDY SET WITHIN 50 MICRO-SEC. AND BSEL0 = 125.
3041 ;*****
3042
3043 ;*****
3044 ;* TEST 9 <LOW RAM (00-0F) SCRATCHPAD>
3045 ;*
3046 ;*
3047 ;* THIS TEST FIRST PERFORMS AN ADDRESSING TEST OF RAM LOCATIONS (00-0F), BY
3048 ;* WRITING THE ADRS INTO EACH LOCATION AND AFTER EACH WRITE, ALL THE LOCATIONS
3049 ;* ARE READ AND CHECKED FOR EXPECTED CONTENTS.
3050 ;*
3051 ;* THEN, THE TEST PERFORMS READ/WRITE DATA TESTING OF RAM LOCATIONS 00-0F,
3052 ;* BY WRITING, READING, AND COMPARING ALL BYTES OF DATA PATTERN B IN EACH
3053 ;* LOCATION.
3054 ;* DATA PATTERN B = 125, 252, 000, 377, 001, 002, 004, 010, 020, 040, 100,
3055 ;* 200, 376, 375, 373, 367, 357, 337, 277, 177, 000
3056 ;*****
3057
3058 ;*****
3059 ;* TEST 10 <DATA RAM MOVING INVERSIONS (LOC'S 0018-01FF HEX)>
3060 ;*
3061 ;*
3062 ;* GENERAL DESCRIPTION:
3063 ;* FIRST, THE 2K BYTE LOCATIONS IN RAM ARE LOADED WITH 0'S (SEE NOTE BELOW).
3064 ;* THEN, THE FIRST LOCATION IS READ AND CHECKED, A SINGLE 1 IS WRITTEN INTO
3065 ;* THE LOW BIT POSITION, AND THIS IS READ AND CHECKED. THIS IS DONE FOR ALL
3066 ;* BYTES IN THE RAM, BY INCREMENTING THE ADDRESS TO POINT TO THE NEXT RAM
3067 ;* LOCATION.
3068 ;* THEN, THE NEXT BIT POSITION IS CHOSEN TO INSERT A 1, AND ALL LOCATIONS
3069 ;* ARE READ, WRITTEN, AND READ AS BEFORE. THIS IS CONTINUED FOR ALL BIT
3070 ;* POSITIONS UNTIL THE ENTIRE RAM IS WRITTEN TO ALL 1'S. THE ABOVE OPERATIONS
3071 ;* ARE PERFORMED A SECOND TIME, WITH 0'S INSERTED INTO THE RAM INSTEAD OF 1'S.
3072 ;* THIS RESULTS IN THE ENTIRE RAM BEING WRITTEN TO ALL 0'S.
3073 ;* THIS TEST CONSTITUTES A THOROUGH TEST OF THE RAM. IT IS CAPABLE OF
3074 ;* DETECTING THE FOLLOWING FAULTS : STUCK ADDRESS BITS, UNI- AND BI-DIRECT-
3075 ;* IONAL COUPLING BETWEEN ADDRESS BITS, STUCK MEMORY BITS, AND UNI- AND
3076 ;* BI-DIRECTIONAL COUPLING BETWEEN MEMORY BITS IN BOTH ROWS AND COLUMNS OF THE
3077 ;* MEMORY MATRIX.
3078 ;*
3079 ;* NOTE:
3080 ;* THIS TEST DOES NOT CHECK LOCATIONS 0010-001F, SO THAT THE PRIMARY CSR'S
3081 ;* ARE NOT WRITTEN. IT DOES TEST LOCATIONS 0000-000F (SCRATCHPAD RAM) AND
3082 ;* LOCATIONS 0020-002F (SECONDARY CSR'S), AS WELL AS 0030-0800 (BASIC RAM).
3083 ;*
3084 ;* THE "TMP#" REGISTERS ARE USED HERE TO CONTAIN THE VARIOUS CONSTANTS &
3085 ;* VARIABLES USED THROUGHOUT THIS TEST. A LIST OF THEIR ASSIGNMENTS SEEMS
3086 ;* USEFUL SO HERE IT IS:
3087 ;*
3088 ;* TMP0 POINTS TO THE FIRST LOCATION AFTER THE SELECT REGISTERS.
3089 ;*
3090 ;* TMP1 ----
3091 ;*

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CVDMAC0 DMV11 MCTRL DIAG #1
CVDMAC.P11 16 AUG 84 13:59

MACY11 30A(1052) 16-AUG-84 14:51 PAGE 8-3
PROGRAM DOCUMENT

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3092      ;*      TMP2      TEST PATTERN ID CODE -- UNUSED BY THIS TEST.
3093      ;*
3094      ;*      TMP3      TEST DATA PATTERN INDEX -- UNUSED BY THIS TEST.
3095      ;*
3096      ;*      TMP4      TEST DATA PATTERN.  THE HIGH BYTE IS THE PATTERN BEING WRITTEN
3097      ;*      ON ANY GIVEN PASS AND THE LOW BYTE IS THE PATTERN THAT WAS
3098      ;*      WRITTEN BY THE PREVIOUS PASS THROUGH THE RAM.
3099      ;*
3100      ;*      TMP5      DATA READ FROM THE RAM.  ONLY THE LOW BYTE IS USED.
3101      ;*
3102      ;*      TMP6      ----
3103      ;*      TMP7      ----
3104      ;*      TMP8      ----
3105      ;*      TMP9      - - -
3106      ;*
3107      ;*      TMPA      RAM ADDRESS BEING TESTED.
3108      ;*
3109      ;*      TMPB      BIT POINTER.  NUMBER OF THE BIT WITHIN THE DATA FIELD WHICH IS
3110      ;*      BEING SWITCHED ON EACH WRITE WITHIN THE CURRENT PASS.
3111      ;*
3112      ;*      TMPC      DATA FLAG.  BIT 0 OF THIS WORD IS THE VALUE TO WHICH THE BIT
3113      ;*      IDENTIFIED IN TMPB IS BEING SET ON EACH WRITE IN THE CURRENT
3114      ;*      PASS.
3115      ;*
3116      ;*      TMPD      DIRECTION SWITCH.  0 = FORWARD    NON-ZERO = BACKWARD
3117      ;*
3118      ;*      TMPE      LAST VALID ADDRESS TO BE TESTED.  (I.E. THE END OF RAM)
3119      ;*
3120      ;*      TMPF      ERROR FLAGS.  BIT 1 SET = THE LAST DETECTED ERROR WAS THE READ
3121      ;*      OF THE PREVIOUS DATA BEFORE WRITING THE NEW DATA.  IF BIT2 IS
3122      ;*      SET, THE READ AFTER WRITE FAILED.  IF EITHER IS SET WHEN AN
3123      ;*      ERROR IS DETECTED, THE SUPERVISOR IS NOT CALL'D AND THEREFOR
3124      ;*      IT'S ERROR COUNTER WILL NOT REFLECT THE ERROR -- INSTEAD, THE
3125      ;*      DATA LINE IS PRINTED.  (UNLESS THE ERROR HANDLER'S DATA LINE
3126      ;*      PRINT COUNT HAS EXCEEDED ITS LIMIT -- IN WHICH CASE ITS
3127      ;*      INVOCATION IS IGNORED.)
3128      ;*
3129      ;*
3130      ;*
3131      ;*
3132      ;*      TEST 11 <VIA REGISTER ADDRESSING>
3133      ;*
3134      ;*      VIA == "6522 VERSATILE INTERFACE ADAPTER"
3135      ;*
3136      ;*      A MASTER CLEAR IS PERFORMED, NEXT, TIMER 1 LATCHES
3137      ;*      ARE CLEARED BY WRITING 000 INTO VIA REGS 6 & 7
3138      ;*      THEN, 377 IS LOADED INTO DATA DIRECTION REGISTERS A, B (DDRA, DDRB) TO
3139      ;*      SET THE PORT PINS FOR OUTPUT MODE.
3140      ;*      THEN, A DIFFERENT BYTE OF DATA PATTERN C IS WRITTEN INTO EACH VIA
3141      ;*      LOCATION, (EXCEPT THE TIMER REGS 4,5,10,11 OCT) AND AFTER EACH IS WRITTEN,
3142      ;*      ALL VIA REGS (EXCEPT 4,5,10,11) ARE READ AND COMPARED TO EXPECTED
3143      ;*      CONTENTS.  NOTE THAT SOME VIA REGS ARE ALTERED BY THE LOADING OF OTHERS,
3144      ;*      AND THE PROGRAM TAKES THIS INTO ACCOUNT, IN THE SETTING OF EXPECTED REG
3145      ;*      VALUES.  THE DATA PATTERN IS CHOSEN TO AVOID ACTIVATING THE VIA CHIP (SUCH
3146      ;*      AS GENERATING OUTPUTS ON CA1, CA2, CB1, CB2, OR CAUSING 6502
3147      ;*      INTERRUPT REQUESTS).

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;* DATA PATTERN C (WITH VIA REGS AND THEIR DATA SHOWN IN OCTAL) :
;* REGISTER = 00 01 02 03 06 07 12 13 14 15 16 17
;* DATA = 100, 101, 377, 377, 106, 107, 112, 040, 042, 000, 200, 117
;* NEXT, 000 IS LOADED INTO DDRA, AND DDRB IS READ AND COMPARED TO 377. THEN,
;* THE 377 IS LOADED BACK INTO DDRA, AND DDRB IS LOADED WITH 000 AND DDRA IS
;* READ AND COMPARED TO 377.
;*****

;*****
;* TEST 12 <VIA'S DDRB DATA READ/WRITE>
;*
;* DDRB == "DATA DIRECTION REGISTER B"
;* FIRST, A MASTER CLEAR IS PERFORMED. THEN :
;* READ/WRITE BITS 0-7 OF VIA DATA DIRECTION REGISTER B ARE TESTED BY WRITING,
;* READING, AND COMPARING EACH BYTE OF DATA PATTERN B.
;* DATA PATTERN B = 125, 252, 000, 377, 001, 002, 004, 010, 020, 040, 100,
;* 200, 376, 375, 373, 367, 357, 337, 277, 177, 000
;*****

;*****
;* TEST 13 <VIA'S DDRA DATA READ/WRITE>
;*
;* DDRA == "DATA DIRECTION REGISTER A"
;*
;* FIRST, A MASTER CLEAR IS PERFORMED. THEN :
;* READ/WRITE BITS 0-7 OF VIA DATA DIRECTION REGISTER A ARE TESTED BY WRITING,
;* READING, AND COMPARING EACH BYTE OF DATA PATTERN B.
;* DATA PATTERN B = 125, 252, 000, 377, 001, 002, 004, 010, 020, 040, 100,
;* 200, 376, 375, 373, 367, 357, 337, 277, 177, 000
;*****

;*****
;* TEST 14 <VIA'S ORB DATA READ/WRITE>
;*
;* ORB == "OUTPUT REGISTER PORT B"
;*
;* FIRST, A MASTER CLEAR IS PERFORMED. NEXT, 377 IS LOADED INTO DATA
;* DIR. REG. B (DDR B) TO SET ALL B PORT PINS FOR OUTPUT MODE. THEN :
;* READ/WRITE BITS 0-7 OF VIA OUTPUT REG. PORT B ARE TESTED BY WRITING,
;* READING, AND COMPARING EACH BYTE OF DATA PATTERN B.
;* DATA PATTERN B = 125, 252, 000, 377, 001, 002, 004, 010, 020, 040, 100,
;* 200, 376, 375, 373, 367, 357, 337, 277, 177, 000
;*****

;*****
;* TEST 15 <VIA'S T1 DATA READ/WRITE>
;*
;* T1 == "TIMER #1"
;*
;* THIS TEST WRITES, READS, AND CHECKS THE T1 LATCHES AND COUNTER REGISTERS
;* WITH DATA PATTERNS IN EACH OF 3 SUBTESTS.
;*****

```

CVDMACO DMV11 MCTRL DIAG #1
 CVDMAC.P11 16-AUG-84 13:59

MACY11 30A(1052) 16-AUG-84 14:51 PAGE 8-5
 PROGRAM DOCUMENT

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;*
;* FIRST SUBTEST: CHECKS FOR PROPER LOADING OF LATCHES
;* IT ALSO CHECKS TO BE SURE THAT THE COUNTER APPEARS TO BE DOING
;* SOMETHING TO THE COUNTERS. AS LONG AS THEY HAVE CHANGED FROM THE
;* VALUE LOADED INTO THEM, WE WILL BE SATISFIED.
;*
;* A. A MASTER CLEAR IS PERFORMED.
;* B. ALL LATCHES ARE LOADED TO ZEROES (JUST IN CASE), ACR6 & ACR7 ARE SET
;* TO ZERO (MODE 00), AND "T1" INTERRUPT ENABLE FLAG IS CLEARED.
;*
;* C. T1L-L(ADR 04) IS LOADED WITH THE CURRENT BYTE OF DATA PATTERN B.
;* D. T1L-L(ADR 06) IS READ AND COMPARED TO THE BYTE JUST WRITTEN.
;* E. T1C-L(ADR 04) IS READ AND CHECKED TO BE DIFFERENT THAN THE TEST BYTE.
;*
;* F. T1L-L(ADR 06) IS LOADED WITH THE COMPLEMENT OF THE CURRENT DATA BYTE.
;* G. T1L-L(ADR 06) IS READ AND COMPARED TO THE BYTE JUST WRITTEN.
;*
;* H. T1L-L(ADR 06) IS RE-LOADED WITH 0 TO MAKE T1C-M DECREMENT FAST.
;* T1L-M(ADR 05) IS LOADED WITH THE ORIGINAL TEST DATA PATTERN BYTE.
;* I. T1L-M(ADR 07) IS READ AND COMPARED TO THE BYTE LOADED INTO T1L-M.
;*
;* J. T1C-M(ADR 05) IS READ AND CHECKED TO BE DIFFERENT THAN THE TEST BYTE.
;*
;* K. T1L-M(ADR 07) IS LOADED WITH THE COMPLEMENT OF THE CURRENT DATA BYTE.
;* L. T1L-M(ADR 07) IS READ AND COMPARED TO THE BYTE JUST LOADED.
;*
;* M. STEPS C-L ARE REPEATED USING EACH BYTE OF DATA PATTERN B.
;*
;* SECOND SUBTEST: CHECKS FOR CROSS-TALK AND ADDRESSING ERRORS
;* FROM T1L-L TO T1L-M
;*
;* A. T1L-M(ADR 07) IS LOADED WITH 000 TO CLEAR IT.
;* B. T1L-L(ADR 06) IS LOADED WITH A BYTE OF DATA PATTERN B.
;* C. T1L-L(ADR 06) IS READ AND COMPARED TO THE DATA JUST WRITTEN.
;* D. T1L-M(ADR 07) IS READ AND COMPARED TO 000.
;* E. STEPS B-D ARE REPEATED USING EACH BYTE OF DATA PATTERN B.
;*
;* THIRD SUBTEST: CHECKS FOR CROSS-TALK AND ADDRESSING ERRORS
;* FROM T1L-M TO T1L-L
;*
;* A. T1L-L(ADR 04) IS LOADED WITH 000 TO CLEAR IT
;* B. T1L-M(ADR 07) IS LOADED WITH A BYTE OF DATA PATTERN B.
;* C. T1L-M(ADR 07) IS READ AND COMPARED TO THE DATA JUST WRITTEN.
;* D. T1L-L(ADR 06) IS READ AND COMPARED TO 000.
;* E. STEPS B-D ARE REPEATED USING EACH BYTE OF DATA PATTERN B.
;*
;* DATA PATTERN B = 125, 252, 000, 377, 001, 002, 004, 010, 020, 040, 100,
;* 200, 376, 375, 373, 367, 357, 337, 277, 177, 000
;*****
;*****
;* TEST 16 <VIA'S SR DATA READ/WRITE>
;*
```


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```

;*      SR == "SHIFT REGISTER"
;*
;* FIRST, A MASTER CLEAR IS PERFORMED AND THE ACR IS SET TO 000. THEN :
;* READ/WRITE BITS 0-7 OF VIA SHIFT REGISTER ARE TESTED BY WRITING, READING,
;* AND COMPARING EACH BYTE OF DATA PATTERN B.
;* DATA PATTERN B = 125, 252, 000, 377, 001, 002, 004, 010, 020, 040, 100,
;*                   200, 376, 375, 373, 367, 357, 337, 277, 177, 000
;*****

;*****
;*      TEST 17 <VIA'S ACR DATA READ/WRITE>
;*
;*      ACR == "AUXILIARY CONTROL REGISTER"
;*
;* FIRST, A MASTER CLEAR IS PERFORMED. THEN :
;* READ/WRITE BITS 0-7 OF THE ACR ARE TESTED BY WRITING, READING,
;* AND COMPARING EACH BYTE OF DATA PATTERN B.
;* DATA PATTERN B = 125, 252, 000, 377, 001, 002, 004, 010, 020, 040, 100,
;*                   200, 376, 375, 373, 367, 357, 337, 277, 177, 000
;*****

;*****
;*      TEST 18 <VIA'S PCR DATA READ/WRITE>
;*
;*      PCR == "PERIPHERAL CONTROL REGISTER"
;*
;* FIRST, A MASTER CLEAR IS PERFORMED. THEN :
;* READ/WRITE BITS 0-7 OF THE PCR REGISTER ARE TESTED BY WRITING, READING,
;* AND COMPARING EACH BYTE OF A SUBSET OF DATA PATTERN B.
;* DATA PATTERN B (SUBSET) = 125, 252, 000, 377, 001, 002, 004, 010, 020,
;*                             040, 100, 200.
;*****

;*****
;*      TEST 19 <VIA'S IER DATA READ/WRITE>
;*
;*      IER == "INTERRUPT ENABLE REGISTER"
;*
;* BITS 0-6 OF THE IER CAN BE SET OR CLEARED ON A WRITE, UNDER CONTROL OF THE
;* SET/CLEAR CONTROL BIT 7. TO TEST THIS, EACH BYTE OF DATA PATTERN D IS
;* WRITTEN INTO IER, AND THE REGISTER IS READ AND COMPARED TO THE CORRESPOND-
;* ING BYTE OF DATA PATTERN E.
;*
;* DATA PATTERN D = 200, 201, 202, 204, 210, 220, 240, 300, 200, 000, 001,
;*                   002, 004, 010, 020, 040, 100, 000, 325, 125, 252, 052
;*
;* DATA PATTERN E = 000, 001, 003, 007, 017, 037, 077, 177, 177, 177, 176,
;*                   174, 170, 160, 140, 100, 000, 000, 125, 000, 052, 000
;*****
;*****

```

CVDMACO DMV11 MCTRL DIAG #1
CVDMAC.P11 16-AUG-84 13:59

MACY11 30A(1052) 16-AUG-84 14:51 PAGE 8-7
PROGRAM DOCUMENT

```

3316 ;* TEST 20 <VIA'S ORB/DORB MASTER CLEAR TEST>
3317 ;*
3318 ;* ORB == "OUTPUT REGISTER PORT B"
3319 ;* DORB == "DATA DIRECTION REGISTER B"
3320 ;*
3321 ;* FIRST, A MASTER CLEAR IS PERFORMED. NEXT, 377 IS LOADED INTO DORB TO SET
3322 ;* ALL B PORT PINS FOR OUTPUT MODE. THEN, A 000 BYTE IS WRITTEN INTO ORB AND
3323 ;* THE REGISTER IS READ BACK AND CHECKED FOR 000. THEN, A MASTER CLEAR IS
3324 ;* PERFORMED AND ORB IS READ AND CHECKED FOR 377.
3325 ;*****
3326
3327
3328 ;*****
3329 ;* TEST 21 <VIA'S DORB MASTER CLEAR TEST>
3330 ;*
3331 ;* DORB == "DATA DIRECTION REGISTER B"
3332 ;*
3333 ;* A 377 BYTE IS WRITTEN INTO DORB AND THE REGISTER IS READ BACK AND CHECKED
3334 ;* FOR 377. THEN, A MASTER CLEAR IS PERFORMED AND DORB IS READ AND CHECKED FOR
3335 ;* 000.
3336 ;*
3337 ;* NOTE: THIS TESTING IS ALSO DONE IN TEST 23. IT IS INCLUDED HERE ONLY TO
3338 ;* PROVIDE TIGHTER LOOPING ON JUST THE DORB MASTER CLEAR CHECKING.
3339 ;*****
3340
3341
3342 ;*****
3343 ;* TEST 22 <VIA'S DDRA MASTER CLEAR TEST>
3344 ;*
3345 ;* DDRA == "DATA DIRECTION REGISTER A"
3346 ;*
3347 ;* A 377 BYTE IS WRITTEN INTO DDRA AND THE REGISTER IS READ BACK AND CHECKED
3348 ;* FOR 377. THEN, A MASTER CLEAR IS PERFORMED AND DDRA IS READ AND CHECKED FOR
3349 ;* 000.
3350 ;*****
3351
3352
3353 ;*****
3354 ;* TEST 23 <VIA'S SR MASTER CLEAR TEST>
3355 ;*
3356 ;* SR == "SHIFT REGISTER"
3357 ;*
3358 ;* A 123 BYTE IS WRITTEN INTO SR AND THE REGISTER IS READ BACK AND CHECKED
3359 ;* FOR 123. THEN, A MASTER CLEAR IS PERFORMED AND SR IS READ AND CHECKED FOR
3360 ;* NO CHANGE.
3361 ;*****
3362
3363
3364 ;*****
3365 ;* TEST 24 <VIA'S ACR MASTER CLEAR TEST>
3366 ;*
3367 ;* ACR == "AUXILIARY CONTROL REGISTER"
3368 ;*
3369 ;* A 252 BYTE IS WRITTEN INTO ACR AND THE REGISTER IS READ BACK AND CHECKED
3370 ;* FOR 252. THEN, A MASTER CLEAR IS PERFORMED AND ACR IS READ AND CHECKED FOR
3371 ;* 000, TO VERIFY THAT IT IS CLEARED BY MASTER CLEAR.

```

CVDMACO DMV11 MCTRL DIAG #1
CVDMAC.P11 16-AUG-84 13:59

MACY11 30A(1052) 16-AUG-84 14:51 PAGE 8-8
PROGRAM DOCUMENT

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```

;*****
;*****
;*****
;* TEST 25 <VIA'S PCR MASTER CLEAR TEST>
;*
;* PCR == "PERIPHERAL CONTROL REGISTER"
;*
;* A 377 BYTE IS WRITTEN INTO PCR AND THE REGISTER IS READ BACK AND CHECKED
;* FOR 377. THEN, A MASTER CLEAR IS PERFORMED AND PCR IS READ AND CHECKED FOR
;* 000.
;*****
;*****
;* TEST 26 <VIA'S IER MASTER CLEAR TEST>
;*
;* IER == "INTERRUPT ENABLE REGISTER"
;*
;* A 377 BYTE IS WRITTEN INTO IER AND THE REGISTER IS READ BACK AND CHECKED
;* FOR 377. THEN, A MASTER CLEAR IS PERFORMED AND IER IS READ AND CHECKED FOR
;* 200.
;*****

```


CVDMA0 DMV11 MCTRL DIAG #1
CVDMA0.P11 16-AUG-84 13:59

MACY11 30A(1052) 16-AUG-84 14:51 PAGE 9
PROGRAM DOCUMENT

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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 EXAMPLE PROVIDES A TYPICAL ERROR REPORT, WHICH DESCRIBES A "MASTER CLEAR FAILURE" ERROR, AND PROVIDES THE PC OF THE ERROR CALL AND THE DEVICE REGISTER CONTENTS :

CVDMA DVC FTL ERR 00001 ON UNIT 00 TST 002 SUB 000 PC: 021122
MASTER CLEAR FAILURE

THE CONTENTS OF ALL BYTE SELECT REG'S ARE:

BSEL0	BSEL1	BSEL2	BSEL3
000	000	000	000
BSEL4	BSEL5	BSEL6	BSEL7
000	000	121	000
BSEL10	BSEL11	BSEL12	BSEL13
000	000	000	000
BSEL14	BSEL15	BSEL16	BSEL17
000	000	000	000

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

IF EXTENDED ERROR INFORMATION HAD BEEN INHIBITED USING THE IXE FLAG PRIOR TO RUNNING THE TEST, THE ABOVE ERROR WOULD HAVE BEEN REPORTED IN THE FOLLOWING SHORTENED FORM :

CVDMA DVC FTL ERR 00001 ON UNIT 00 TST 002 SUB 000 PC: 021122
MASTER CLEAR FAILURE

CVDMACO DMV11 MCTRL DIAG #1
CVDMAC.P11 16-AUG-84 13:59

MACY11 30A(1052) 16-AUG-84 14:51 PAGE 10
LISTING & ASSEMBLY CONTROL

```

3440      .SBTTL LISTING & ASSEMBLY CONTROL
3441
3442      000000      HELP=0      ; CONTROL LISTING OF HELP INFORMATION
3443                                     ; HELP=0  NO LIST
3444                                     ; HELP=1  LIST
3445
3451      002000      . =2000
3452
3453                                     .MCALL  SVC
3454 002000      SVC                                     ; INITIALIZE SUPERVISOR MACROS
3455
3456 002000      BGNMOD  LUIMOD
3457
3458
3459      000001      $LSTIN= 1
3460      000001      $LSTTAG= 1
3461      000001      SVCINS= 1      ; LIST INSTRUCTIONS, SHIFTED RIGHT
3462      000001      SVCTST= 1      ; LIST TEST TAGS, SHIFTED RIGHT
3463      000001      SVCSUB= 1      ; LIST SUBTEST TAGS, SHIFTED RIGHT
3464      000001      SVCGBL= 1      ; LIST GLOBAL TAGS, SHIFTED RIGHT
3465      000001      SVCTAG= 1      ; LIST OTHER TAGS, SHIFTED RIGHT
3466
3467      ; CHANGE THE VALUES OF THE SVC... SYMBOLS TO BE ZERO IF YOU WISH
3468      ; TO ALIGN THE MACRO CALLS AND THEIR EXPANSIONS. CHANGE THE
3469      ; SYMBOLS TO BE MINUS-ONE TO NOT LIST THE EXPANSIONS. YOU MAY
3470      ; CHANGE THE SYMBOLS AT ANY POINT IN YOUR PROGRAM.
3471
3472 002000      POINTER BGNUA,BGNU,ERRTBL
3473

```

CVDMACO DMV11 MCTRL DIAG 01
CVDMAC.P11 16-AUG-84 13:59

MACY11 30A(1052) 16-AUG-84 14:51 PAGE 11
PROGRAM HEADER

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3485
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3487
3488
3489
3490
3491 002000
(4) 002000
(4) 002000      103
(4) 002001      126
(4) 002002      104
(4) 002003      115
(4) 002004      101
(6) 002005      000
(6) 002006      000
(5) 002007      000
(5) 002010
(4) 002010      103
(5) 002011
(4) 002011      060
(5) 002012
(4) 002012      000000
(5) 002014
(4) 002014      000156
(5) 002016
(4) 002016      040116
(5) 002020
(4) 002020      000000
(5) 002022
(4) 002022      002216
(5) 002024
(4) 002024      000000
(5) 002026
(4) 002026      040374
(5) 002030
(4) 002030      000000
(5) 002032
(4) 002032      000000
(5) 002034
(4) 002034      000000
(5) 002036
(4) 002036      000000
(5) 002040
(4) 002040      002124
(5) 002042
(4) 002042      000000
(5) 002044
(4) 002044      000000
(5) 002046
(4) 002046      000000
(5) 002050
(4) 002050      003
(3) 002051      003

```

.SBTTL PROGRAM HEADER

```

;THE PROGRAM HEADER MACRO CHARACTERIZES THIS DIAGNOSTIC. THE
;HEADER MACRO'S ARGUMENTS ARE FILE NAME, RELEASE LEVEL, PATCH
;DISPOSITION OF THE MOST RECENT PATCH, MAXIMUM TEST TIME IN SEC.,
;AND THE TYPE OF DIAGNOSTIC (0-SEQUENTIAL, 1-EXERCISER). THESE
;ARGUMENTS ARE IN RESPECTIVE ORDER.

```

HEADER CVDMA.C.0.110..0

```

L$NAME::
          .ASCII /C/
          .ASCII /V/
          .ASCII /D/
          .ASCII /M/
          .ASCII /A/
          .BYTE  0
          .BYTE  0
          .BYTE  0
L$REV::
          .ASCII /C/
L$DEPO::
          .ASCII /0/
L$UNIT::
          .WORD  0
L$TIML::
          .WORD  110.
L$MPCP::
          .WORD  L$MARD
L$SPCP::
          .WORD  0
L$MPTP::
          .WORD  L$MM
L$SPTP::
          .WORD  0
L$LADP::
          .WORD  L$LAST
L$STA::
          .WORD  0
L$CO::
          .WORD  0
L$DTYP::
          .WORD  0
L$APT::
          .WORD  0
L$DTP::
          .WORD  L$DISPATCH
L$PRIO::
          .WORD  0
L$ENVI::
          .WORD  0
L$EXP1::
          .WORD  0
L$MREV::
          .BYTE  C$REVISION
          .BYTE  C$EDIT

```

CVDMACO DMV11 MCTRL DIAG 01
CVDMAC.P11 16-AUG 84 13:59

MACY11 30A(1052) 16-AUG-84 14:51 PAGE 11-1
PROGRAM HEADER

(5) 002052
(4) 002052 000000
(5) 002054 000000
(5) 002056
(4) 002056 000000
(5) 002060
(4) 002060 003522
(5) 002062
(4) 002062 000000
(5) 002064
(4) 002064 000000
(5) 002066
(4) 002066 000000
(5) 002070
(4) 002070 020364
(5) 002072
(4) 002072 020360
(5) 002074
(4) 002074 000000
(5) 002076
(4) 002076 003542
(5) 002100
(4) 002100 104035
(5) 002102
(4) 002102 002236
(5) 002104
(4) 002104 017634
(5) 002106
(4) 002106 020342
(5) 002110
(4) 002110 020216
(5) 002112
(4) 002112 017626
(5) 002114
(4) 002114 000000
(5) 002116
(4) 002116 000000
(5) 002120
(4) 002120 000000

L\$EF:: .WORD 0
 .WORD 0
L\$SPC:: .WORD 0
L\$DEVP:: .WORD L\$DVTYP
L\$REPP:: .WORD 0
L\$EXP4:: .WORD 0
L\$EXP5:: .WORD 0
L\$AUT:: .WORD L\$AU
L\$DUT:: .WORD L\$DU
L\$LUN:: .WORD 0
L\$DESP:: .WORD L\$DESC
L\$LOAD:: EMT E\$LOAD
L\$ETP:: .WORD L\$ERRTBL
L\$ICP:: .WORD L\$INIT
L\$CCP:: .WORD L\$CLEAN
L\$ACP:: .WORD L\$AUTO
L\$PRT:: .WORD L\$PROT
L\$TEST:: .WORD 0
L\$DLY:: .WORD 0
L\$HIME:: .WORD 0

3492
3498

.EVEN

CVDMACO DMV11 MCTRL DIAG #1
CVDMAC.P11 16-AUG-84 13:59

MACY11 30A(1052) 16-AUG-84 14:51 PAGE 12
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.
////////////////////////////////////

3500
3501
3502
3503
3504
3505
3506
3507 002122
(4) 002122 000034
(3) 002124
(6) 002124 020366
(6) 002126 021132
(6) 002130 021242
(6) 002132 021434
(6) 002134 021576
(6) 002136 021720
(6) 002140 022132
(6) 002142 022642
(6) 002144 023210
(6) 002146 024156
(6) 002150 025136
(6) 002152 025760
(6) 002154 026042
(6) 002156 026124
(6) 002160 026226
(6) 002162 027272
(6) 002164 027354
(6) 002166 027436
(6) 002170 027522
(6) 002172 027610
(6) 002174 030076
(6) 002176 030226
(6) 002200 030356
(6) 002202 030512
(6) 002204 030642
(6) 002206 030772
(6) 002210 031130
(6) 002212 036362
3508

DISPATCH 28.

.WORD 28
L#DISPATCH: :
.WORD T1
.WORD T2
.WORD T3
.WORD T4
.WORD T5
.WORD T6
.WORD T7
.WORD T8
.WORD T9
.WORD T10
.WORD T11
.WORD T12
.WORD T13
.WORD T14
.WORD T15
.WORD T16
.WORD T17
.WORD T18
.WORD T19
.WORD T20
.WORD T21
.WORD T22
.WORD T23
.WORD T24
.WORD T25
.WORD T26
.WORD T27
.WORD T28

CVDMAC0 DMV11 MCTRL DIAG #1
CVDMAC.P11 16-AUG-84 13:59

MACY11 30A(1052) 16-AUG-84 14:51 PAGE 13
DEFAULT HARDWARE P-TABLE

.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. /
;/ ;; /

3516
3517
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3522
3523
3524 002214
(3) 002214 000007
(3) 002216
(3) 002216
3525
3526 002216 160020
3527 002220 000300
3528 002222 004000
3529 002224 000000
3530 002226 000000
3531 002230 000000
3532 002232 000111
3533
3534
3535
3536
3537
3538
3539
3540
3541
3542
3543 002234
(3) 002234

BGNHW DFPTBL

.WORD L10000-L\$HW/2

L\$HW::
DFPTBL::

.WORD 160020 ;DMV11 CSR UNIBUS ADDRESS
.WORD 300 ;DMV11 INTERRUPT VECTOR
.WORD 4000 ;DMV11 INTERRUPT PRIORITY LEVEL = 4
.WORD 000 ;SWITCH REG. #1 (BOOT ADDRESS)
.WORD 000 ;SWITCH REG. #2 (DDCMP ADDRESS)
.WORD 0 ;H3254&H3255 USED
.WORD 000111 ;MISC. CONTROLS:

; POWER-UP MODE 0 MASK = 100
; 0 = NOT JUMPED FOR MODE 0 POWER-UP
; 1 = JUMPED FOR MODE 0 POWER-UP <=== DEFAULT SETTING
; BOTH W5 & W6 REMOVED

; BAUD RATE MASK = 77
; 7 = 19.2 K
; 11 = 56 K <=== DEFAULT SETTING

ENDHW

L10000:

CVDMACO DMV11 MCTRL DIAG #1
CVDMAC.P11 16-AUG-84 13:59

MACY11 30A(1052) 16-AUG-84 14:51 PAGE 14
SOFTWARE P-TABLE

3545
3546
3547
3548
3549
3550
3551
3552 002234
(3) 002234 000000
(3) 002236
(3) 002236
3553 002236
(3) 002236

.SBTTL SOFTWARE P-TABLE

;/;;;/;
;/ THE SOFTWARE P-TABLE CONTAINS THE VALUES OF THE PROGRAM
;/ PARAMETERS THAT CAN BE CHANGED BY THE OPERATOR.
;/;;;/;

BGNSW SFPTBL

ENDSW

.WORD L10001-L#SW/2
L#SW::
SFPTBL::
L10001:

CVDMACO DMV11 MCTRL DIAG #1
CVDMAC.P11 16-AUG-84 13:59

MACY11 30A(1052) 16-AUG-84 14:51 PAGE 15
GLOBAL EQUATES SECTION

```

3555      .SBTTL GLOBAL EQUATES SECTION
3556
3557
3558      ; ///////////////////////////////////////////////////////////////////
3559      ;//      THE GLOBAL EQUATES SECTION CONTAINS PROGRAM EQUATES THAT
3560      ;//      ARE USED IN MORE THAN ONE TEST.
3561      ; ///////////////////////////////////////////////////////////////////
3562
3563      002236      EQUALS
(1)      ;
(1)      ; BIT DIFINITIONS
(1)      ;
(1)      100000      BIT15== 100000
(1)      040000      BIT14== 40000
(1)      020000      BIT13== 20000
(1)      010000      BIT12== 10000
(1)      004000      BIT11== 4000
(1)      002000      BIT10== 2000
(1)      001000      BIT09== 1000
(1)      000400      BIT08== 400
(1)      000200      BIT07== 200
(1)      000100      BIT06== 100
(1)      000040      BIT05== 40
(1)      000020      BIT04== 20
(1)      000010      BIT03== 10
(1)      000004      BIT02== 4
(1)      000002      BIT01== 2
(1)      000001      BIT00== 1
(1)      ;
(1)      001000      BIT9== BIT09
(1)      000400      BIT8== BIT08
(1)      000200      BIT7== BIT07
(1)      000100      BIT6== BIT06
(1)      000040      BIT5== BIT05
(1)      000020      BIT4== BIT04
(1)      000010      BIT3== BIT03
(1)      000004      BIT2== BIT02
(1)      000002      BIT1== BIT01
(1)      000001      BIT0== BIT00
(1)      ;
(1)      ; EVENT FLAG DEFINITIONS
(1)      ; EF32:EF17 RESERVED FOR SUPERVISOR TO PROGRAM COMMUNICATION
(1)      ;
(1)      000040      EF.START== 32.      ; START COMMAND WAS ISSUED
(1)      000037      EF.RESTART== 31.      ; RESTART COMMAND WAS ISSUED
(1)      000036      EF.CONTINUE== 30.      ; CONTINUE COMMAND WAS ISSUED
(1)      000035      EF.NEW== 29.      ; A NEW PASS HAS BEEN STARTED
(1)      000034      EF.PWR== 28.      ; A POWER-FAIL/POWER-UP OCCURRED
(1)      ;
(1)      ;
(1)      ; PRIORITY LEVEL DEFINITIONS
(1)      ;
(1)      000340      PRI07== 340
(1)      000300      PRI06== 300
(1)      000240      PRI05== 240
(1)      000200      PRI04== 200

```

CVDMACO DMV11 MCTRL DIAG #1
CVDMAC.P11 16-AUG-84 13:59

MACY11 30A(1052) 16-AUG-84 14:51 PAGE 15-1
GLOBAL EQUATES SECTION

```

(1)      000140      PRI03== 140
(1)      000100      PRI02== 100
(1)      000040      PRI01== 40
(1)      000000      PRI00== 0
(1)
(1)      ; OPERATOR FLAG BITS
(1)
(1)      ;
(1)      000004      EVL==      4
(1)      000010      LOT==      10
(1)      000020      ADR==      20
(1)      000040      IDU==      40
(1)      000100      ISR==     100
(1)      000200      UAM==     200
(1)      000400      BOE==     400
(1)      001000      PNT==    1000
(1)      002000      PRI==    2000
(1)      004000      IXE==    4000
(1)      010000      IBE==   10000
(1)      020000      IER==   20000
(1)      040000      LOE==   40000
(1)      100000      HOE==  100000
3564
3565      .SBTTL DEFINE THE NUMBER OF CSR'S
3566      000020      CSREGS = 16.
3567
3568      ;-----
3569
3570      .SBTTL NPR ADDRESS REGISTER EQUATES
3571      000070      NPRAOL = 70 ;OUT NPR ADRS LO REG
3572      000071      NPRAOH = NPRAOL+1 ;OUT NPR ADRS HI REG
3573      000072      NPRAOX = NPRAOL+2 ;OUT NPR EXTENDED ADRS REG
3574      000074      NPRAIL = NPRAOL+4 ;IN NPR ADRS LO REG
3575      000075      NPRAIH = NPRAOL+5 ;IN NPR ADRS HI REG
3576      000076      NPRAIX = NPRAOL+6 ;IN NPR EXTENDED ADRS REG
3577      000010      NPRBS7 = BIT3 ;"BANK SELECT 7" BIT -- W/IN EXTENDED ADRS. REG.
3578
3579
3580
3581      .SBTTL NPR DATA REG EQUATES
3582      123000      NPRDRL = 123000 ;NPR DATA REGISTER -- LOW BYTE
3583      123001      NPRDRH = NPRDRL+1 ;NPR DATA REGISTER -- HIGH BYTE
3584
3585
3586
3587      .SBTTL NPR CONTROL REG EQUATES
3588      123004      NPRCTL = NPRDRL+4 ;NPR CONTROL REGISTER
3589      000200      NPRABT = BIT7 ;=1 IF BUS TIME-OUT ON NPR
3590      000100      NPRGO = BIT6 ;SET FOR NOP, CLEAR TO "GO" / 0=DONE, 1=BUSY
3591      000040      NPRIO = BIT5 ;0 = (LSI ==> DMV); 1 = (DMV ==> LSI)
3592      000020      LSIHLT = BIT4 ;SETTING THIS WILL "HALT" THE LSI-11 !!
3593      000010      NPRBYT = BIT3 ;SET TO 1 TO WRITE BYTE ONLY TO LSI-11
3594      000004      DMVPU = BIT2 ;SET BY MICRO-DIAG. MUST REMAIN SET!!!
3595      000002      LSIIDCL = BIT1 ;IF SET, WILL CAUSE POWER DOWN CONDITION IN LSI!
3596      000001      DMVDAI = BIT0 ;"DISABLE INIT" FROM EFFECTING DMV-11
3597
3598

```


CVDMACO DMV11 MCTRL DIAG #1
CVDMAC.P11 16-AUG-84 13:59

MACY11 30A(1052) 16-AUG-84 14:51 PAGE 15-2
NPR REQUEST FUNCTIONS

```

3599      .SBTTL  NPR REQUEST FUNCTIONS
3600      000004  NPRLD   = DMVPU           ;WORD XFER:  LSI ==> DMV
3601      000044  NPRDL   = DMVPU!NPRIO       ;WORD XFER:  DMV ==> LSI
3602      000054  NPRDLB  = DMVPU!NPRIO!NPRBYT ;BYTE XFER:  DMV ==> LSI
3603
3604      ;-----
3605
3606      .SBTTL  INTERRUPT REG EQUATES
3607      123005  IRQREG   = 123005         ;INTERRUPT REQUEST REG
3608      000004  IRQA     = BIT2          ;REQUEST BIT FOR XX0 INTERRUPT -- "A"
3609      000002  IRQB     = BIT1          ;REQUEST BIT FOR XX4 INTERRUPT -- "B"
3610
3611      ;-----
3612
3613      .SBTTL  CONTROL FLAGS FROM P-TABLE ENTRIES
3614      000001  PU24     = BIT0          ;POWER-FAIL VECTORIZING MODE. 1 = MODE 0
3615                                         ; (I.E. JUMPERS W5 & W6 BOTH REMOVED)

```

CVDMACO DMV11 MCTRL DIAG #1
CVDMAC.P11 16-AUG-84 13:59

MACY11 30A(1052) 16-AUG-84 14:51 PAGE 16
SWITCH PACKS

3617
3618
3619
3620
3621
3622
3623
3624
3625

121000
121400

.SBTTL SWITCH PACKS

;;*****
;* SWITCH PACKS
;;*****

SWPBOT = 121000
SWPDDCMP = 121400

;"BOOT ADDRESS" SWITCH PACK [A200]
;"DDCMP ADDRESS" SWITCH PACK [A300]

CVDMACO DMV11 MCTRL DIAG #1
 CVDMAC.P11 16-AUG-84 13:59

MACY11 30A(1052) 16-AUG-84 14:51 PAGE 17
 CSR REG. DEFINITION FOR MAINT. LOOP

```

3627      .SBTTL  CSR REG. DEFINITION FOR MAINT. LOOP
3628
3629      ;*****
3630      .SBTTL      MAINTENANCE REGISTER - BSELO
3631      ;-----*****
3632      ;          INTERRUPT ENABLE BITS
3633
3634      000001      IENBA  = BIT0          ;INTERRUPT ENABLE "A"
3635      000020      IENBB  = BIT4          ;INTERRUPT ENABLE "B"
3636
3637
3638      ;*****
3639      .SBTTL      MAINTENANCE REGISTER - BSEL1
3640      ;-----*****
3641      ; MAINT. LOOP CONTROL BITS:
3642
3643      000200      RUN    = BIT7
3644      000100      MCLR  = BIT6
3645      000001      MREQ  = BIT0
3646
3647
3648      ;*****
3649      .SBTTL      MAINTENANCE REGISTER - BSEL2
3650      ;-----*****
3651      ; MAINTENANCE FUNCTION CODES
3652
3653      000001      REDLOC = 1          ;FUNCTION CODE FOR READ A 6502 LOCATION
3654      000002      WRILOC = 2          ;FUNCTION CODE FOR WRITE A 6502 LOCATION
3655      000003      REDPAG = 3          ;FUNCTION CODE FOR READ A 6502 MEMORY PAGE
3656      000004      WRIPAG = 4          ;FUNCTION CODE FOR WRITE A 6502 RAM PAGE
3657      000005      EXECUT = 5          ;FUNCTION CODE FOR EXECUTE AT GIVEN PC
3658
3659      000200      MRDY  = BIT7          ;M-LOOP REDY FOR A COMMAND WHEN SET
    
```

CVDMACO DMV11 MCTRL DIAG #1
CVDMAC.P11 16-AUG-84 13:59

MACY11 30A(1052) 16-AUG-84 14:51 PAGE 18
DMV INTERNAL ADDRESSES

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3707

.SBTTL DMV INTERNAL ADDRESSES

;+*****
; DMV INTERNAL ADDRESSES
;--*****

;***** << MICROPROCESSOR REGISTER ADDRESS EQUATES >> *****

.SBTTL BYTE & WORD SELECT REGISTERS

SLT0 =020
BSLT0 =SLT0
BSLT1 =SLT0+1
SLT2 =SLT0+2
BSLT2 =SLT0+2
BSLT3 =SLT0+3
SLT4 =SLT0+4
BSLT4 =SLT0+4
BSLT5 =SLT0+5
SLT6 =SLT0+6
BSLT6 =SLT0+6
BSLT7 =SLT0+7

.SBTTL VIA'S REGISTERS

ORB =120000
ORA =ORB+1
DORB =ORB+2
DDRA =ORB+3
T1CL =ORB+4
T1CH =ORB+5
T1LMGO =ORB+5
T1LL =ORB+6
T1LH =ORB+7
T2LL =ORB+10
T2CL =T2LL
T2CH =ORB+11
SR =ORB+12
ACR =ORB+13
PCR =ORB+14
IFR =ORB+15
IENR =ORB+16
ORAM =ORB+17

.SBTTL VIA'S "IFR" REGISTER'S BIT ASSIGNMENTS

CVDMACO DMV11 MCTRL DIAG #1
CVDMAC.P11 16-AUG-84 13:59

MACY11 30A(1052) 16-AUG-84 14:51 PAGE 18-1
VIA'S "IFR" REGISTER'S BIT ASSIGNMENTS

3708	000200	IFRIRQ	=BIT7	;"IRQ" HAS BEEN ISSUED -- LOGICAL "OR" OF BITS 0 --> 6
3709	000100	IFRT1	=BIT6	;"T1" -- TIMER # 1 TIMED-OUT
3710	000040	IFRT2	=BIT5	;"T2" -- TIMER # 1 TIMED-OUT
3711	000020	IFRCB1	=BIT4	;"CB1" EDGE DETECTED ("K2 LINE UNIT STEP" O/P SIGNAL FROM SR)
3712	000010	IFRCB2	=BIT3	;"CB2" EDGE DETECTED (UNUSED!)
3713	000004	IFRSR	=BIT2	;"SR" REGISTER COMPLETED SHIFT OPERATION
3714	000002	IFRCA1	=BIT1	;"CA1" EDGE DETECTED ("K6 MOD RDY H")
3715	000001	IFRCA2	=BIT0	;"CA2" EDGE DETECTED ("K2 CTS H")
3716				
3717				

CVDMAC0 DMV11 MCTRL DIAG #1
CVDMAC.P11 16-AUG-84 13:59

MACY11 30A(1052) 16-AUG-84 14:51 PAGE 19
GLOBAL DATA SECTION

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3990
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3992
3993
3994
3995
3996
3997
3998
3999
4000
4001
4002
4003
4004
4005
4006
4007
4008
4009
4010
4011
4012
4013
4014
4015
4016
4017
4018

002236
(3) 002236
(1) 002236 000000
(1) 002240 000000
(1) 002242 000000
(1) 002244 000000

002246
002246 000000
002250
002250 000000
002252
002252 000000
002254
002254 000000
002256
002256 000000
002260
002260 000000
002262
002262 000000
002264
002264 000000
002266
002270 000000
002272 000000
002274 000000
002276 000000
002300 000000
002302 000000
002304 000000

.SBTTL GLOBAL DATA SECTION

```

;//////////
; THE GLOBAL DATA SECTION CONTAINS DATA THAT ARE USED
; IN MORE THAN ONE TEST.
;//////////
    
```

```

;*****
.SBTTL CONTROL BLOCK FOR STACKED ERROR MESSAGES
;-----
    
```

ERRTBL

L:ERRTBL::

```

ERRTYP: .WORD 0
ERRNBR: .WORD 0
ERRMSG: .WORD 0
ERRBLK: .WORD 0
    
```

```

;*****
.SBTTL STORAGE FOR DEVICE REGISTERS
;-----
    
```

```

WSR0:
BSR0: .WORD 0
WSR2:
BSR1: .WORD 0
WSR4:
BSR2: .WORD 0
WSR6:
BSR3: .WORD 0
WSR10:
BSR4: .WORD 0
WSR12:
BSR5: .WORD 0
WSR14:
BSR6: .WORD 0
WSR16:
BSR7: .WORD 0
BSR10: .WORD 0
BSR11: .WORD 0
BSR12: .WORD 0
BSR13: .WORD 0
BSR14: .WORD 0
BSR15: .WORD 0
BSR16: .WORD 0
BSR17: .WORD 0
    
```

```

;*****
.SBTTL MISCELLANEOUS STORAGE
;-----
    
```

```

TDATA: .WORD 0 ;TEST DATA
GDATA: .WORD 0 ;EXPECTED DATA
BDATA: .WORD 0 ;ACTUAL DATA
XDATA: .WORD 0 ;EXCLUSIVE OR BETWEEN "GDATA" & "BDATA"
DELAY1: .WORD 110400 ;DELAY TIME, 3 INST., 500 MILLISEC.
DELAY2: .WORD 1000 ;DELAY TIME FOR M-LOOP FUNCTION, 100 USEC.APPROX.
LOGDEV: .WORD 0 ;LOGICAL DEVICE NUMBER
    
```

CVDMACO DMV11 MCTRL DIAG #1
CVDMAC.P11 16-AUG-84 13:59

MACY11 30A(1052) 16-AUG-84 14:51 PAGE 19-1
MISCELLANEOUS STORAGE

4019	002324	000000	PSTACK: .WORD	0	;CONTAINS BASE LEVEL PROGRAM STACK POINTER
4020	002326	000000	INT:LG: .WORD	0	;INTERRUPT RECEIVED FLAG BYTES. ALLOCATION:
4021					; LOW BYTE FOR "A" & HIGH BYTE FOR "B"
4022	002330	000000	INTMCH: .WORD	0	;BYTE IS SET NON-ZERO WHEN HANDLER SHOULD BE
4023					; WATCHING FOR INT'S. ALLOCATION: SEE INTFLG
4024	002332	000000	ERRFLG: .WORD	0	;ERROR FLAG
4025	002334	000000	REGNUM: .WORD	0	;REGISTER NUMBER -- FOR PASSING ARG. TO "ERR#"
4026	002336	000000	FRSTIM: .WORD	0	;FLAG=0 IF PROGRAM JUST LOADED
4027	002340	000000	FRSPAS: .WORD	0	;FLAG=0 IF FIRST PASS AFTER LOAD
4028	002342	000000	DEVMAP: .WORD	0	;BIT MAP OF ACTIVE DEVICES
4029	002344	000000	DEVPTR: .WORD	0	;DEVICE MAP BIT POINTER
4030	002346	000000	CONSOL: .WORD	0	;CONSOLE DEVICE FLAG -- NON-ZERO = NONE PRESENT
4031	002350	000000	PFLAG: .WORD	0	;MISC. PROGRAM FLAGS
4032					
4033					; THE ABOVE WORD CONTAINS MISC. FLAGS WHICH CAN ONLY BE ACCESSED BY PATCHING.
4034					; IT IS NOT INTENDED THAT THEY BE SET OR CLEARED EXCEPT UNDER VERY UNUSUAL
4035					; CIRCUMSTANCES. THEREFORE, THEY WILL NOT BE DOCUMENTED ANY OTHER PLACE
4036					; EXCEPT RIGHT HERE.
4037					
4038					; BIT 0 -- WHEN SET, THOSE TESTS WHICH DO A BUS RESET WILL NOT BE EXECUTED.
4039					; THIS WAS IMPLEMENTED TO SAVE WEAR & TEAR ON THE RX01 IN THE
4040					; DEVELOPMENT SYSTEM WHILE DOING LONG TERM TESTING OF ALL OTHER
4041					; TESTS.
4042					
4043					; BIT 1 -- CPU TYPE. (NOT USED)
4044					
4045					; BIT 2 -- CONTROLS PRINTING OF EXTENDED ERROR INFORMATION DURING "MOVING
4046					; INVERSIONS TEST" OF RAM. NORMALLY ONLY ADDRESS, GOOD & BAD
4047					; DATA, AND XOR WILL BE PRINTED. IF THIS BIT IS SET HOWEVER,
4048					; INFORMATION IDENTIFYING WHERE WITHIN THE ALGORITHM THE ERROR
4049					; WAS DETECTED IS REPORTED. THE FOLLOWING ABBREVIATIONS ARE USED
4050					; IN THE HEADING:
4051					; BIT --- IDENTIFIES THE INNERMOST LOOP. WHICH BIT IS
4052					; BEING INVERTED AT EACH LOCATION. BITS ARE
4053					; IDENTIFIED AS 0 THROUGH 7.
4054					; DATA -- IDENTIFIES THE VALUE TO WHICH THE ABOVE BIT IS
4055					; BEING SET (I.E. 0 OR 1). IT IS FIRST READ AND
4056					; CHECKED FOR EXPECTED CONTENTS; THEN THE BIT IS
4057					; INVERTED TO THIS STATE (DATA) AND RE-WRITTEN;
4058					; THEN IT IS AGAIN READ & CHECKED FOR THE NEW
4059					; VALUE.
4060					; SEQ -- INDICATES THE DIRECTION (FWD OR BKWD) THE TEST
4061					; WAS SCANNING THROUGH RAM WHEN THE ERROR OCCURED.
4062					; LSB --- THIS IS THE LOGICAL LEAST SIGNIFICANT BIT OF THE
4063					; RAM ADDRESS AS WE SCAN THROUGH MEMORY. BY
4064					; VARYING THIS, THE ALGORITHM GENERATS NON-SEQUEN-
4065					; TIAL ADDRESSING OF RAM AND EFFECTS A MUCH MORE
4066					; THOROUGH TEST OF MEMORY.
4067					
4068					
4069					

CVDMACO DMV11 MCTRL DIAG #1
CVDMAC.P11 16-AUG-84 13:59

MACY11 30A(1052) 16-AUG-84 14:51 PAGE 20
CURRENT DEVICE PARAMETERS

```

4071          .SBTTL  CURRENT DEVICE PARAMETERS
4072
4073          160000      $MPCSR  ==      160000      ;INITIAL ASSEMBLED IN CSR ADDRESS
4074
4075 002352      MPCSR:          ;POINTER TO THE DMV11 CSR'S
4076 002352      BSEL0:        ;POINTER TO BSEL0
4077 002352      BSEL:         ;ALTERNATE NAME FOR BSEL0
4078 002352 160000      SEL0:   .WORD  $MPCSR      ;POINTER TO SEL0
4079 002354 160001      BSEL1: .WORD  $MPCSR.1    ;POINTER TO BSEL1
4080 002356      BSEL2:        ;POINTER TO BSEL2
4081 002356 160002      SEL2:   .WORD  $MPCSR.2    ;POINTER TO SEL2
4082 002360 160003      BSEL3: .WORD  $MPCSR.3    ;POINTER TO BSEL3
4083 002362      BSEL4:        ;POINTER TO BSEL4
4084 002362 160004      SEL4:   .WORD  $MPCSR.4    ;POINTER TO SEL4
4085 002364 160005      BSEL5: .WORD  $MPCSR.5    ;POINTER TO BSEL5
4086 002366      BSEL6:        ;POINTER TO BSEL6
4087 002366 160006      SEL6:   .WORD  $MPCSR.6    ;POINTER TO SEL6
4088 002370 160007      BSEL7: .WORD  $MPCSR.7    ;POINTER TO BSEL7
4089 002372      BSEL10:       ;POINTER TO BSEL10
4090 002372 160010      SEL10:  .WORD  $MPCSR.10   ;POINTER TO SEL10
4091 002374 160011      BSEL11: .WORD  $MPCSR.11   ;POINTER TO BSEL11
4092 002376      BSEL12:       ;POINTER TO BSEL12
4093 002376 160012      SEL12:  .WORD  $MPCSR.12   ;POINTER TO SEL12
4094 002400 160013      BSEL13: .WORD  $MPCSR.13   ;POINTER TO BSEL13
4095 002402      BSEL14:       ;POINTER TO BSEL14
4096 002402 160014      SEL14:  .WORD  $MPCSR.14   ;POINTER TO SEL14
4097 002404 160015      BSEL15: .WORD  $MPCSR.15   ;POINTER TO BSEL15
4098 002406      BSEL16:       ;POINTER TO BSEL16
4099 002406 160016      SEL16:  .WORD  $MPCSR.16   ;POINTER TO SEL16
4100 002410 160017      BSEL17: .WORD  $MPCSR.17   ;POINTER TO BSEL17
4101
4102 002412 000300      MPIVEC: .WORD  300      ;DMV11 INPUT INTERRUPT VECTOR
4103 002414 000304      MPOVEC: .WORD  304      ;DMV11 OUTPUT INTERRUPT VECTOR
4104 002416 000340      MPRIOR: .WORD  340      ;DMV11 DEVICE PRIORITY
4105
4106          .SBTTL  GEN'L PURPOSE SCRATCH STORAGE
4107
4108 002420 000000      REG0:   .WORD  0
4109 002422 000000      REG1:   .WORD  0
4110 002424 000000      REG2:   .WORD  0
4111 002426 000000      REG3:   .WORD  0
4112 002430 000000      REG4:   .WORD  0
4113 002432 000000      REG5:   .WORD  0
4114 002434 000000      REG6:   .WORD  0
4115 002436 000000      REG7:   .WORD  0
4116

```

CVDMACO DMV11 MCTRL DIAG #1
CVDMAC.P11 16-AUG-84 13:59

MACY11 30A(1052) 16-AUG-84 14:51 PAGE 21
SCRATCH STORAGE FOR MESSAGE REPORTING

4118
4119
4120 002440 000000
4121 002442 000000
4122 002444 000000
4123 002446 000000
4124 002450 000000
4125 002452 000000
4126 002454 000000
4127 002456 000000
4128 002460 000000
4129 002462 000000
4130 002464 000000
4131 002466 000000
4132 002470 000000
4133 002472 000000
4134 002474 000000
4135 002476 000000
4136 002500 000000
4137 002502 000000
4138
4139

.SBTTL SCRATCH STORAGE FOR MESSAGE REPORTING

TMP0: .WORD 0
TMP1: .WORD 0
TMP2: .WORD 0
TMP3: .WORD 0
TMP4: .WORD 0
TMP5: .WORD 0
TMP6: .WORD 0
TMP7: .WORD 0
TMP8: .WORD 0
TMP9: .WORD 0
TMPA: .WORD 0
TMPB: .WORD 0
TMPC: .WORD 0
TMPD: .WORD 0
TMPE: .WORD 0
TMPF: .WORD 0
NEWPC: .WORD 0
OLDSP: .WORD 0

;SAVE LOCATION FOR A "PC" VALUE RESET
;SAVE LOCATION FOR A STACK POINTER RESET VALUE

CVDMACO DMV11 MCTRL DIAG #1
CVDMAC.P11 16-AUG-84 13:59

MACY11 30A(1052) 16-AUG-84 14:51 PAGE 22
***** DATA PATTERN A *****

.SBTTL ***** DATA PATTERN A *****

4141		
4142		
4143		
4144	002504	000020
4145	002506	001
4146	002507	002
4147	002510	004
4148	002511	010
4149	002512	020
4150	002513	040
4151	002514	100
4152	002515	200
4153	002516	052
4154	002517	300
4155	002520	140
4156	002521	060
4157	002522	030
4158	002523	014
4159	002524	006
4160	002525	003

.EVEN				:USAGE:
PATA:	.WORD	PATB-PATA-2		:# OF BYTES IN PATTERN
	.BYTE	001		:BSEL0
	.BYTE	002		:BSEL1
	.BYTE	004		:BSEL2
	.BYTE	010		:BSEL3
	.BYTE	020		:BSEL4
	.BYTE	040		:BSEL5
	.BYTE	100		:BSEL6
	.BYTE	200		:BSEL7
	.BYTE	052		:BSEL10
	.BYTE	300		:BSEL11
	.BYTE	140		:BSEL12
	.BYTE	060		:BSEL13
	.BYTE	030		:BSEL14
	.BYTE	014		:BSEL15
	.BYTE	006		:BSEL16
	.BYTE	003		:BSEL17

.SBTTL ***** DATA PATTERN B *****

4161		
4162		
4163		
4164		
4165	002526	000026
4166	002530	125
4167	002531	252
4168	002532	000
4169	002533	377
4170	002534	001
4171	002535	002
4172	002536	004
4173	002537	010
4174	002540	020
4175	002541	040
4176	002542	100
4177	002543	200
4178	002544	376
4179	002545	375
4180	002546	373
4181	002547	367
4182	002550	357
4183	002551	337
4184	002552	277
4185	002553	177
4186	002554	000
4187		

.EVEN				:USAGE:
PATB:	.WORD	PATC-PATB-2		:# OF BYTES IN PATTERN
	.BYTE	125		
	.BYTE	252		
	.BYTE	000		
	.BYTE	377		
	.BYTE	001		
	.BYTE	002		
	.BYTE	004		
	.BYTE	010		
	.BYTE	020		
	.BYTE	040		
	.BYTE	100		
	.BYTE	200		
	.BYTE	376		
	.BYTE	375		
	.BYTE	373		
	.BYTE	367		
	.BYTE	357		
	.BYTE	337		
	.BYTE	277		
	.BYTE	177		
	.BYTE	000		

CVDMACO DMV11 MCTRL DIAG #1
 CVDMAC.P11 16-AUG-84 13:59

MACY11 30A(1052) 16-AUG-84 14:51 PAGE 23
 ***** DATA PATTERN C *****

4189
 4190
 4191
 4192
 4193 002556
 4194 002556 000012
 4195 002560 002 377
 4196 002562 003 366
 4197 002564 000 100
 4198 002566 013 040
 4199 002570 006 106
 4200 002572 007 107
 4201 002574 012 112
 4202 002576 014 042
 4203 002600 015 000
 4204 002602 016 200
 4205
 4206
 4207
 4208 002604 100
 4209 002605 000
 4210 002606 377
 4211 002607 366
 4212 002610 000
 4213 002611 000
 4214 002612 106
 4215 002613 107
 4216 002614 000
 4217 002615 000
 4218 002616 112
 4219 002617 040
 4220 002620 042
 4221 002621 000
 4222 002622 200
 4223 002623 000
 4224
 4225
 4226
 4227
 4228
 4229 002624 000
 4230 002625 377
 4231 002626 000
 4232 002627 000
 4233 002630 377
 4234 002631 377
 4235 002632 000
 4236 002633 000
 4237 002634 377
 4238 002635 377
 4239 002636 000
 4240 002637 000
 4241 002640 000
 4242 002641 377
 4243 002642 200
 4244 002643 377

```

.SBTTL ***** DATA PATTERN C *****
; USED BY TEST # 11 TO LOAD UP THE VIA'S REGISTERS. THE REGISTER NUMBER
; LOADED IS THE FIRST BYTE AND THE VALUE LOADED INTO IT IS THE SECOND BYTE

.EVEN
PATC: .WORD <PATCR-PATC-2>/2
      .BYTE 2,377 ;SETUP ORB AS AN I/O (READ/WRITE) REGISTER
      .BYTE 3,366 ;SETUP ORA AS AN O/P REGISTER -- IT CAN'T BE TESTED!
      .BYTE 0,100 ;LOAD UP ORB
      .BYTE 13,040 ; ACR
      .BYTE 6,106 ; T1LL
      .BYTE 7,107 ; T1LH
      .BYTE 12,112 ; SR
      .BYTE 14,042 ; PCR
      .BYTE 15,000 ; IFR
      .BYTE 16,200 ; IER

; THIS TABLE IS THE LIST OF EXPECTED CONTENTS OF THE VIA'S REGISTERS
PATCR: .BYTE 100 ; ORB
      .BYTE 000 ; ORA
      .BYTE 377 ; DDRB
      .BYTE 366 ; DDRA
      .BYTE 000 ; T1CL
      .BYTE 000 ; T1CH
      .BYTE 106 ; T1LL
      .BYTE 107 ; T1LH
      .BYTE 000 ; T2CL
      .BYTE 000 ; T2CH
      .BYTE 112 ; SR
      .BYTE 040 ; ACR
      .BYTE 042 ; PCR
      .BYTE 000 ; IFR
      .BYTE 200 ; IER
      .BYTE 000 ; ORA

; THIS IS THE TABLE OF TEST PATTERN "A" MASKS. BEFORE A REGISTER'S
; CONTENTS IS TESTED, A BICB IS DONE USING ITS RESPECTIVE BYTE FROM
; THE TABLE BELOW (INSURING THAT "DON'T CARE" BITS ARE IGNORED).
PATCH: .BYTE 000 ; ORB
      .BYTE 377 ; ORA -- THIS REGISTER CAN'T BE TESTED!!!
      .BYTE 000 ; DDRB
      .BYTE 000 ; DDRA
      .BYTE 377 ; T1CL -- THIS IS A FREE RUNNING COUNTER
      .BYTE 377 ; T1CH -- THIS IS A FREE RUNNING COUNTER
      .BYTE 000 ; T1LL
      .BYTE 000 ; T1LH
      .BYTE 377 ; T2CL -- THIS IS A FREE RUNNING COUNTER
      .BYTE 377 ; T2CH -- THIS IS A FREE RUNNING COUNTER
      .BYTE 000 ; SR
      .BYTE 000 ; ACR
      .BYTE 000 ; PCR
      .BYTE 377 ; IFR
      .BYTE 200 ; IER -- BIT 7 IS ALWAYS READ AS ZERO
      .BYTE 377 ; ORA -- THIS REGISTER CAN'T BE TESTED!!!
    
```

CVDMACO DMV11 MCTRL DIAG #1
CVDMAC.P11 16-AUG-84 13:59

MACY11 30A(1052) 16-AUG-84 14:51 PAGE 24
***** DATA PATTERN D *****

```

4246          .SBTTL ***** DATA PATTERN D *****
4247
4248          .EVEN
4249 002644 000026 PATD: .WORD PATE-PATD-2
4250 002646 200          .BYTE 200
4251 002647 201          .BYTE 201
4252 002650 202          .BYTE 202
4253 002651 204          .BYTE 204
4254 002652 210          .BYTE 210
4255 002653 220          .BYTE 220
4256 002654 240          .BYTE 240
4257 002655 300          .BYTE 300
4258 002656 200          .BYTE 200
4259 002657 000          .BYTE 000
4260 002660 001          .BYTE 001
4261 002661 002          .BYTE 002
4262 002662 004          .BYTE 004
4263 002663 010          .BYTE 010
4264 002664 020          .BYTE 020
4265 002665 040          .BYTE 040
4266 002666 100          .BYTE 100
4267 002667 000          .BYTE 000
4268 002670 325          .BYTE 325
4269 002671 125          .BYTE 125
4270 002672 252          .BYTE 252
4271 002673 052          .BYTE 052

```

```

4272
4273
4274          .SBTTL ***** DATA PATTERN E *****
4275
4276          .EVEN
4277 002674 000026 PATE: .WORD PATF-PATE-2
4278 002676 200          .BYTE 200
4279 002677 201          .BYTE 201
4280 002700 203          .BYTE 203
4281 002701 207          .BYTE 207
4282 002702 217          .BYTE 217
4283 002703 237          .BYTE 237
4284 002704 277          .BYTE 277
4285 002705 377          .BYTE 377
4286 002706 377          .BYTE 377
4287 002707 377          .BYTE 377
4288 002710 376          .BYTE 376
4289 002711 374          .BYTE 374
4290 002712 370          .BYTE 370
4291 002713 360          .BYTE 360
4292 002714 340          .BYTE 340
4293 002715 300          .BYTE 300
4294 002716 200          .BYTE 200
4295 002717 200          .BYTE 200
4296 002720 325          .BYTE 325
4297 002721 200          .BYTE 200
4298 002722 252          .BYTE 252
4299 002723 200          .BYTE 200

```

CVDMAC) DMV11 MCTRL DIAG #1
CVDMAC.P11 16-AUG-84 13:59

MACY11 30A(1052) 16-AUG-84 14:51 PAGE 25
***** DATA PATTERN F *****

4301			.SBTTL ***** DATA PATTERN F *****
4302			
4303			.EVEN
4304	002724	000045	PATF: .WORD <PATG-PATF-2>/2
4305	002726	125252	.WORD 125252
4306	002730	052525	.WORD 052525
4307	002732	000000	.WORD 000000
4308	002734	177777	.WORD 177777
4309	002736	000001	.WORD 000001
4310	002740	000002	.WORD 000002
4311	002742	000004	.WORD 000004
4312	002744	000010	.WORD 000010
4313	002746	000020	.WORD 000020
4314	002750	000040	.WORD 000040
4315	002752	000100	.WORD 000100
4316	002754	000200	.WORD 000200
4317	002756	000400	.WORD 000400
4318	002760	001000	.WORD 001000
4319	002762	002000	.WORD 002000
4320	002764	004000	.WORD 004000
4321	002766	010000	.WORD 010000
4322	002770	020000	.WORD 020000
4323	002772	040000	.WORD 040000
4324	002774	100000	.WORD 100000
4325	002776	177776	.WORD 177776
4326	003000	177775	.WORD 177775
4327	003002	177773	.WORD 177773
4328	003004	177767	.WORD 177767
4329	003006	177757	.WORD 177757
4330	003010	177737	.WORD 177737
4331	003012	177677	.WORD 177677
4332	003014	177577	.WORD 177577
4333	003016	177377	.WORD 177377
4334	003020	176777	.WORD 176777
4335	003022	175777	.WORD 175777
4336	003024	173777	.WORD 173777
4337	003026	167777	.WORD 167777
4338	003030	157777	.WORD 157777
4339	003032	137777	.WORD 137777
4340	003034	077777	.WORD 077777
4341	003036	000000	.WORD 000000

CVDMAC0 DMV11 MCTRL DIAG #1
CVDMAC.P11 16-AUG-84 13:59

MACY11 30A(1052) 16-AUG-84 14:51 PAGE 26
***** DATA PATTERN F *****

4343 003040

PATG:

4344

.SBTTL ***** DATA PATTERN RESULTS TABLE FOR MASTER CLEAR (RESFMC) *****

4345

4346

4347

4348 003040 000020

.EVEN

RESFMC: .WORD RESFT3-RESFMC-2

4349 003042 000

BSELRS: .BYTE 000 ;BSEL0

4350 003043 200

.BYTE 200 ;BSEL1 -- "RUN" BIT SET

4351 003044 000

.BYTE 000 ;BSEL2

4352 003045 000

.BYTE 000 ;BSEL3

4353 003046 033

.BYTE 033 ;BSEL4 -- CODE FOR THE DMV-11

4354 003047 000

.BYTE 000 ;BSEL5

4355 003050 305

.BYTE 305 ;BSEL6 -- INDICATING VALID COMPLETION OF U DIAG.

4356 003051 000

.BYTE 000 ;BSEL7

4357 003052 000

.BYTE 000 ;BSEL10

4358 003053 000

.BYTE 000 ;BSEL11

4359 003054 000

.BYTE 000 ;BSEL12

4360 003055 000

.BYTE 000 ;BSEL13

4361 003056 000

.BYTE 000 ;BSEL14

4362 003057 000

.BYTE 000 ;BSEL15

4363 003060 000

.BYTE 000 ;BSEL16

4364 003061 000

.BYTE 000 ;BSEL17

4365

.SBTTL ***** DATA PATTERN RESULTS FOR TEST 3 (RESFT3) *****

4366

4367

4368 003062 000020

RESFT3: .BLKW 16.

4369

.EVEN

CVDMACO DMV11 MCTRL DIAG #1
CVDMAC.P11 16-AUG-84 13:59

MACY11 30A(1052) 16-AUG-84 14:51 PAGE 27
DATA BUFFER AREAS

4371
4372
4373 003122 000400
4374
4375
4376
4377
4378
4379 003322
4380 003324
4381 003326
4382 003330
4383 003332
4384 003334
4385 003336
4386 003340
4387 003342
4388 003344
4389 003346
4390 003350
4391 003352
4392 003354
4393 003356
4394 003360
4395
4396 003122
4397 003206

.SBTTL DATA BUFFER AREAS

BUFAREA: .BLKB 256.

; THIS BUFFER HAS SOME ALTERNATE USES TOO. THE FOLLOWING LABELS ARE PROVIDED
; FOR THOSE USAGES.

W0 = BUFAREA+128. ;THIS WORD TABLE STARTS IN THE MIDDLE OF "BUFAREA"
W1 = W0+2 ;AND IS USED BY "ERR6" FOR PRINTING BYTES
W2 = W1+2
W3 = W2+2
W4 = W3+2
W5 = W4+2
W6 = W5+2
W7 = W6+2
W8 = W7+2
W9 = W8+2
WA = W9+2
WB = WA+2
WC = WB+2
WD = WC+2
WE = WD+2
WF = WE+2

BT1 = BUFAREA ;BYTE TABLE # 1
BT2 = BUFAREA+64 ;BYTE TABLE # 2

CVDMACO DMV11 MCTRL DIAG #1
CVDMAC.P11 16-AUG-84 13:59

MACY11 30A(1052) 16-AUG-84 14:51 PAGE 28
GLOBAL TEXT SECTION

.SBTTL GLOBAL TEXT SECTION

;# THE GLOBAL TEXT SECTION CONTAINS FORMAT STATEMENTS,
;# MESSAGES, AND ASCII INFORMATION THAT ARE USED IN
;# MORE THAN ONE TEST.

;* NAMES OF DEVICES SUPPORTED BY PROGRAM
;--*****
DEV TYP <M8053 OR M8064>

L#DVTYP::
.ASCIZ /M8053 OR M8064/

.EVEN

;* TITLE OF PROGRAM
;--*****

.RADIX 10.
DESCRIPT <DMV-11 U-CONTRL LOGIC DIAG - PART 1 OF 2>

L#DESC::
.ASCIZ /DMV-11 U-CONTRL

.EVEN

.RADIX 8.

4399
4400
4401
4402
4403
4404
4405
4406
4407
4408
4409
4410 003522
 (4) 003522
 (3) 003522 034115 032460 020063
 (3) 003530 051117 046440 030070
 (3) 003536 032066 000
 (2) 003542
4411
4412
4413
4414
4415
4416 000012
4417 003542
 (4) 003542
 (3) 003542 046504 026526 030461
 (3) 003550 052440 041455 047117
 (3) 003556 051124 020114 047514
 (3) 003564 044507 020103 044504
 (3) 003572 043501 026440 050040
 (3) 003600 051101 020124 020061
 (3) 003606 043117 031040 000
 (2) 003614
4418 000010
4419

CVDMACO DMV11 MCTRL DIAG #1
CVDMAC.P11 16-AUG-84 13:59

MACY11 30A(1052) 16-AUG-84 14:51 PAGE 29
GLOBAL SUBROUTINES

.SBTTL GLOBAL SUBROUTINES

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

.SBTTL MASCLR - MASTER CLEAR SUBROUTINE

; FUNCTION:

; THIS SUBROUTINE FORCES THE 6502 MICROPROCESSOR TO EXECUTE A MINI 17 PART
; DIAGNOSTIC OF THE MICRO-PROCESSOR INSTRUCTION SET, RAM DATA AND ADDRESSING
; VALIDITY, AND A ROM CRC TEST. THE CLEAR SUBROUTINE EXECUTES IN
; APPROXIMATELY 500 HUNDRED(S) MILLISECOND. THIS SUBROUTINE WILL SEND THE
; MASTER CLEAR COMMAND AND DELAY FOR APPROX. 500 MSEC. AT WHICH POINT IN
; TIME, THE STATE OF THE CSR REGISTERS IS TESTED. IF ANY ONE OF THE
; REGISTERS CONTAINS ANYTHING THAT IS NOT EXPECTED, AN ERROR IS QUEUE UP AND
; THE CARRY BIT IS SET. ELSE, THE CARRY BIT IS CLEARED.

; CALLING SEQUENCE:

; JSR PC,MASCLR
; BCC N# ;IF NO ERROR OCCURED, PROCEED WITH ROUTINE
; ERROR ;AN ERROR MESSAGE HAS BEEN STACKED: PRINT IT
; <ANY OTHER SPECIAL ERROR PROCESSING MAY BE DONE HERE (I.E. CKLOOP)>

; N#: <RESUMPTION OF NORMAL PROCESSING>

MASCLR: MOV R1,-(SP) ; SAVE REGISTER ONE

MOV B #RUN!MCLR,8BSEL1 ;SET BOTH THE RUN AND MASTER CLEAR BITS
;TO INITIATE THE MICRODIAGNOSTIC

;NOW DELAY LONG ENOUGH FOR THE MICRODIAGNOSTIC TO COMPLETE

MOV R2,-(SP) ; SAVE REGISTER 2

MOV #10,R2

2#: MOV DELAY1,R1 ;INITIALIZE THE LOOP COUNTER FOR DELAY LOOP

10#: DEC R1 ; ELSE, DECREMENT THE LOOP COUNTER AND

BNE 10# ; CONTINUE TO LOOP.

DEC R2

BNE 2#

1#: ; TIME-UP!

BITB #RUN,8BSEL1 ;CHECK THE RUN BIT --

BEQ 3# ;IF NOT SET, GO REPORT THE ERROR

;IF THE RUN BIT IS SET, MICRODIAGNOSTICS ARE COMPLETE.
;CHECK IF ALL MICRODIAGNOSTICS PASSED.

4#: CMPB 8BSEL6,8SELRS+6 ;THIS CHECKS THE BYTE IN B-SELECT 6 FOR THE
;VALID MICRODIAGNOSTIC COMPLETION CODE.

BNE 3# ;IF BAD, GO REPORT ERROR

4427
4428
4429
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4434
4435
4436
4437
4438
4439
4440
4441
4442
4443
4444
4445
4446
4447
4448
4449
4450
4451
4452
4453
4454
4455
4456
4457
4458
4459
4460
4461
4462
4463
4464
4465
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4472
4473
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4475
4476
4477
4478
4479
4480
4481
4482

003614 010146
003616 112777 000300 176530
003624 010246
003626 012702 000010
003632 013701 002316
003636 005301
003640 001376
003642 005302
003644 001372
003646
003646 132777 000200 176500
003654 001410
003656 127737 176504 003050
003664 001004

2#:
10#:

1#:

4#:

CVDMAC0 DMV11 MCTRL DIAG #1
CVDMAC.P11 16-AUG-84 13:59

MACY11 30A(1052) 16-AUG-84 14:51 PAGE 29-1
MASCLR - MASTER CLEAR SUBROUTINE

```

4483 003666 127737 176470 003046      CMPB      BSEL4,BSELR5+4 ;ELSE, CHECK FOR THE VALID CODE FOR A DMV-11
4484 003674 001420                      BEQ       6#             ;IF THIS TOO IS CORRECT THEN NO ERROR EXISTS
4485                                     ;ELSE, FALL INTO THE ERROR REPORTING CODE
4486
4487 003676 004737 004446      3# :      JSR       PC,GETBSR ;GET THE BSEL REGISTERS FOR DUMPING
4488 003702                      GDF       20#,ERR3 ;MASTER CLEAR ERROR
(2)                                     ;      QUEUE "DEVICE FATAL" ERROR # 1
(5) 003702 012737 000001 002236                      MOV       @T,EDF,ERRTYP
(5) 003710 012737 000001 002240                      MOV       @1,ERRNBR
(5) 003716 012737 003746 002242                      MOV       @20#,ERRMSG
(5) 003724 012737 005426 002244                      MOV       @ERR3,ERRBLK
4489 003732 000261                      SEC
4490 003734 000401                      BR       7#             ;INDICATE TO THE CALLING ROUTINE THAT
                                        ; AN ERROR WAS DETECTED
4491
4492 003736 000241      6# :      CLC
4493 003740 012602      7# :      MOV       (SP)+,R2 ;CLEAR THE CARRY BIT TO INDICATE NO ERROR
4494 003742 012601                      MOV       (SP)+,R1 ;RESTORE REGISTER 2
4495 003744 000207                      RTS      PC ;RESTORE REGISTER 1
                                        ; RETURN TO THE CALLER
4496                                     .NLIST
4497 003746 040515 052123 051105 20# :      .ASCIZ /MASTER CLEAR FAILURE/
4498                                     .LIST
4499                                     .EVEN
003774

```

CVDMACO DMV11 MCTRL DIAG #1
 CVDMAC.P11 16-AUG-84 13:59

MACY11 30A(1052) 16-AUG-84 14:51 PAGE 30
 M-LOOP -- MSTCLR -- MASTER CLEAR & ENTER M-LOOP

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4501 .SBTTL M-LOOP -- MSTCLR -- MASTER CLEAR & ENTER M-LOOP
4502 ;*****
4503 ; MSTCLR -- MASTER CLEAR & ENTER M-LOOP
4504 ;
4505 ; CALLING SEQUENCE:
4506 ;
4507 ; JSR PC,MSTCLR
4508 ; BCC N# ;IF NO ERROR OCCURED, PROCEED WITH ROUTINE
4509 ; ERROR ;AN ERROR MESSAGE HAS BEEN STACKED: PRINT IT
4510 ; <ANY OTHER SPECIAL ERROR PROCESSING MAY BE DONE HERE (I.E. CKLOOP)>
4511 ;
4512 ; N#: <RESUMPTION OF NORMAL PROCESSING>
4513 ;
4514 ;-----*****
4515
4516 003774 012777 140400 176350 MSTCLR: MOV #<RUN!MCLR!MREQ>*256.,@SELO ;INITIATE M-LOOP
4517
4518 004002 010346 MOV R3,-(SP)
4519 004004 012703 001000 MOV #512.,R3 ;WAIT FOR THE M-LOOP TO FINISH THE OPERATION
4520 004010 077301 1#: SOB R3,1#
4521 004012 012603 MOV (SP)+,R3
4522
4523 004014 132777 000200 176334 BITB @MRDY,@BSEL2 ;DID THE M-LOOP FINISH
4524 004022 001023 BNE S# ;YES, GOOD. RETURN
4525 004024 004737 004610 JSR PC,GETWSR ;GET BYTE SELECT REGISTERS
4526 004030 012737 000301 002310 MOV @RUN!MCLR!MREQ,GDATA ;IDENTIFY REQUESTED FUNCTION
4527 004036 GTDF EM3,ERR4 ;"MRDY" TIMEOUT
(2) ; QUEUE "DEVICE FATAL" ERROR # 2
(5) 004036 012737 000001 002236 MOV #T.EDF,ERRTYP
(5) 004044 012737 000002 002240 MOV #2,ERRNBR
(5) 004052 012737 014466 002242 MOV #EM3,ERRMSG
(5) 004060 012737 005440 002244 MOV #ERR4,ERRBLK
4528 004066 000261 SEC ;SET CARRY TO INDICATE ERROR
4529 004070 000401 BR 9# ;EXIT WITH THE "ERROR" FLAG (CARRY BIT) SET
4530 004072 000241 5#: CLC ;CLEAR C BIT FOR NO ERRORS
4531 004074 000207 9#: RTS PC ;RETURN
    
```

CVDMACO DMV11 MCTRL DIAG #1
 CVDMAC.P11 16-AUG-84 13:59

MACY11 30A(1052) 16-AUG-84 14:51 PAGE 31
 M-LOOP -- READ

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4533 .SBTTL M-LOOP -- READ
4534 ;.....
4535 ; READ - READ THE SPECIFIED ADDRESS WITHIN THE DMV-11
4536 ;
4537 ; CALLING SEQUENCE:
4538 ;
4539 ; JSR R5,READ
4540 ; .WORD <ADDRESS OF REGISTER WITHIN DMV-11>
4541 ; .WORD <DESTINATION ADDRESS WITHIN LSI-11>
4542 ; BCC N# ;IF NO ERROR OCCURED, PROCEED WITH ROUTINE
4543 ; ERROR ;AN ERROR MESSAGE HAS BEEN STACKED: PRINT IT
4544 ; <ANY OTHER SPECIAL ERROR PROCESSING MAY BE DONE HERE (I.E. CKLOOP)>
4545 ;
4546 ; N#: <RESUMPTION OF NORMAL PROCESSING>
4547 ;
4548 ;-----
4549 ;
4550 004076 012577 176260 READ: MOV (R5),#SEL4 ;SETUP SOURCE REGISTER
4551 004102 112777 000001 176246 MOVB #REDLOC,#SEL2 ;TELL M-LOOP TO GIVE US THE REQUESTED DATA
4552 ;
4553 004110 010346 MOV R3,-(SP)
4554 004112 012703 000032 MOV #26,R3 ;WAIT FOR THE M-LOOP TO FINISH THE OPERATION
4555 004116 077301 11: SOB R3,1#
4556 004120 012603 MOV (SP),R3
4557 ;
4558 004122 132777 000200 176226 BITB #RDY,#SEL2 ;DID THE M-LOOP FINISH
4559 004130 001023 BNE 5# ;YES, GOOD. RETURN
4560 ;
4561 004132 004737 004610 JSR PC,GETWSR ;GET BYTE SELECT REGISTERS
4562 004136 012737 000001 002310 MOV #REDLOC,GDATA ;IDENTIFY REQUESTED FUNCTION
4563 004144 GTDF EM4,ERR4 ;"RDY" TIMEOUT
4564 (2) ; QUEUE "DEVICE FATAL" ERROR # 3
4565 (5) 004144 012737 000001 002236 MOV #T.EDF,ERRTYP
4566 (5) 004152 012737 000003 002240 MOV #3,ERRNBR
4567 (5) 004160 012737 014512 002242 MOV #EM4,ERRMSG
4568 (5) 004166 012737 005440 002244 MOV #ERR4,ERRBLK
4569 004174 000261 SEC ;INDICATE AN ERROR HAS BEEN STACKED
4570 004176 000401 BR 6# ;RETURN WITH THAT INDICATION
4571 ;
4572 51: CLC ;INDICATE "NO ERROR"
4573 61: MOVB #SEL6,(R5). ;PUT DATA WHERE CALLER WANTS IT
4574 RTS R5 ;RETURN
    
```

CVDMACO DMV11 MCTRL DIAG #1
CVDMAC.P11 16-AUG-84 13:59

MACY11 30A(1052) 16-AUG-84 14:51 PAGE 32
M-LOOP -- READ IMMEDIATE

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4589 004210 012577 176146
4590 004214 112777 000001 176134
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4592 004222 010346
4593 004224 012703 001000
4594 004230 077301
4595 004232 012603
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4597 004234 132777 000200 176114
4598 004242 001023
4599
4600 004244 004737 004610
4601 004250 012737 000001 0023:0
4602 004256
(2)
(5) 004256 012737 000001 002236
(5) 004264 012737 000004 002240
(5) 004272 012737 014512 002242
(5) 004300 012737 005440 002244
4603 004306 000261
4604 004310 000401
4605
4606 004312 000241
4607 004314 017725 176046
4608 004320 000205

```

```

.SBTTL M-LOOP -- READ IMMEDIATE
;.....
; READI - READ IMMEDIATE THE SPECIFIED ADDRESS WITHIN THE DMV-11
;
; CALLING SEQUENCE:
;
;     JSR     R5,READI
;     .WORD  <ADDRESS OF REGISTER WITHIN DMV-11>
;     .WORD  <DESTINATION -- CONTENTS OF REG. IS PUT HERE>
;     BCC    N0          ;IF NO ERROR OCCURED, PROCEED WITH ROUTINE
;     ERROR  ;AN ERROR MESSAGE HAS BEEN STACKED: PRINT IT
;     <ANY OTHER SPECIAL ERROR PROCESSING MAY BE DONE HERE (I.E. CKLOOP)>
;
; N0:  <RESUMPTION OF NORMAL PROCESSING>
;
;-----
READI:
MOV     (R5),BSEL4      ;SETUP SOURCE POINTER
MOV8    @REDLOC,BSEL2   ;TELL M-LOOP TO GIVE US THE REQUESTED DATA
;
MOV     R3, -(SP)
MOV     #512,R3        ;WAIT FOR THE M-LOOP TO FINISH THE OPERATION
10:    SOB    R3,10
MOV     (SP),R3
;
BITB    @MROY,BSEL2    ;DID THE M-LOOP FINISH
BNE     50             ;YES, GOOD. RETURN
;
JSR     PC,GETWSR      ;GET BYTE SELECT REGISTERS
MOV     @REDLOC,GDATA  ;IDENTIFY REQUESTED FUNCTION
GTDF    EM4,ERR4       ;"MROY" TIMEOUT
;     QUEUE "DEVICE FATAL" ERROR # 4
;
;     MOV     @T.EDF,EMRTYP
;     MOV     @4,ERRNBR
;     MOV     @EM4,ERRMSG
;     MOV     @ERR4,ERRBLK
;
SEC
BR      60             ;INDICATE AN ERROR HAS BEEN STACKED
;RETURN WITH THAT INDICATION
;
50:    CLC
60:    MOV     @SEL6,(R5) ;INDICATE "NO ERROR"
;PUT DATA WHERE CALLER WANTS IT
RTS     R5            ;RETURN

```

CYDMACO DMV11 MCTRL DIAG 01
CYDMAC.P11 16-AUG-84 13.59

MACY11 30A(1052) 16-AUG-84 14:51 PAGE 33
M-LOOP -- WRITE

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4627 004322 012577 176034
4628 004326 113577 176034
4629 004332 000404

```

.SBTTL M-LOOP -- WRITE
;.....
; WRITE - WRITE THE SPECIFIED DATA INTO THE SPECIFIED DMV-11 ADDRESS
;
; CALLING SEQUENCE:
;
;     JSR     RS,WRITE
;     .WORD  <ADDRESS OF REGISTER WITHIN DMV-11>
;     .WORD  <ADDRESS OF DATA BYTE>
;     BCC   N0           ;IF NO ERROR OCCURED, PROCEED WITH ROUTINE
;     ERROR           ;AN ERROR MESSAGE HAS BEEN STACKED: PRINT IT
;     <ANY OTHER SPECIAL ERROR PROCESSING MAY BE DONE HERE (I.E. CKLOOP)>
;
; N0:  <RESUMPTION OF NORMAL PROCESSING>
;
;-----
WRITE:  MOV     (RS),.BSEL4   ;SETUP SOURCE POINTER
        MOVB   B(RS),.BSEL6 ;MAKE DATA AVAILABLE TO M-LOOP
        BR     PLWRI        ;THE REST OF THIS ROUTINE IS THE SAME AS "WRITEI"

```


CVDMACO DMV11 MCTRL DIAG #1
CVDMAC.P11 16-AUG-84 13:59

MACY11 30A(1052) 16-AUG-84 14:51 PAGE 34
M-LOOP -- WRITE IMMEDIATE

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4662
(2)
(5)
(5)
(5)
(5)
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004334
004334 012577 176022
004340 012577 176022
004344 112777 000002 176004

004352 010346
004354 012703 000050
004360 077301
004362 012603

004364 132777 000200 175764
004372 001023
004374 004737 004610
004400 012737 000002 002310
004406

004406 012737 000001 002236
004414 012737 000005 002240
004422 012737 014512 002242
004430 012737 005440 002244

004436 000261
004440 000401

004442 000241
004444 000205

```
.SBTTL M-LOOP -- WRITE IMMEDIATE
;.....
; WRITEI - WRITE IMMEDIATE THE SPECIFIED DATA INTO THE SPECIFIED DMV-11 ADDRESS
;
; CALLING SEQUENCE:
;
;       JSR      R5,WRITEI
;       .WORD    <ADDRESS OF REGISTER WITHIN DMV-11>
;       .WORD    <DATA FIELD -- DATA TO BE WRITTEN IN DMV-11>
;       BCC     N0                ;IF NO ERROR OCCURED, PROCEED WITH ROUTINE
;       ERROR   ;AN ERROR MESSAGE HAS BEEN STACKED: PRINT IT
;       <ANY OTHER SPECIAL ERROR PROCESSING MAY BE DONE HERE (I.E. CXL'OP)>
;
; N0:    <RESUMPTION OF NORMAL PROCESSING>
;
;-----
WRITEI:
      MOV      (R5),BSEL4        ;SETUP SOURCE POINTER
      MOV      (R5),BSEL6        ;MAKE DATA AVAILABLE TO M-LOOP
      PLWRI:  MOVB   @WRILOC,BSEL2 ;TELL M-LOOP TO WRITE THE DATA
;
      MOV      R3,-(SP)
      MOV      @40.,R3          ;WAIT FOR THE M-LOOP TO FINISH THE OPERATION
10:   SOB     R3,10
      MOV      (SP),R3
;
      BITB    @MRDY,BSEL2       ;DID THE M-LOOP FINISH
      BNE     50                ;YES, GOOD. RETURN
      JSR     PC,GETWSR         ;GET BYTE SELECT REGISTERS
      MOV     @WRILOC,GDATA     ;IDENTIFY REQUESTED FUNCTION
      GTDF   EMA,ERR4          ;"MRDY" TIMEOUT
;                               ;   QUEUE "DEVICE FATAL" ERROR # 5
;                               MOV     @T.EDF,ERRTYP
;                               MOV     @5,ERRNBR
;                               MOV     @EMA,ERRMSG
;                               MOV     @ERR4,ERRBLK
;
      SEC
      BR      60                ;INDICATE AN ERROR HAS BEEN STACKED
;                               ;RETURN WITH THAT INDICATION
;
50:   CLC
60:   RTS      R5                ;INDICATE "NO ERROR"
;                               ;RETURN
```

CVDMACO DMV11 MCTRL DIAG #1
 CVDMAC.P11 16-AUG-84 13:59

MACY11 30A(1052) 16-AUG-84 14:51 PAGE 35
 GETBSR -- GET BYTE SELECT REGISTERS

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 4686 004446 117737 175700 002246
 4687 004454 117737 175674 002250
 4688 004462 117737 175670 002252
 4689 004470 117737 175664 002254
 4690 004476 117737 175660 002256
 4691 004504 117737 175654 002260
 4692 004512 117737 175650 002262
 4693 004520 117737 175644 002264
 4694 004526 117737 175640 002266
 4695 004534 117737 175634 002270
 4696 004542 117737 175630 002272
 4697 004550 117737 175624 002274
 4698 004556 117737 175620 002276
 4699 004564 117737 175614 002300
 4700 004572 117737 175610 002302
 4701 004600 117737 175604 002304
 4702 004606 000207
 4703
 4704
 4705
 4706
 4707 004610 017737 175536 002246
 4708 004616 017737 175534 002250
 4709 004624 017737 175532 002252
 4710 004632 017737 175530 002254
 4711 004640 017737 175526 002256
 4712 004646 017737 175524 002260
 4713 004654 017737 175522 002262
 4714 004662 017737 175520 002264
 4715 004670 000207

```
.SBTTL GETBSP -- GET BYTE SELECT REGISTERS
;*****
;
; GET THE CONTENTS OF ALL CONTROL AND STATUS REGISTERS
;
; FUNCTION - THIS SUBROUTINE COLLECTS THE CONTENTS OF THE
;           BYTE SELECT REGISTERS FOR THE PURPOSE OF DISPLAY.
;
; ENTRY CONDITIONS - NONE      **  *  ****  *  **  *
;                               *  *  *  *  *  *  *  *
; EXIT CONDITIONS - NONE      *  *  *  *  *  *  *  *
;                               *  *  *  *  *  *  *  *
; REGISTERS DESTROYED - NONE  **  ****  ****  *  *  *
;*****
```

```
GETBSR: MOVB  BSEL0,BSR0      ;PUT THE CURRENT CSR VALUES INTO THE PRINT-OUT
        MOVB  BSEL1,BSR1      ;TABLE
        MOVB  BSEL2,BSR2
        MOVB  BSEL3,BSR3
        MOVB  BSEL4,BSR4
        MOVB  BSEL5,BSR5
        MOVB  BSEL6,BSR6
        MOVB  BSEL7,BSR7
        MOVB  BSEL10,BSR10
        MOVB  BSEL11,BSR11
        MOVB  BSEL12,BSR12
        MOVB  BSEL13,BSR13
        MOVB  BSEL14,BSR14
        MOVB  BSEL15,BSR15
        MOVB  BSEL16,BSR16
        MOVB  BSEL17,BSR17
        RTS    PC              ;RETURN TO CALLER
```

```
.SBTTL GETWSR -- GET WORD SELECT REGISTERS
; "WORD" VERSION OF ABOVE SUBROUTINE
GETWSR: MOV   BSEL0,WSR0      ;MOVE THE 8 WORD REGISTERS TO THE OTHERWISE
        MOV   BSEL2,WSR2      ;BYTE TABLE
        MOV   BSEL4,WSR4
        MOV   BSEL6,WSR6
        MOV   BSEL10,WSR10
        MOV   BSEL12,WSR12
        MOV   BSEL14,WSR14
        MOV   BSEL16,WSR16
        RTS    PC              ;RETURN TO CALLER
```

CVDMACO DMV11 MCTRL DIAG #1
CVDMAC.P11 16-AUG-84 13:59

MACY11 30A(1052) 16-AUG-84 14:51 PAGE 36

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.INITT1 -- INITIALIZE TIMER # 1

.SBTTL .INITT1 -- INITIALIZE TIMER # 1

; INITT1 - INITIALIZE TIMER # 1

; CALLING SEQUENCE:

```

;          JSR      R5,INITT1
;          .WORD   <VALUE LOADED INTO THE T1 LATCH @ T1LH & T1LH>
;          .WORD   <BITS 6 & 7 WILL BE LOADED INTO "ACR", BIT 5 WILL BE
;                   USED TO SET OR CLEAR BIT 6 ("T1") OF THE INTERRUPT
;                   ENABLE REGISTER ("IER")>
    
```

; SEQUENCE OF EVENTS HEREIN:

```

;          SET THE VIA'S INTERRUPT ENABLE REGISTER ("IER")
;          SET THE VIA'S "ACR"
;          SET T1L-L (ADDR 06)
;          SET T1L-H (ADDR 07)
;          RETURN WITHOUT ANY ERROR CHECKING
    
```

```

*****
INITT1: MOV      R1,-(SP)          ;SAVE THE REGISTER WE WILL BE USING
        MOVB    (R5),TMP6+1     ;SETUP VALUES TO BE LOADED INTO THE LATCHES
        MOVB    (R5),TMP7+1
        MOVB    (R5),TMPB+1     ;GET & PROCESS BITS FOR ACR 6 & 7
        BICB    @+C<BIT6+BIT7>,TMPB+1 ;EXTRACT BITS 6 & 7 & SAVE THEM FOR LATER
        MOV     (R5),R1         ;NOW, GET THE BIT TO BE USED IN SETTING OR
                                ;CLEARING BIT 6 OF "IER"
    
```

```

; THE PASSED BIT IS IN THE WRONG POSITION BUT, IT SHOULD CONTROL THE OPERATION.
; WE KNOW WE ARE SETTING OR CLEARING BIT 6 -- THUS, THE PASSED BIT WILL BECOME
; THE CONTROLLING BIT 7 AND WE WILL "OR" IN THE BIT WE WISH TO BE CONTROLLED
; (BIT 6).
    
```

```

        ASLB    R1              ;THIS PUTS THE PASSED BIT INTO BIT 6.
        BIC     @+C<BIT6>,R1   ;WHILE HERE, CLEAR ALL OTHER BITS AND
        BICB    R1,@SEL3      ;CLEAR THE INTERRUPT FLAG IN THE SELECT REG.
        ASLB    R1              ;NOW THE BIT IS IN THE CONTROLLING POSITION
        BIS     @BIT6,R1       ;SET BIT 6
        MOVB    R1,TMPE+1     ;THE CALL WILL NOW WRITE THE APPROPRIATE VALUE
    
```

```

        JSR     R5,WRITE       ;WRITE TO
        IENR    ;THE VIA'S IER
        TMPE+1 ;INTERRUPT ENABLE/DISABLE INFORMATION
        BCS     63#           ;EXIT ON ERROR
    
```

```

        JSR     R5,READ        ;READ THE CURRENT SETTING OF
        ACR     ;THE VIA'S ACR
        TMPB
    
```

```

004672 010146
004674 112537 002455
004700 112537 002457
004704 111537 002467
004710 142737 177477 002467
004716 012501
004720 106301
004722 042701 177677
004726 140177 175426
004732 106301
004734 052701 000100
004740 110137 002475
004744 004537 004322
004750 120016
004752 002475
004754 103431
004756 004537 004076
004762 120013
004764 002466
    
```

CVDMAC0 DMV11 MCTRL DIAG #1
CVDMAC.P11 16-AUG-84 13:59

MACY11 30A(1052) 16-AUG-84 14:51 PAGE 36-1
.INITI1 -- INITIALIZE TIMER # 1

```

4773 004766 103424          BCS      63#          ;EXIT ON ERROR
4774
4775 004770 013701 002466    MOV      TMPB,R1      ;GET THAT VALUE
4776 004774 042701 177477    BIC      @+C<BIT6+BIT7>,R1 ;CLEAR BITS 6 & 7
4777 005000 150137 002467    BISB     R1,TMPB+1    ;ADD CURRENT BITS 0 --> 5 TO NEW BITS 6 & 7
4778
4779 005004 004537 004322    JSR      R5,WRITE     ;WRITE THE NEW REGISTER SETTING TO VIA'S ACR
4780 005010 120013
4781 005012 002467
4782 005014 103411          BCS      63#          ;EXIT ON ERROR
4783
4784 005016 004537 004322    JSR      R5,WRITE     ;WRITE TO
4785 005022 120006          TILL     ;LOW ORDER LATCH REGISTER (T1L-L)
4786 005024 002455          TMP6+1  ;THE VALUE PASSED
4787 005026 103404          BCS      63#          ;EXIT ON ERROR
4788
4789 005030 004537 004322    JSR      R5,WRITE     ;WRITE TO
4790 005034 120007          T1LH    ;HIGH ORDER LATCH REGISTER (T1L-H)
4791 005036 002457          TMP7+1  ;THE VALUE PASSED
4792
4793
4794 005040 012601          63#:    MOV      (SP)+,R1    ;RESTORE R1
4795 005042 000205          RTS      R5           ;RETURN
4796
4797
4798          .SBTTL  STALL -- DELAY FOR 10.5 MICRO-SEC'S (ON LSI-11)
4799          ;*****
4800          ; STALL -- THIS SUBROUTINE STALLS FOR ABOUT 10.5 MICRO-SECONDS
4801          ;-----*****
4802
4803 005044 000207          STALL:  RTS      PC
4804

```

CVDMAC0 DMV11 MCTRL DIAG #1
CVDMAC.P11 16-AUG-84 13:59

MACY11 30A(1052) 16-AUG-84 14:51 PAGE 37
STREG -- STATIC TEST OF SPECIFIED DMV-11 LOCATION

```
.SBTTL STREG -- STATIC TEST OF SPECIFIED DMV-11 LOCATION
;*****
; STREG -- PERFORM A STATIC TEST OF THE SPECIFIED REGISTER
;
; CALLING SEQUENCE:
;
; <R0 CONTAINS THE ADDRESS OF THE REGISTER TO BE TESTED>
; <"TDATA" CONTAINS THE TEST BYTE>
; <"GDATA" CONTAINS THE EXPECTED DATA>
;
; JSR PC,STREG
; BCC N# ;IF NO ERROR OCCURED, PROCEED WITH ROUTINE
; ERROR ;AN ERROR MESSAGE HAS BEEN STACKED: PRINT IT
; <ANY OTHER SPECIAL ERROR PROCESSING MAY BE DONE HERE (I.E. CKLOOP)>
;
; N#: <RESUMPTION OF NORMAL PROCESSING>
;
;-----
STREG: MOV R0,2# ;PUT SPECIFIED REGISTER'S ADDRESS IN I/O CALLS
        MOV R0,4#
2#: JSR R5,WRITE ;WRITE IT
        0 ;*** MODIFIED FROM ABOVE ***
        TDATA ;*** MODIFIED FROM ABOVE ***
        BCS 10# ;ON ERROR, EXIT
4#: JSR R5,READ ;READ IT BACK AGAIN
        0 ;*** MODIFIED FROM ABOVE ***
        BDATA
        BCS 10# ;ON ERROR, EXIT
        CMPB GDATA,BDATA ;DID WE READ WHAT WE WROTE?
        CLC ; (THIS ISN'T NEEDED FOR THE ERROR TEST BUT
                ; MUST BE CLEARED ON EXIT IF NO ERROR OCCURED)
        BEQ 10# ;YES, EXIT FROM SUBTEST
        MOV 2#,REGNUM ;BUILD REGISTER #
        BIC #177760,REGNUM
        GTDF EM25,ERR7 ;REPORT READ/WRITE ERROR
                ; QUEUE "DEVICE FATAL" ERROR # 6
                MOV #T.EDF,ERRTYP
                MOV #6,ERRNBR
                MOV #EM25,ERRMSG
                MOV #ERR7,ERRBLK
10#: SEC ;INDICATE THAT AN ERROR WAS DETECTED
        RTS PC
```

CVDMACO DMV11 MCTRL DIAG #1
 CVDMAC.P11 16-AUG-84 13:59

MACY11 30A(1052) 16-AUG-84 14:51 PAGE 38
 INTERRUPT HANDLER -- MPIHAN

```

4849 .SBTTL INTERRUPT HANDLER -- MPIHAN
4850
4851 ;*****
4852 ; MPIHAN -- COUNT INTERRUPTS -- USUALLY INTERRUPT "A"
4853 ;
4854 ; THIS ROUTINE WILL INCREMENT THE LOW BYTE OF "INTFLG" EACH TIME IT IS
4855 ; ENTERED. IF "IHILNK" IS NON-ZERO, VECTOR TO THE ADDRESS THEREIN USING
4856 ; A "JSR PC"
4857 ;-----
4858
4859 005164          BGNSRV MPIHAN
4860 (3) 005164
4861 005164 010046          MOV      RO,-(SP)      ;SAVE RO
4862 005166 105737 002330  TSTB    INTWCH      ;HAVE WE BEEN TOLD TO WATCH FOR TYPE "A" INT'S?
4863 005172 001007          BNE     5$          ;YES, DO NORMAL INTERRUPT PROCESSING
4864 005174 004737 004446  JSR     PC,GETBSR   ;NO, DUMP REGISTERS AND
4865 (2) 005200          GEDF    EM34,ERR3   ; REPORT "UNEXPECTED INTERRUPT"
4866 (6) 005200 104455          ; "DEVICE FATAL" ERROR # 7
4867 (7) 005202 000007          TRAP   C$ERDF
4868 (7) 005204 015625          .WORD  7
4869 (7) 005206 005426          .WORD  EM34
4870 005210 000407          .WORD  ERR3
4871 BR      10$          ;GO TO EXIT
4872
4873 5$: INCB   INTFLG      ;INCREMENT LOW BYTE OF INTERRUPT COUNTER
4874 TST    IHILNK      ;ARE WE EXPECTED TO EXECUTE ANOTHER ROUTINE?
4875 BEQ    10$          ;NO, GET OUT
4876 JSR    PC,@IHILNK  ;YES, GO TO IT -- I HOPE IT'S VALID!
4877 10$: MOV   (SP)+,RO  ;RESTORE RO
4878 ENDSRV          ;RETURN TO INTERRUPTED PROCESS
4879 (3) 005232          L10002:
4880 (2) 005232 000002          RTI
4881
4882 005234 000000          IHILNK: .WORD  0
4883 ;POINTER TO AUXILIARY INT. HANDLING ROUTINE
    
```

CVDMAC0 DMV11 MCTRL DIAG #1
 CVDMAC.P11 16-AUG-84 13:59

MACY11 30A(1052) 16-AUG-84 14:51 PAGE 39
 INTERRUPT HANDLER -- MPOHAN

.SBTTL INTERRUPT HANDLER -- MPOHAN

```

;*****
; MPOHAN -- SIMPLY COUNT INTERRUPTS -- USUALLY INTERRUPT "B"
;
; THIS ROUTINE WILL INCREMENT THE HIGH BYTE OF "INTFLG" EACH TIME IT IS
; ENTERED. IF "IHOLNK" IS NON-ZERO, VECTOR TO THE ADDRESS THEREIN USING
; A "JSR PC"
;-----
    
```

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 4891
 (2)
 (6)
 (7)
 (7)
 (7)
 4892
 4893
 4894
 4895
 4896
 4897
 4898
 4899
 (3)
 (2)
 4900
 4901

005236
 005236 010046
 005240 105737 002331
 005244 001007
 005246 004737 00444C
 005252
 005252 104455
 005254 000010
 005256 015656
 005260 005426
 005262 000407
 005264 105237 002327
 005270 005737 005306
 005274 001402
 005276 004777 000004
 005302 012600
 005304
 005304 000002
 005306 000000

```

BGNSRV MPOHAN
MPOHAN::
MOV RO,-(SP) ;SAVE RO
TSTB INTWCH+1 ;HAVE WE BEEN TOLD TO WATCH FOR TYPE "B" INT'S?
BNE 5$ ;YES, DO NORMAL INTERRUPT PROCESSING
JSR PC,GETBSR ;NO, DUMP REGISTERS AND
GEDF EM34B,ERR3 ; REPORT "UNEXPECTED INTERRUPT"
; "DEVICE FATAL" ERROR # 8
TRAP C$ERDF
.WORD 8
.WORD EM34B
.WORD ERR3
BR 10$ ;GO TO EXIT
5$: INCB INTFLG+1 ;INCREMENT HIGH BYTE OF INTERRUPT COUNTER
TST IHOLNK ;ARE WE EXPECTED TO EXECUTE ANOTHER ROUTINE?
BEQ 10$ ;NO, GET OUT
JSR PC,@IHOLNK ;YES, GO TO IT -- I HOPE IT'S VALID!
10$: MOV (SP)+,RO ;RESTORE RO
ENDSRV ;RETURN TO INTERRUPTED PROCESS
L10003:
RTI
IHOLNK: .WORD 0 ;POINTER TO AUXILIARY INT. HANDLING ROUTINE
    
```


CVDMACO DMV11 MCTRL DIAG #1
CVDMAC.P11 16-AUG-84 13:59

MACY11 30A(1052) 16-AUG-84 14:51 PAGE 40
GLOBAL ERROR REPORT REPORT SECTION

.SBTTL GLOBAL ERROR REPORT REPORT SECTION

;/;/ THE GLOBAL ERROR REPORT SECTION CONTAINS ERROR MESSAGES
;/;/ THAT ARE USED IN MORE THAN ONE TEST.
;/;/
.EVEN

.SBTTL ERROR HANDLER -- ERR1 -- "NO NOTHING" HANDLER

BGNMSG ERR1
JSR PC,NULERR ;USE COMMON ROUTINE TO TERMINATE ERROR MESSAGE
ENDMSG
L10004: TRAP C#MSG

.SBTTL ERROR HANDLER -- ERR2 -- CSR REGISTER ERROR REPORTING

BGNMSG ERR2
PRINTB #FMT02,#TXT5,REGNUM
JSR PC,XORGB
PRINTB #FMT02A,<B,GDATA>,<B,BDATA>,<B,XDATA>
JSR PC,ERR4# ;DUMP THE BYTE SELECT REGISTERS
JSR PC,NULERR ;USE COMMON ROUTINE TO TERMINATE ERROR MESSAGE
ENDMSG
L10005: TRAP C#MSG

.SBTTL ERROR HANDLER -- ERR3 -- DUMP THE BYTE SELECT REGISTERS

BGNMSG ERR3
JSR PC,ERR4#
JSR PC,NULERR ;USE COMMON ROUTINE TO TERMINATE ERROR MESSAGE
ENDMSG
L10006:

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4906
4907
4908
4909
4910
4911
4912
4913 005310
(3) 005310
4914 005310 004737 012104
4915 005314
(3) 005314
(3) 005314 104423
4916
4917
4918
4919 005316
(3) 005316
4920 005316
(9) 005316 013746 002334
(8) 005322 012746 013617
(7) 005326 012746 012136
(6) 005332 012746 000003
(3) 005336 010600
(4) 005340 104414
(4) 005342 062706 000010
4921 005346 004737 011310
4922 005352
(10) 005352 005046
(10) 005354 153716 002314
(9) 005360 005046
(9) 005362 153716 002312
(8) 005366 005046
(8) 005370 153716 002310
(7) 005374 012746 012173
(6) 005400 012746 000004
(3) 005404 010600
(4) 005406 104414
(4) 005410 062706 000012
4923 005414 004737 011334
4924 005420 004737 012104
4925 005424
(3) 005424
(3) 005424 104423
4926
4927
4928
4929 005426
(3) 005426
4930 005426 004737 011334
4931 005432 004737 012104
4932 005436
(3) 005436

CVDMACO DMV11 MCTRL DIAG #1
CVDMAC.P11 16-AUG-84 13:59

MACY11 30A(1052) 16-AUG-84 14:51 PAGE 40-1
ERROR HANDLER -- ERR3 -- DUMP THE BYTE SELECT REGISTERS

```

(3) 005436 104423                                     TRAP      C#MSG
4933
4934
4935
4936 005440
(3) 005440
4937 005440 010146
4938 005442 113701 002310
4939 005446 122701 000017
4940 005452 103013
4941 005454
(8) 005454 005046
(8) 005456 150116
(7) 005460 012746 012412
(6) 005464 012746 000002
(3) 005470 010600
(4) 005472 104415
(4) 005474 062706 000006
4942 005500 000425
4943
4944 005502 001001
4945 005504 005001
4946 005506 022701 000007
4947 005512 003002
4948 005514 012701 000006
4949 005520 006301
4950 005522
(9) 005522 016146 017544
(8) 005526 005046
(8) 005530 153716 002310
(7) 005534 012746 012455
(6) 005540 012746 000003
(3) 005544 010600
(4) 005546 104415
(4) 005550 062706 000010
4951
4952 005554 012601
4953 005556 004737 011722
4954 005562
(3) 005562
(3) 005562 104423
4955
4956
4957
4958 005564
(3) 005564
4959 005564
(9) 005564 013746 002334
(8) 005570 012746 013617
(7) 005574 012746 012136
(6) 005600 012746 000003
(3) 005604 010600
(4) 005606 104414
(4) 005610 062706 000010
4960 005614 004737 011310
4961 005620

-----
;SBTTL ERROR HANDLER -- ERR4 -- M-LOOP TIMEOUT ERROR HANDLING
-----
      BGNMSG  ERR4
      ERR4::
      MOV     R1, -(SP)          ;SAVE THE WORKING REGISTER
      MOVB   GDATA, R1         ;SAVE THIS FOR LATER
      CPB    @17, R1           ;WAS THIS AN M-LOOP REQUEST?
      BHIS   5#                ;YES, THEN REPORT THE FUNCTION CODE
      PRINTX @FMT5, <B, R1>    ;NO, THEN IT MUST BE A BSEL1 SETTING
      CLR    (SP)
      BISB   R1, (SP)
      MOV    @FMT5, -(SP)
      MOV    @2, (SP)
      MOV    SP, R0
      TRAP   C#PNTX
      ADD    @6, SP
      BR     20#

5#:   BNE    6#                ;IF IT WAS A 17, THIS IS A "NOP" AND
      CLR    R1                ; THE TEXT POINTER MUST SO REFLECT.
6#:   CMP    @7, R1           ;IS FUNCTION CODE > 7?
      BGT    7#                ;NO, THEN WE CAN HANDLE IT
      MOV    @6, R1           ;YES, THEN IT'S UNDEFINED -- SAY SO
7#:   ASL    R1                ;CONVERT TO A WORD OFFSET
      PRINTX @FMT5A, <B, GDATA>, TXTMLT(R1) ;REPORT THE FAILING FUNCTION
      MOV    TXTMLT(R1), -(SP)
      CLR    -(SP)
      BISB   GDATA, (SP)
      MOV    @FMT5A, -(SP)
      MOV    @3, -(SP)
      MOV    SP, R0
      TRAP   C#PNTX
      ADD    @10, SP

20#:  MOV    (SP)+, R1         ;RESTORE THE WORKING REGISTER
      JSR    PC, ERR5#        ;DUMP THE SELECT REGISTERS
      ENDMSG

L10607: TRAP      C#MSG
-----
;SBTTL ERROR HANDLER -- ERR5 -- WORD SELECT REG. ERRORS
-----
      BGNMSG  ERR5
      ERR5::
      PRINTB @FMT02, @TXT5, REGNUM
      MOV    REGNUM, (SP)
      MOV    @TXT5, (SP)
      MOV    @FMT02, (SP)
      MOV    @3, (SP)
      MOV    SP, R0
      TRAP   C#PNTB
      ADD    @10, SP

      JSR    PC, XORG8
      PRINTB @FMT10, GDATA, BDATA, XDATA

```

CVDMACO DMV11 MCTRL DIAG #1
CVDMAC.P11 16-AUG-84 13:59

MACY11 30A(1052) 16-AUG-84 14:51 PAGE 40-2
ERROR HANDLER -- ERR5 -- WORD SELECT REG. ERRORS

(10)	005620	013746	002314		MOV	XDATA,-(SP)
(9)	005624	013746	002312		MOV	BDATA,-(SP)
(8)	005630	013746	002310		MOV	GDATA,-(SP)
(7)	005634	012746	012666		MOV	#FMT10,-(SP)
(6)	005640	012746	000004		MOV	#4,-(SP)
(3)	005644	010600			MOV	SP,R0
(4)	005646	104414			TRAP	C#PNTB
(4)	005650	062706	000012		ADD	#12,SP
4962	005654	004737	011722	JSR PC,ERR5#		;DUMP THE SELECT REGISTERS
4963	005660			ENDMSG		
(3)	005660					L10010:
(3)	005660	104423				TRAP C#MSG
4964						
4965						
4966						
4967	005662					
(3)	005662					
4968						
4969	005662	010146				
4970	005664	012701	002604			
4971	005670					
(8)	005670	012746	013644			
(7)	005674	012746	012574			
(6)	005700	012746	000002			
(3)	005704	010600				
(4)	005706	104415				
(4)	005710	062706	000006			
4972	005714					
(14)	005714	005046				
(14)	005716	152116				
(13)	005720	005046				
(13)	005722	152116				
(12)	005724	005046				
(12)	005726	152116				
(11)	005730	005046				
(11)	005732	152116				
(10)	005734	005046				
(10)	005736	152116				
(9)	005740	005046				
(9)	005742	152116				
(8)	005744	012746	014016			
(7)	005750	012746	012603			
(6)	005754	012746	000010			
(3)	005760	010600				
(4)	005762	104415				
(4)	005764	062706	000022			
4973	005770					
(9)	005770	005046				
(9)	005772	152116				
(8)	005774	005046				
(8)	005776	152116				
(7)	006000	012746	012651			
(6)	006004	012746	000003			
(3)	006010	010600				
(4)	006012	104415				
(4)	006014	062706	000010			

```

-----
:SBTTL ERROR HANDLER -- ERR6 -- VIA REGISTER ERRORS W/FULL REG. DUMP
-----
BGNMSG ERR6
ERR6::
;*** PRINT THE FIRST HALF OF THE REGISTERS ***
MOV R1,-(SP) ;PRESERVE R1'S CONTENTS
MOV #PNTCR,R1 ;POINT TO EXPECTED VALUES
PRINTX #FMT06,#TXT7
MOV #TXT7,-(SP)
MOV #FMT06,-(SP)
MOV #2,-(SP)
MOV SP,R0
TRAP C#PNTX
ADD #6,SP
PRINTX #FMT06A,#TXT8A,<B,(R1)>,<B,(R1)>,<B,(R1)>,<B,(R1)>,<B,(R1)>,<B,(R1)>,<B,(R1)>
CLR -(SP)
BISB (R1)+,(SP)
CLR -(SP)
BISB (R1)+,(SP)
CLR -(SP)
BISB (R1)+,(SP)
CLR -(SP)
BISB (R1)+,(SP)
CLR -(SP)
BISB (R1)+,(SP)
CLR -(SP)
BISB (R1)+,(SP)
CLR -(SP)
BISB (R1)+,(SP)
CLR -(SP)
BISB (R1)+,(SP)
MOV #TXT8A,(SP)
MOV #FMT06A,-(SP)
MOV #10,-(SP)
MOV SP,R0
TRAP C#PNTX
ADD #22,SP
PRINTX #FMT06B,<B,(R1)>,<B,(R1)>
CLR -(SP)
BISB (R1)+,(SP)
CLR -(SP)
BISB (R1)+,(SP)
MOV #FMT06B,-(SP)
MOV #3,-(SP)
MOV SP,R0
TRAP C#PNTX
ADD #10,SP

```

CVDMACO DMV11 MCTRL DIAG #1
CVDMAC.P11 16-AUG-84 13:59

MACY11 30A(1052) 16-AUG-84 14:51 PAGE 40 3
ERROR HANDLER -- ERR6 -- VIA REGISTER ERRORS W/FULL REG. DUMP

```

4974 006020 012701 003122      MOV    @BT1,R1      ;POINT TO ACTUAL VALUES
4975 006024      PRINTX @FMT06A,@TXT08,<B.(R1)>,<B.(R1)>,<B.(R1)>,<B.(R1)>,<B.(R1)>,<B.(R1)>
(14) 006024 005046      CLR    -(SP)
(14) 006026 152116      BISB  (R1),-(SP)
(13) 006030 005046      CLR    -(SP)
(13) 006032 152116      BISB  (R1),-(SP)
(12) 006034 005046      CLR    -(SP)
(12) 006036 152116      BISB  (R1),-(SP)
(11) 006040 005046      CLR    -(SP)
(11) 006042 152116      BISB  (R1),-(SP)
(10) 006044 005046      CLR    -(SP)
(10) 006046 152116      BISB  (R1),-(SP)
(9) 006050 005046      CLR    (SP)
(9) 006052 152116      BISB  (R1),-(SP)
(8) 006054 012746 014033      MOV    @TXT08,-(SP)
(7) 006060 012746 012603      MOV    @FMT06A,-(SP)
(6) 006064 012746 000010      MOV    @10,-(SP)
(3) 006070 010600      MOV    SP,R0
(4) 006072 104415      TRAP  C:PN7X
(4) 006074 062706 000022      ADD    @22,SP
4976 006100      PRINTX @FMT06B,<B.(R1)>,<B.(R1)>
(9) 006100 005046      CLR    -(SP)
(9) 006102 152116      BISB  (R1),-(SP)
(8) 006104 005046      CLR    -(SP)
(8) 006106 152116      BISB  (R1),-(SP)
(7) 006110 012746 012651      MOV    @FMT06B,-(SP)
(6) 006114 012746 000003      MOV    @3,-(SP)
(3) 006120 010600      MOV    SP,R0
(4) 006122 104415      TRAP  C:PN7X
(4) 006124 062706 000010      ADD    @10,SP
4977 006130 012701 003206      MOV    @BT2,R1      ;POINT TO XOR VALUES
4978 006134      PRINTX @FMT06A,@TXT0C,<B.(R1)>,<B.(R1)>,<B.(R1)>,<B.(R1)>,<B.(R1)>,<B.(R1)>
(14) 006134 005046      CLR    -(SP)
(14) 006136 152116      BISB  (R1),-(SP)
(13) 006140 005046      CLR    -(SP)
(13) 006142 152115      BISB  (R1),-(SP)
(12) 006144 005046      CLR    -(SP)
(12) 006146 152116      BISB  (R1),-(SP)
(11) 006150 005046      CLR    -(SP)
(11) 006152 152116      BISB  (R1),-(SP)
(10) 006154 005046      CLR    -(SP)
(10) 006156 152116      BISB  (R1),-(SP)
(9) 006160 005046      CLR    -(SP)
(9) 006162 152116      BISB  (R1),-(SP)
(8) 006164 012746 014050      MOV    @TXT0C,-(SP)
(7) 006170 012746 012603      MOV    @FMT06A,-(SP)
(6) 006174 012746 000010      MOV    @10,-(SP)
(3) 006200 010600      MOV    SP,R0
(4) 006202 104415      TRAP  C:PN7X
(4) 006204 062706 000022      ADD    @22,SP
4979 006210      PRINTX @FMT06B,<B.(R1)>,<B.(R1)>
(9) 006210 005046      CLR    -(SP)
(9) 006212 152116      BISB  (R1),-(SP)
(8) 006214 005046      CLR    -(SP)
(8) 006216 152116      BISB  (R1),-(SP)
(7) 006220 012746 012651      MOV    @FMT06B,-(SP)

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CVDMACO DMV11 MCTRL DIAG #1
CVDMAC.P11 16-AUG-84 13:59

MACY11 30A(1052) 16 AUG-84 14:51 PAGE 40 4
ERROR HANDLER -- ERR6 VIA REGISTER ERRORS W/FULL REG. DUMP

(6)	006224	012746	000003		MOV	#3,-(SP)
(3)	006230	010600			MOV	SP,RO
(4)	006232	104415			TRAP	C#PNTX
(4)	006234	062706	000010		ADD	#10,SP
4980				;... PRINT SECOND HALF OF THE REGISTERS ...		
4981	006240	012701	002614	MOV	#PATER.#,R1	;POINT TO 2ND HALF OF REGISTERS EXPECTED VALUES
4982	006244			PRINTX	#FMT06,#TXT7A	
(8)	006244	012746	013731		MOV	#TXT7A,-(SP)
(7)	006250	012746	012574		MOV	#FMT06,-(SP)
(6)	006254	012746	000002		MOV	#2,-(SP)
(3)	006260	010600			MOV	SP,RO
(4)	006262	104415			TRAP	C#PNTX
(4)	006264	062706	000006		ADD	#6,SP
4983	006270			PRINTX	#FMT06A,#TXT8A,<B.(R1)>,<B.(R1)>,<B.(R1)>,<B.(R1)>,<B.(R1)>,<B.(R1)>	
(14)	006270	005046			CLR	-(SP)
(14)	006272	152116			BISB	(R1)>,(SP)
(13)	006274	005046			CLR	-(SP)
(13)	006276	152116			BISB	(R1)>,(SP)
(12)	006300	005046			CLR	-(SP)
(12)	006302	152116			BISB	(R1)>,(SP)
(11)	006304	005046			CLR	-(SP)
(11)	006306	152116			BISB	(R1)>,(SP)
(10)	006310	005046			CLR	-(SP)
(10)	006312	152116			BISB	(R1)>,(SP)
(9)	006314	005046			CLR	-(SP)
(9)	006316	152116			BISB	(R1)>,(SP)
(8)	006320	012746	014016		MOV	#TXT8A,-(SP)
(7)	006324	012746	012603		MOV	#FMT06A,-(SP)
(6)	006330	012746	000010		MOV	#10,-(SP)
(3)	006334	010600			MOV	SP,RO
(4)	006336	104415			TRAP	C#PNTX
(4)	006340	062706	000022		ADD	#22,SP
4984	006344			PRINTX	#FMT06B,<B.(R1)>,<B.(R1)>	
(9)	006344	005046			CLR	-(SP)
(9)	006346	152116			BISB	(R1)>,(SP)
(8)	006350	005046			CLR	-(SP)
(8)	006352	152116			BISB	(R1)>,(SP)
(7)	006354	012746	012651		MOV	#FMT06B,-(SP)
(6)	006360	012746	000003		MOV	#3,-(SP)
(3)	006364	010600			MOV	SP,RO
(4)	006366	104415			TRAP	C#PNTX
(4)	006370	062706	000010		ADD	#10,SP
4985	006374	012701	003132	MOV	#BT1.#,R1	;POINT TO 2ND HALF OF ACTUAL VALUES
4986	006400			PRINTX	#FMT06A,#TXT8B,<B.(R1)>,<B.(R1)>,<B.(R1)>,<B.(R1)>,<B.(R1)>,<B.(R1)>	
(14)	006400	005046			CLR	-(SP)
(14)	006402	152116			BISB	(R1)>,(SP)
(13)	006404	005046			CLR	-(SP)
(13)	006406	152116			BISB	(R1)>,(SP)
(12)	006410	005046			CLR	-(SP)
(12)	006412	152116			BISB	(R1)>,(SP)
(11)	006414	005046			CLR	-(SP)
(11)	006416	152116			BISB	(R1)>,(SP)
(10)	006420	005046			CLR	-(SP)
(10)	006422	152116			BISB	(R1)>,(SP)
(9)	006424	005046			CLR	-(SP)
(9)	006426	152116			BISB	(R1)>,(SP)

CVDMACO DMV11 MCTRL DIAG #1
CVDMAC.P11 16-AUG-84 13:59

MACY11 30A(1052) 16-AUG-84 14:51 PAGE 40-5
ERROR HANDLER -- ERR6 -- VIA REGISTER ERRORS W/FULL REG. DUMP

(8)	006430	012746	014033		MOV	@TXT8B,-(SP)	
(7)	006434	012746	012603		MOV	@FMT06A,-(SP)	
(6)	006440	012746	000010		MOV	@10,-(SP)	
(3)	006444	010600			MOV	SP,R0	
(4)	006446	104415			TRAP	C#PNTX	
(4)	006450	062706	000022		ADD	@22,SP	
4987	006454			PRINTX	@FMT06B,<B,(R1)>,<B,(R1)>		
(9)	006454	005046			CLR	-(SP)	
(9)	006456	152116			BISB	(R1),-(SP)	
(8)	006460	005046			CLR	-(SP)	
(8)	006462	152116			BISB	(R1),-(SP)	
(7)	006464	012746	012651		MOV	@FMT06B,-(SP)	
(6)	006470	012746	000003		MOV	@3,-(SP)	
(3)	006474	010600			MOV	SP,R0	
(4)	006476	104415			TRAP	C#PNTX	
(4)	006500	062706	000010		ADD	@10,SP	
4988	006504	012701	003216	MOV	@B2+8,R1 ;POINT TO 2ND HALF OF XOR VALUES		
4989	006510			PRINTX	@FMT06A,@TXT8C,<B,(R1)>,<B,(R1)>,<B,(R1)>,<B,(R1)>,<B,(R1)>,<B,(R1)>,<B,(R1)>		
(14)	006510	005046			CLR	-(SP)	
(14)	006512	152116			BISB	(R1),-(SP)	
(13)	006514	005046			CLR	-(SP)	
(13)	006516	152116			BISB	(R1),-(SP)	
(12)	006520	005046			CLR	-(SP)	
(12)	006522	152116			BISB	(R1),-(SP)	
(11)	006524	005046			CLR	-(SP)	
(11)	006526	152116			BISB	(R1),-(SP)	
(10)	006530	005046			CLR	-(SP)	
(10)	006532	152116			BISB	(R1),-(SP)	
(9)	006534	005046			CLR	-(SP)	
(9)	006536	152116			BISB	(R1),-(SP)	
(8)	006540	012746	014050		MOV	@TXT8C,-(SP)	
(7)	006544	012746	012603		MOV	@FMT06A,-(SP)	
(6)	006550	012746	000010		MOV	@10,-(SP)	
(3)	006554	010600			MOV	SP,R0	
(4)	006556	104415			TRAP	C#PNTX	
(4)	006560	062706	000022		ADD	@22,SP	
4990	006564			PRINTX	@FMT06B,<B,(R1)>,<B,(R1)>		
(9)	006564	005046			CLR	-(SP)	
(9)	006566	152116			BISB	(R1),-(SP)	
(8)	006570	005046			CLR	-(SP)	
(8)	006572	152116			BISB	(R1),-(SP)	
(7)	006574	012746	012651		MOV	@FMT06B,-(SP)	
(6)	006600	012746	000003		MOV	@3,-(SP)	
(3)	006604	010600			MOV	SP,R0	
(4)	006606	104415			TRAP	C#PNTX	
(4)	006610	062706	000010		ADD	@10,SP	
4991	006614	012601		MOV	(SP),R1 ;RESTORE R1		
4992	006616	004737	012104	JSR	PC,NULERR ;USE COMMON ROUTINE TO TERMINATE ERROR MESSAGE		
4993	006622			ENDMSG			
(3)	006622					L10011:	
(3)	006622	104423				TRAP	C#MSG
4994							
4995							
4996							
4997	006624						
(3)	006624						

 ;SBTTL ERROR HANDLER -- ERR7 -- VIA REGISTER ERRORS

 ; BGNMSG ERR7
 ERR7::

CVDMACO DMV11 MCTRL DIAG #1
CVDMAC.P11 16-AUG-84 13:59

MACY11 30A(1052) 16-AUG-84 14:51 PAGE 40-6
ERROR HANDLER -- ERR7 -- VIA REGISTER ERRORS

```

4998 006624 113701 002334      MOVB   REGNUM,R1
4999 006630 006301              ASL    R1              ;AS PASSED, THIS WAS A BYTE OFFSET
5000 006632              PRINTB #FMT07,#TXTVR,TXTVRT(R1)
(9) 006632 016146 017566              MOV    TXTVRT(R1),-(SP)
(8) 006636 012746 014341              MOV    #TXTVR,-(SP)
(7) 006642 012746 012542              MOV    #FMT07,-(SP)
(6) 006646 012746 000003              MOV    #3,-(SP)
(3) 006652 010600              MOV    SP,RO
(4) 006654 104414              TRAP   C#PNTB
(4) 006656 062706 000010              ADD   #10,SP
5001 006662 004737 011310      JSR    PC,XORGB
5002 006666              PRINTB #FMT02A,<B,GDATA>,<B,BDATA>,<B,XDATA>
(10) 006666 005046              CLR   -(SP)
(10) 006670 153716 002314              BISB  XDATA,(SP)
(9) 006674 005046              CLR   -(SP)
(9) 006676 153716 002312              BISB  BDATA,(SP)
(8) 006702 005046              CLR   -(SP)
(8) 006704 153716 002310              BISB  GDATA,(SP)
(7) 006710 012746 012173              MOV    #FMT02A,-(SP)
(6) 006714 012746 000004              MOV    #4,-(SP)
(3) 006720 010600              MOV    SP,RO
(4) 006722 104414              TRAP   C#PNTB
(4) 006724 062706 000012              ADD   #12,SP
5003 006730 004737 012104      JSR    PC,NULERR      ;USE COMMON ROUTINE TO TERMINATE ERROR MESSAGE
5004 006734              ENDMSG
(3) 006734              L10012:
(3) 006734 104423              TRAP   C#MSG
5005
5006      ;SBTTL ERROR HANDLER -- ERR47 -- FOR RAM DATA ERRORS IN STATIC TEST(S)
5007      ;-----
5008 006736              BGNMSG ERR47
(3) 006736              ERR47::
5009      ; PRINT HEADING LINE # 1
5010
5011 006736 013700 002444      MOV    TMP2,RO      ;GET TEST PATTERN CODE
5012 006742 001404              BEQ    2#           ;ZERO IS UNDEFINED BUT THERE IS TEXT TO SAY THAT
5013 006744 020027 000006      CMP    RO,#6       ;THIS IT ALL WE UNDERSTAND FOR NOW
5014 006750 003401              BLE    2#           ;IF WITHIN LIMITS, LET IT GO
5015 006752 005000              CLR    RO           ;ELSE, MAKE IT 0 FOR "UNDEFINED"
5016 006754 006300      2#: ASL    RO           ;CONVERT TO A WORD INDEX
5017 006756 016000 007626      MOV    TXT47P(RO),RO ;GET ADDRESS OF REQUIRED TEXT
5018 006762              PRINTX #FMT47A,RO  ;IDENTIFY TEST PATTERN BEING USED
(8) 006762 010046              MOV    RO,-(SP)
(7) 006764 012746 007244              MOV    #FMT47A,-(SP)
(6) 006770 012746 000002              MOV    #2,-(SP)
(3) 006774 010600              MOV    SP,RO
(4) 006776 104415              TRAP   C#PNTX
(4) 007000 062706 000006              ADD   #6,SP
5019      ; PRINT HEADING LINE # 2
5020
5021 007004              PRINTX #FMT47B      ;STANDARD PORTION OF LINE 2
(7) 007004 012746 007275              MOV    #FMT47B,-(SP)
(6) 007010 012746 000001              MOV    #1,-(SP)
(3) 007014 010600              MOV    SP,RO
(4) 007016 104415              TRAP   C#PNTX
(4) 007020 062706 000004              ADD   #4,SP

```


CVDMACO DMV11 MCTRL DIAG #1
CVDMAC.P11 16-AUG 84 13:59

MACY11 30A(1052) 16-AUG-84 14:51 PAGE 40-7
ERROR HANDLER -- ERR47 -- FOR RAM DATA ERRORS IN STATIC TEST(S)

```

5022      ; PRINT HEADING LINE # 3
5023
5024      007024      PRINTX #FMT47C      ;STANDARD PORTION OF LINE 3
(7) 007024 012746 007334      MOV #FMT47C,-(SP)
(6) 007030 012746 000001      MOV #1,-(SP)
(3) 007034 010600      MOV SP,R0
(4) 007036 104415      TRAP C#PNTX
(4) 007040 062706 000004      ADD #4,SP
5025      ; PRINT HEADING LINE # 4
5026
5027      007044      PRINTX #FMT47E      ;STANDARD PORTION OF LINE 4
(7) 007044 012746 007362      MOV #FMT47E,-(SP)
(6) 007050 012746 000001      MOV #1,-(SP)
(3) 007054 010600      MOV SP,R0
(4) 007056 104415      TRAP C#PNTX
(4) 007060 062706 000004      ADD #4,SP
5028      ; GO PRINT DATA PORTION OF ERROR MESSAGE
5029
5030      007064      PRINTX #NEWLIN      ;TERMINATE HEADER & CAUSE 1 BLANK LINE
(7) 007064 012746 012133      MOV #NEWLIN,-(SP)
(6) 007070 012746 000001      MOV #1,-(SP)
(3) 007074 010600      MOV SP,R0
(4) 007076 104415      TRAP C#PNTX
(4) 007100 062706 000004      ADD #4,SP
5031      007104 005037 007116      CLR ER47CT      ;RE-INITIALIZE THE DATA LINE COUNTER
5032      007110 004737 007122      JSR PC,ERR47.  ;USE COMMON SUBROUTINE TO REPORT DATA
5033      007114      ENDMMSG
(3) 007114      L10013:
(3) 007114 104423      TRAP C#MSG
5034
5035      007116 000000      ER47CT: .WORD 0      ;THIS VARIABLE WILL COUNT THE DATA LINES
5036      007120 000020      ER47MX: .WORD 16.   ;THIS CONSTANT LIMITS THE DATA LINES PRINTED
5037
5038      007122      ERR47.:
5039
5040      007122 023737 007116 007120      CMP ER47CT,ER47MX ;HAVE WE REPORTED ENOUGH OF THESE DATA LINES?
5041      007130 103044      BHS 60#          ;YES, BYPASS THIS WHOLE ROUTINE AND EXIT
5042      007132 005237 007116      INC ER47CT      ;NO, COUNT THIS LINE
5043
5044      007136 113701 002450      MOVB TMP4,R1    ;GET EXPECTED DATA
5045      007142 113703 002452      MOVB TMP5,R3    ;SETUP TO CALCULATE XOR
5046      007146 074103      XOR R1,R3       ;CALCULATE XOR OF EXPECTED & ACTUAL DATA
5047      007150      PRINTX #FMT47G,TMP4,<B,R1>,<B,TMP5>,<B,R3> ;PRINT DATA LINE
(11) 007150 005046      CLR -(SP)
(11) 007152 150316      BISB R3,(SP)
(10) 007154 005046      CLR -(SP)
(10) 007156 153716 002452      BISB TMP5,(SP)
(9) 007162 005046      CLR -(SP)
(9) 007164 150116      BISB R1,(SP)
(8) 007166 013746 002464      MOV TMPA,-(SP)
(7) 007172 012746 007421      MOV #FMT47G,-(SP)
(6) 007176 012746 000005      MOV #5,-(SP)
(3) 007202 010600      MOV SP,R0
(4) 007204 104415      TRAP C#PNTX
(4) 007206 062706 000014      ADD #14,SP
5048      007212 023737 007116 007120      CMP ER47CT,ER47MX ;IF THESE TWO ARE EQUAL, WE WON'T BE PRINTING

```

CVDMACO DMV11 MCTRL DIAG #1
CVDMAC.P11 16-AUG-84 13:59

MACY11 30A(1052) 16-AUG-84 14:51 PAGE 40-8
ERROR HANDLER -- ERR47 -- FOR RAM DATA ERRORS IN STATIC TEST(S)

```

5049 007220 001010          BNE      601          ;ANY MORE LINES FOR A WHILE.  SO,
5050 007222          PRINTX  #FMT48I          ; PUT OUT A MESSAGE TO THAT EFFECT.
      (7) 007222 012746 010656          MOV      #FMT48I, -(SP)
      (6) 007226 012746 000001          MOV      #1, -(SP)
      (3) 007232 010600          MOV      SP, R0
      (4) 007234 104415          TRAP    C#PNTX
      (4) 007236 062706 000004          ADD      #4, SP
5051 007242 000207          601:   RTS      PC
5052
5053          .NLIST  BEX
5054 007244 047045 051445 022462 FMT47A: .ASCIZ  \#S2#ATEST PATTERN: #T\
5055 007275          045 022516 031123 FMT47B: .ASCIZ  \#S2#A (ALL VALUES IN OCTAL)\
5056 007334 047045 051445 022463 FMT47C: .ASCIZ  \#S3#A RAM SHOULD\
5057 007362 047045 051445 022463 FMT47E: .ASCIZ  \#S3#ADDRESS BE IS XOR\
5058 007421          045 022516 032123 FMT47G: .ASCIZ  \#S4#04#S4#03#S3#03#S2#03\
5059 007454 046101 020114 047117 TXT47C: .ASCIZ  \ALL ONES\
5060 007465          101 046114 055040 TXT47D: .ASCIZ  \ALL ZEROES\
5061 007500 020061 044502 020124 TXT47E: .ASCIZ  \1 BIT ALTERNATING\
5062 007522 020062 044502 051524 TXT47F: .ASCIZ  \2 BITS ALTERNATING\
5063 007545          101 042104 042522 TXT47G: .ASCIZ  \ADDRESS IN ADDRESS\
5064 007570 047111 051103 046505 TXT47H: .ASCIZ  \INCREMENTAL VALUE IN ADDRESS\
5065          .LIST  BEX
5066          .EVEN
5067 007626 014247 007454 007465 TXT47P: .WORD  TXT47C, TXT47D, TXT47E, TXT47F, TXT47G, TXT47H
      007634 007500 007522 007545
      007642 007570

5068
5069          ;          "TXT47L6" ABOVE IS DEFINED AS "UNDEFINED" IN THE M-LOOP FUNCTION DEF'S.
5070
5071          ;-----
5072          .SBTTL  ERROR HANDLER -- ERR48 -- FOR DATA ERRORS IN "MOVING INVERSIONS TEST"
5073          ;-----
5074 007644          BGNMSG  ERR48
      (3) 007644          ERR48::
5075          ;          PRINT HEADING LINE # 1
5076
5077 007644          PRINTX  #FMT48A          ;STANDARD PORTION OF LINE 1
      (7) 007644 012746 010312          MOV      #FMT48A, -(SP)
      (6) 007650 012746 000001          MOV      #1, -(SP)
      (3) 007654 010600          MOV      SP, R0
      (4) 007656 104415          TRAP    C#PNTX
      (4) 007660 062706 000004          ADD      #4, SP
5078 007664 032737 000004 002350          BIT      #BIT2, PFLAG          ;IF EXTENDED INFORMATION REQUESTED.
5079 007672 001410          BEQ      21
5080 007674          PRINTX  #FMT48B          ;PRINT EXTENDED PORTION OF LINE 1
      (7) 007674 012746 010361          MO/     #FMT48B, -(SP)
      (6) 007700 012746 000001          MOV      #1, -(SP)
      (3) 007704 010600          MOV      SP, R0
      (4) 007706 104415          TRAP    C#PNTX
      (4) 007710 062706 000004          ADD      #4, SP
5081          ;          PRINT HEADING LINE # 2
5082
5083 007714          21:   PRINTX  #FMT48C          ;STANDARD PORTION OF LINE 2
      (7) 007714 012746 010414          MOV      #FMT48C, (SP)
      (6) 007720 012746 000001          MOV      #1, (SP)
      (3) 007724 010600          MOV      SP, R0

```

CVDMACO DMV11 MCTRL DIAG #1
CVDMAC.P11 16-AUG-84 13:59

MACY11 30A(1052) 16-AUG-84 14:51 PAGE 40-9
ERROR HANDLER -- ERR48 -- FOR DATA ERRORS IN "MOVING INVERSIONS TEST"

```

(4) 007726 104415 TRAP C:PNTX
(4) 007730 062706 000004 ADD #4,SP
5084
5085 ; PRINT HEADING LINE # 3
5086
5087 007734 PRINTX #FMT48E ;STANDARD PORTION OF LINE 3
(7) 007734 012746 010451 MOV #FMT48E,-(SP)
(6) 007740 012746 000001 MOV #1,-(SP)
(3) 007744 010600 MOV SP,RO
(4) 007746 104415 TRAP C:PNTX
(4) 007750 062706 000004 ADD #4,SP
5088 007754 032737 000004 002350 BIT #BIT2,PFLAG ;IF EXTENDED INFORMATION REQUESTED,
5089 007762 001410 BEQ 6;
5090 007764 PRINTX #FMT48F ;PRINT EXTENDED PORTION OF LINE 3
(7) 007764 012746 010520 MOV #FMT48F,-(SP)
(6) 007770 012746 000001 MOV #1,-(SP)
(3) 007774 010600 MOV SP,RO
(4) 007776 104415 TRAP C:PNTX
(4) 010000 062706 000004 ADD #4,SP
5091 ; GO PRINT DATA PORTION OF ERROR MESSAGE
5092
5093 010004 6;: PRINTX #NEWLIN ;TERMINATE HEADER & CAUSE 1 BLANK LINE
(7) 010004 012746 012133 MOV #NEWLIN,-(SP)
(6) 010010 012746 000001 MOV #1,-(SP)
(3) 010014 010600 MOV SP,RO
(4) 010016 104415 TRAP C:PNTX
(4) 010020 062706 000004 ADD #4,SP
5094 010024 005037 010036 CLR ER48CT ;RE-INITIALIZE THE DATA LINE COUNTER
5095 010030 004737 010042 JSR PC,ERR48. ;USE COMMON SUBROUTINE TO REPORT DATA
5096 010034 ENDMSG
(3) 010034 L10014: TRAP C:MSG
(3) 010034 104423
5097
5098 010036 000000 ER48CT: .WORD 0 ;THIS VARIABLE WILL COUNT THE DATA LINES
5099 010040 000020 ER48MX: .WORD 16. ;THIS CONSTANT LIMITS THE DATA LINES PRINTED
5100
5101 010042 ERR48.:
5102
5103 010042 023737 010036 010040 CMP ER48CT,ER48MX ;HAVE WE REPORTED ENOUGH OF THESE DATA LINES?
5104 010050 103117 BHIS 60; ;YES. BYPASS THIS WHOLE ROUTINE AND EXIT
5105 010052 005237 010036 INC ER48CT ;NO. COUNT THIS LINE
5106
5107 ; DETERMINT WHICH ERROR CALL GOT US HERE -- PRE-WRITE OR POST-WRITE:
5108
5109 010056 032737 000002 002476 BIT #BIT1,TMPF ;DID PRE-WRITE ERROR CALL GET US HERE?
5110 010064 001405 BEQ 2; ;NO. THEN SETUP FOR "POST" IN ERROR MESSAGE
5111 010066 012700 010750 MOV #TXT48A,RO ;YES. SETUP FOR "PRE" IN ERROR MESSAGE
5112 010072 113701 002450 MOVB TMP4,R1 ;GET EXPECTED DATA (BEFORE WRITING NEW VALUE)
5113 010076 000404 BR 4;
5114
5115 010100 012700 010755 2;: MOV #TXT48B,RO ;POINT TO "POST" TEXT
5116 010104 113701 002451 MOVB TMP4+1,R1 ;GET EXPECTED DATA (AFTER WRITING NEW VALUE)
5117 010110 013703 002452 4;: MOV TMP5,R3 ;SETUP TO CALCULATE XOR
5118 010114 074103 XOR R1,R3 ;CALCULATE XOR OF EXPECTED & ACTUAL DATA
5119 010116 PRINTX #FMT48G,RO,TMPA,<B,R1>,<B,TMP5>,<B,R3> ;PRINT STANDARD DATA LINE
(12) 010116 005046 CLR -(SP)

```

CVDMACO DMV11 MCTRL DIAG #1
CVDMAC.P11 16-AUG-84 13:59

MACY11 30A(1052) 16 AUG-84 14:51 PAGE 40 10
ERROR HANDLER -- ERR48 FOR DATA ERRORS IN "MOVING INVERSIONS TEST"

```

(12) 010120 150316
(11) 010122 005046
(11) 010124 153716 002452
(10) 010130 005046
(10) 010132 150116
(9) 010134 013746 002464
(8) 010140 010046
(7) 010142 012746 010563
(6) 010146 012746 000006
(3) 010152 010600
(4) 010154 104415
(4) 010156 062706 000016
5120 010162 032737 000004 002350
5121 010170 001433
5122
5123 010172 013701 002470
5124 010176 042701 177776
5125 010202 005737 002472
5126 010206 001003
5127 010210 012700 010762
5128 010214 000402
5129 010216 012700 010767
5130 010222
(11) 010222 005046
(11) 010224 153716 002462
(10) 010230 010046
(9) 010232 010146
(8) 010234 013746 002466
(7) 010240 012746 010623
(6) 010244 012746 000005
(3) 010250 010600
(4) 010252 104415
(4) 010254 062706 000014
5131 010260 023737 010036 010040 104:
5132 010266 001010
5133 010270
(7) 010270 012746 010656
(6) 010274 012746 000001
(3) 010300 010600
(4) 010302 104415
(4) 010304 062706 000004
5134 010310
5135 010310 000207
5136
5137 010312 047045 051445 022462 .NLIST
5138 010361 045 032523 040445 BEX
5139 010414 047045 051445 022463 FMT48A: .ASCIZ \##S2#APRE OR (ALL VALUES IN OCTAL)\
5140 010451 045 022516 031123 FMT48B: .ASCIZ \##S5#EXTENDED INFORMATION:\
5141 010520 051445 022465 041101 FMT48C: .ASCIZ \##S3#APOST RAM SHOULD\
5142 010563 045 022516 031523 FMT48E: .ASCIZ \##S2#WRITE ADDRESS BE IS XOR\
5143 010623 045 033123 047445 FMT48F: .ASCIZ \##S#ABIT DATA SEQ LSB(DECIMAL)\
5144 010656 047045 047045 051445 FMT48G: .ASCIZ \##S3#T#S4#04#S4#03#S3#03#S2#03\
5145 010750 051120 020105 000 TXT48A: .ASCIZ \PRE \
5146 010755 120 051517 000124 TXT48B: .ASCIZ \POST\
5147 010762 043040 042127 000 TXT48C: .ASCIZ \FWD\
5148 010767 102 053513 000104 TXT48D: .ASCIZ \BKWD\

BISB R3,(SP)
CLR -(SP)
BISB TMP5,(SP)
CLR -(SP)
BISB R1,(SP)
MOV TMPA,-(SP)
MOV RO,-(SP)
MOV #FMT48G,-(SP)
MOV #6,-(SP)
MOV SP,RO
TRAP C#PNTX
ADD #16,SP

BIT #BIT2,PFLAG ;IF EXTENDED INFORMATION REQUESTED,
BEQ 104

;SETUP FOR PRINTING OF EXTENDED INFORMATION
MOV TMPC,R1 ;DATA BIT VALUE (0 OR 1)
BIC #1,CBIT0,R1 ; MAKE SURE WE ONLY HAVE ONE BIT
TST TMPD ;DIRECTION?
BNE 64 ;BACKWARD --
MOV #TXT48C,RO ;FORWARD ---
BR 84
MOV #TXT48D,RO ;BACKWARD --
PRINTX #FMT48H,TMPB,R1,RO,<B,TMP9> ;PRINT EXTENDED INFORMATION
CLR -(SP)
BISB TMP9,(SP)
MOV RO,-(SP)
MOV R1,-(SP)
MOV TMPB,-(SP)
MOV #FMT48H,-(SP)
MOV #5,-(SP)
MOV SP,RO
TRAP C#PNTX
ADD #14,SP

CMP ER48CT,ER48MX ;IF THESE TWO ARE EQUAL, WE WON'T BE PRINTING
BNE 604 ;ANY MORE LINES FOR A WHILE. SO,
PRINTX #FMT48I ; PUT OUT A MESSAGE TO THAT EFFECT.
MOV #FMT48I,-(SP)
MOV #1,-(SP)
MOV SP,RO
TRAP C#PNTX
ADD #4,SP

604:
RTS PC

```

CVMACO DMV11 MCTRL DIAG #1
CV MAC.P11 16-AUG-84 13:59

MACY11 30A(1052) 16-AUG-84 14:51 PAGE 40-11
ERROR HANDLER -- ERR48 -- FOR DATA ERRORS IN "MOVING INVERSIONS TEST"

.LIST BEX
.EVEN

;SBITL ERROR HANDLER -- ERR50 -- FOR REPORTING TIMER # 1 ERRORS

BGNMSG ERR50

ERR50::

```

MOV R1,-(SP) ;SAVE R1 FOR CALLER
MOVB TMP8+1,R1 ;GET THE MODE LAST SETUP
CLC ;SEEING AS THE CARRY BIT WILL BE ROTATED INTO
;THE DATA, WE HAD BETTER CLEAR IT JUST IN CASE.
BIC #1C<BIT6+BIT7>,R1 ;LOOK @ JUST THE TIMER 1 MODE DEFINITION
RCLB R1 ;POSITION IT FOR PRINTOUT
ROLB R1
ROLB R1
    
```

;IDENTIFY THE MODE BEING USED AT THE TIME:

PRINTX #FMT50A,R1

```

MOV R1,-(SP)
MOV #FMT50A,-(SP)
MOV #2,-(SP)
MOV SP,R0
TRAP C#PNTX
ADD #6,SP
    
```

;PRINT THE HEADING TO IDENTIFY THE REGISTERS:

PRINTX #FMT50B

```

MOV #FMT50B,-(SP)
MOV #1,-(SP)
MOV SP,R0
TRAP C#PNTX
ADD #4,SP
    
```

;AND THE VALUES THAT WERE LOADED INTO THE REGISTERS:

PRINTX #FMT50C,@TXT8D,<B,TMP5+1>,<B,TMP4+1>,<B,TMP7+1>,<B,TMP6+1>

```

CLR -(SP)
BISB TMP6+1,(SP)
CLR -(SP)
BISB TMP7+1,(SP)
CLR -(SP)
BISB TMP4+1,(SP)
CLR -(SP)
BISB TMP5+1,(SP)
MOV #TXT8D,-(SP)
MOV #FMT50C,-(SP)
MOV #6,-(SP)
MOV SP,R0
TRAP C#PNTX
ADD #16,SP
    
```

PRINTX #FMT50D,<B,TMP8+1>,<B,TMPE+1>

```

CLR -(SP)
BISB TMPE+1,(SP)
CLR -(SP)
    
```

5149
5150
5151
5152
5153
5154
5155
5156 010774
(3) 010774
5157 010774 010146
5158 010776 113701 002467
5159 011002 000241
5160
5161 011004 042701 177477
5162 011010 106101
5163 011012 106101
5164 011014 106101
5165
5166
5167
5168 011016
(8) 011016 010146
(7) 011020 012746 012761
(6) 011024 012746 000002
(3) 011030 010600
(4) 011032 104415
(4) 011034 062706 000006
5169
5170
5171 011040
(7) 011040 012746 013033
(6) 011044 012746 000001
(3) 011050 010600
(4) 011052 104415
(4) 011054 062706 000004
5172
5173
5174 011060
(12) 011060 005046
(12) 011062 153716 002455
(11) 011066 005046
(11) 011070 153716 002457
(10) 011074 005046
(10) 011076 153716 002451
(9) 011102 005046
(9) 011104 153716 002453
(8) 011110 012746 014065
(7) 011114 012746 013114
(6) 011120 012746 000006
(3) 011124 010600
(4) 011126 104415
(4) 011130 062706 000016
5175 011134
(9) 011134 005046
(9) 011136 153716 002475
(8) 011142 005046

CVDMACO DMV11 MCTRL DIAG #1
 CVDMAC.P11 16-AUG-84 13:59

MACY11 30A(1052) 16-AUG-84 14:51 PAGE 40-12
 ERROR HANDLER -- ERR50 -- FOR REPORTING TIMER # 1 ERRORS

(8) 011144 153716 002467
 (7) 011150 012746 013154
 (6) 011154 012746 000003
 (3) 011160 010600
 (4) 011162 104415
 (4) 011164 062706 000010

BISB TMPB+1,(SP)
 MOV #FMT500,-(SP)
 MOV #3,-(SP)
 MOV SP,R0
 TRAP C#PNTX
 ADD #10,SP

5176

;AND THE VALUES READ FROM THOSE REGISTERS:

5177

5178 011170
 (12) 011170 005046
 (12) 011172 153716 002454
 (11) 011176 005046
 (11) 011200 153716 002456
 (10) 011204 005046
 (10) 011206 153716 002450
 (9) 011212 005046
 (9) 011214 153716 002452
 (8) 011220 012746 014102
 (7) 011224 012746 013114
 (6) 011230 012746 000006
 (3) 011234 010600
 (4) 011236 104415
 (4) 011240 062706 000016

PRINTX #FMT50C,#TXT8E,<B,TMP5>,<B,TMP4>,<B,TMP7>,<B,TMP6>

CLR -(SP)
 BISB TMP6,(SP)
 CLR -(SP)
 BISB TMP7,(SP)
 CLR -(SP)
 BISB TMP4,(SP)
 CLR -(SP)
 BISB TMP5,(SP)
 MOV #TXT8E,-(SP)
 MOV #FMT50C,-(SP)
 MOV #6,-(SP)
 MOV SP,R0
 TRAP C#PNTX
 ADD #16,SP

5179

PRINTX #FMT50E,<B,TMPB>,<B,TMPD>

(9) 011244 005046
 (9) 011246 153716 002472
 (8) 011252 005046
 (8) 011254 153716 002466
 (7) 011260 012746 013171
 (6) 011264 012746 000003
 (3) 011270 010600
 (4) 011272 104415
 (4) 011274 062706 000010

CLR -(SP)
 BISB TMPD,(SP)
 CLR -(SP)
 BISB TMPB,(SP)
 MOV #FMT50E,-(SP)
 MOV #3,-(SP)
 MOV SP,R0
 TRAP C#PNTX
 ADD #10,SP

5180

5181 011300 004737 012104
 5182 011304 012601

JSR PC,MULERR ;USE COMMON ROUTINE TO TERMINATE ERROR MESSAGE
 MOV (SP)+,R1 ;RESTORE R1 FOR CALLER
 ENDMSG

5183

(3) 011306
 (3) 011306 104423

L10015: TRAP C#MSG

5184

5185

CVDMACO DMV11 MCTRL DIAG #1
CVDMAC.P11 16-AUG-84 13:59

MACY11 30A(1052) 16-AUG-84 14:51 PAGE 41
ERROR HANDLER SUBROUTINES

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5187 .SBTTL ERROR HANDLER SUBROUTINES
5188 ;-----
5189 ;----- SUBROUTINES USED ONLY BY ERROR HANDLERS -----
5190 ;-----
5191 ;-----
5192 ;-----
5193 .SBTTL ERROR HANDLER SUBROUTINE -- XORGB
5194 ;-----
5195 ; PERFORM EXCLUSIVE OR BETWEEN "GDATA" & "BDATA" PUTTING
5196 ; THE RESULT IN "XDATA"
5197
5198 XORGB: MOV R1,-(SP) ;PRESERVE WORKING REGISTER
5199 MOV GDATA,R1 ;GET "GOOD" DATA
5200 MOV BDATA,XDATA ;AND "BAD" DATA
5201 XOR R1,XDATA ;PERFORM EXCLUSIVE OR
5202 MOV (SP)+,R1 ;RESTORE R1
5203 RTS PC ;RETURN
5204
5205
5206 ;-----
5207 .SBTTL ERROR HANDLER SUBROUTINE -- ERR4#
5208 ;-----
5209 ; IDENTIFY & DUMP THE BYTE SELECT REGISTERS
5210
5211 ERR4#: PRINTX #FMT4,#TXT3,#TXT1
5212 (9) 011334 012746 013265 MOV #TXT1,-(SP)
5213 (8) 011340 012746 013466 MOV #TXT3,-(SP)
5214 (7) 011344 012746 012257 MOV #FMT4,-(SP)
5215 (6) 011350 012746 000003 MOV #3,-(SP)
5216 (5) 011354 010600 MOV SP,R0
5217 (4) 011356 104415 TRAP C#PNTX
5218 (4) 011360 062706 000010 ADD #10,SP
5219
5220 PRINTX #FMT4A,<B.BSR0>,<B.BSR1>,<B.BSR2>,<B.BSR3>
5221 (11) 011364 005046 CLR -(SP)
5222 (11) 011366 153716 002254 BISB BSR3,(SP)
5223 (10) 011372 005046 CLR -(SP)
5224 (10) 011374 153716 002252 BISB BSR2,(SP)
5225 (9) 011400 005046 CLR -(SP)
5226 (9) 011402 153716 002250 BISB BSR1,(SP)
5227 (8) 011406 005046 CLR -(SP)
5228 (8) 011410 153716 002246 BISB BSR0,(SP)
5229 (7) 011414 012746 012317 MOV #FMT4A,-(SP)
5230 (6) 011420 012746 000005 MOV #5,-(SP)
5231 (3) 011424 010600 MOV SP,R0
5232 (4) 011426 104415 TRAP C#PNTX
5233 (4) 011430 062706 000014 ADD #14,SP
5234
5235 PRINTX #FMT4B,#TXT2
5236 (8) 011434 012746 013323 MOV #TXT2,-(SP)
5237 (7) 011440 012746 012352 MOV #FMT4B,-(SP)
5238 (6) 011444 012746 000002 MOV #2,-(SP)
5239 (3) 011450 010600 MOV SP,R0
5240 (4) 011452 104415 TRAP C#PNTX
5241 (4) 011454 062706 000006 ADD #6,SP
5242
5243 PRINTX #FMT4C,<B.BSR4>,<B.BSR5>,<B.BSR6>,<B.BSR7>
5244 (11) 011460 005046 CLR -(SP)
5245 (11) 011462 153716 002264 BISB BSR7,(SP)

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CVDMAC0 DMV11 MCTRL DIAG #1
CVDMAC.P11 16-AUG-84 13:59

MACY11 30A(1052) 16-AUG-84 14:51 PAGE 41-1
ERROR HANDLER SUBROUTINE -- ERR48

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(10) 011466 005046
(10) 011470 153716 002262
(9) 011474 005046
(9) 011476 153716 002260
(8) 011502 005046
(8) 011504 153716 002256
(7) 011510 012746 012357
(6) 011514 012746 000005
(3) 011520 010600
(4) 011522 104415
(4) 011524 062706 000014
5215 011530          PRINTX  #FMT48,#TXT2A
(8) 011530 012746 013365
(7) 011534 012746 012352
(6) 011540 012746 000002
(3) 011544 010600
(4) 011546 104415
(4) 011550 062706 000006
5216 011554          PRINTX  #FMT4A,<B.BSR10>,<B.BSR11>,<B.BSR12>,<B.BSR13>
(11) 011554 005046
(11) 011556 153716 002274
(10) 011562 005046
(10) 011564 153716 002272
(9) 011570 005046
(9) 011572 153716 002270
(8) 011576 005046
(8) 011600 153716 002266
(7) 011604 012746 012317
(6) 011610 012746 000005
(3) 011614 010600
(4) 011616 104415
(4) 011620 062706 000014
5217 011624          PRINTX  #FMT48,#TXT2B
(8) 011624 012746 013424
(7) 011630 012746 012352
(6) 011634 012746 000002
(3) 011640 010600
(4) 011642 104415
(4) 011644 062706 000006
5218 011650          PRINTX  #FMT4C,<B.BSR14>,<B.BSR15>,<B.BSR16>,<B.BSR17>
(11) 011650 005046
(11) 011652 153716 002304
(10) 011656 005046
(10) 011660 153716 002302
(9) 011664 005046
(9) 011666 153716 002300
(8) 011672 005046
(8) 011674 153716 002276
(7) 011700 012746 012357
(6) 011704 012746 000005
(3) 011710 010600
(4) 011712 104415
(4) 011714 062706 000014
5219 011720 000006          RTS    PC
5220
5221

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CLR    -(SP)
BISB  BSR6,(SP)
CLR    -(SP)
BISB  BSR5,(SP)
CLR    -(SP)
BISB  BSR4,(SP)
MOV   #FMT4C,-(SP)
MOV   #5,-(SP)
MOV   SP,RO
TRAP  C:PNTX
ADD   #14,SP

MOV   #TXT2A,-(SP)
MOV   #FMT48,-(SP)
MOV   #2,-(SP)
MOV   SP,RO
TRAP  C:PNTX
ADD   #6,SP

CLR    -(SP)
BISB  BSR13,(SP)
CLR    -(SP)
BISB  BSR12,(SP)
CLR    -(SP)
BISB  BSR11,(SP)
CLR    -(SP)
BISB  BSR10,(SP)
MOV   #FMT4A,-(SP)
MOV   #5,-(SP)
MOV   SP,RO
TRAP  C:PNTX
ADD   #14,SP

MOV   #TXT2B,-(SP)
MOV   #FMT48,-(SP)
MOV   #2,-(SP)
MOV   SP,RO
TRAP  C:PNTX
ADD   #6,SP

CLR    -(SP)
BISB  BSR17,(SP)
CLR    -(SP)
BISB  BSR16,(SP)
CLR    -(SP)
BISB  BSR15,(SP)
CLR    -(SP)
BISB  BSR14,(SP)
MOV   #FMT4C,-(SP)
MOV   #5,-(SP)
MOV   SP,RO
TRAP  C:PNTX
ADD   #14,SP

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CVDMACO DMV11 MCTRL DIAG #1
CVDMAC.P11 16-AUG-84 13:59

MACY11 30A(1052) 16-AUG-84 14:51 PAGE 41-2
.....ERROR HANDLER SUBROUTINE -- ERR5#

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5222 .SBTTL .....ERROR HANDLER SUBROUTINE -- ERR5#
5223 :-----
5224 : COMMON ERROR SUBROUTINE TO PRINT SELECT REGISTERS
5225 ERR5#
5226 PRINTX #FMT4,@TXT6,@TXT4
(9) 011722 012746 013516 MOV #TXT4,-(SP)
(8) 011726 012746 013621 MOV #TXT6,-(SP)
(7) 011732 012746 012257 MOV #FMT4,-(SP)
(6) 011736 012746 000003 MOV #3,-(SP)
(3) 011742 010600 MOV SP,RO
(4) 011744 104415 TRAP C#PNTX
(4) 011746 062706 000010 ADD #10,SP
5227 PRINTX #FMT11,WSR0,WSR2,WSR4,WSR6 ;DUMP THE SELECT REGISTERS
(11) 011752 013746 002254 MOV WSR6,-(SP)
(10) 011756 013746 002252 MOV WSR4,-(SP)
(9) 011762 013746 002250 MOV WSR2,-(SP)
(8) 011766 013746 002246 MOV WSR0,-(SP)
(7) 011772 012746 012742 MOV #FMT11,-(SP)
(6) 011776 012746 000005 MOV #5,-(SP)
(3) 012002 010600 MOV SP,RO
(4) 012004 104415 TRAP C#PNTX
(4) 012006 062706 000014 ADD #14,SP
5228 PRINTX #FMT4B,@TXT4A
(8) 012012 012746 013556 MOV #TXT4A,-(SP)
(7) 012016 012746 012352 MOV #FMT4B,-(SP)
(6) 012022 012746 000002 MOV #2,-(SP)
(3) 012026 010600 MOV SP,RO
(4) 012030 104415 TRAP C#PNTX
(4) 012032 062706 000006 ADD #6,SP
5229 PRINTX #FMT11,WSR10,WSR12,WSR14,WSR16
(11) 012036 013746 002264 MOV WSR16,-(SP)
(10) 012042 013746 002262 MOV WSR14,-(SP)
(9) 012046 013746 002260 MOV WSR12,-(SP)
(8) 012052 013746 002256 MOV WSR10,-(SP)
(7) 012056 012746 012742 MOV #FMT11,-(SP)
(6) 012062 012746 000005 MOV #5,-(SP)
(3) 012066 010600 MOV SP,RO
(4) 012070 104415 TRAP C#PNTX
(4) 012072 062706 000014 ADD #14,SP
5230 JSR PC,NULERR ;USE COMMON ROUTINE TO TERMINATE ERROR MESSAGE
5231 RTS PC
5232 :-----
5233 :.SBTTL SUBROUTINE TO PERFORM "PRINTB #ENDEMB"
5234 :
5235 NULERR: PRINTB #ENDEMB ;TERMINATE ERROR MESSAGE
(7) 012104 012746 012126 MOV #ENDEMB,-(SP)
(6) 012110 012746 000001 MOV #1,-(SP)
(3) 012114 010600 MOV SP,RO
(4) 012116 104414 TRAP C#PNTB
(4) 012120 062706 000004 ADD #4,SP
5237 RTS PC
5238 :-----

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CVDMACO DMV11 MCTRL DIAG 01
CVDMAC.P11 16-AUG 84 13:59

MACY11 30A(1052) 16-AUG-84 14:51 PAGE 42
FORMAT SPEC'S FOR ERROR HANDLERS -- "FMT..."

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012126 047045 047045 000
012133 045 000116
012136 047045 040445 040506
012173 045 022516 020101
012257 045 022516 020101
012317 045 022516 030523
012352 047045 052045 000
012357 045 022516 032523
012412 047045 040445 020040
012455 045 022516 020101
012542 040445 020040 042504
012574 047045 047045 052045
012603 045 022516 022524
012651 045 031123 047445
012666 047045 040445 020040
012742 047045 047445 022470
012761 045 022516 020101
013033 045 022516 030523
013114 047045 051445 022463
013154 051445 022463 031517
013171 045 031523 047445
013206 047045 022462 030523

013265 102 042523 030114
013323 040 020040 041040
013365 102 042523 030514
013424 020040 041040 042523
013466 041040 052131 020105
013516 020040 051440 046105
013556 020040 051440 046105
013617 102 000
013621 040 042523 042514
013644 051040 043505 051511
013731 040 020040 020040
014016 042440 050130 041505
014033 040 041501 052524
014050 054040 051117 020072
014065 040 047514 042101
014102 051040 040505 035104

014117 116 050117 000
014123 122 040505 020104
014137 127 044522 042524
014154 050116 026522 052517
014176 050116 026522 047111

.SBTTL FORMAT SPEC'S FOR ERROR HANDLERS -- "FMT..."
|-----
----- FORMAT SPEC'S USED BY ERROR HANDLERS -----
.MLIST BEX
ENDEMB: .ASCIZ /#M/#/
NEWLIN: .ASCIZ /#N/

FMT02: .ASCIZ /#M#AFAILING REG = #T#ASEL#02/
FMT02A: .ASCIZ /#M#A EXPECTED: #03#A ACTUAL: #03#A XOR: #03/
FMT4: .ASCIZ /#M#A THE CONTENTS OF ALL#T#M#T/
FMT4A: .ASCIZ /#M#S1#03#S5#03#S5#03#S5#03/
FMT4B: .ASCIZ /#M#T/
FMT4C: .ASCIZ /#M#S5#03#S5#03#S5#03#S5#03/
FMT5: .ASCIZ /#M#A WHEN #03#A LOADED INTO BSEL1/
FMT5A: .ASCIZ /#M#A ATTEMPTING "M-LOOP" FUNCTION CODE #02#A (#T#A)/
FMT07: .ASCIZ /#A DETECTED IN #T#T#A --/
FMT06: .ASCIZ /#M#M#T/
FMT06A: .ASCIZ /#M#T#03#S2#03#S2#03#S2#03#S2#03#S2#03/
FMT06B: .ASCIZ /#S2#03#S2#03/
FMT10: .ASCIZ /#M#A EXPECTED:#08#A ACTUAL:#08#A XOR:#08/
FMT11: .ASCIZ /#M#08#08#08#08/
FMT50A: .ASCIZ /#M#A TIMER # 1 MODE: #01#A REGISTERS:/
FMT50B: .ASCIZ /#M#S1#M#T#1#M T1CL T1LM T1LL ACR IFR IER/
FMT50C: .ASCIZ /#M#S3#T#S1#03#S3#03#S3#03#S3#03/
FMT50D: .ASCIZ /#S3#03#S9#03/
FMT50E: .ASCIZ /#S3#03#S3#03/
FMT50M: .ASCIZ /#M#S10#A(T1CH & T1CL HAVEN'T YET BEEN LOADED)/

.SBTTL TEXT STRINGS FOR ERROR HANDLERS -- "TXT..."
|-----
----- TEXT USED BY ERROR HANDLERS -----
TXT1: .ASCIZ /#BSEL0 BSEL1 BSEL2 BSEL3/
TXT2: .ASCIZ / BSEL4 BSEL5 BSEL6 BSEL7/
TXT2A: .ASCIZ /#BSEL10 BSEL11 BSEL'2 BSEL13/
TXT2B: .ASCIZ / BSEL14 BSEL15 BSEL16 BSEL17/
TXT3: .ASCIZ / BYTE SELECT REG'S ARE:/
TXT4: .ASCIZ / SEL0 SEL2 SEL4 SEL6/
TXT4A: .ASCIZ / SEL10 SEL12 SEL14 SEL16/
TXT5: .ASCIZ /B/
TXT6: .ASCIZ / SELECT REG'S ARE:/
TXT7: .ASCIZ / REGISTERS ORB ORA DORB DORA T1CL T1CH T1LL T1LM /
TXT7A: .ASCIZ / T2CL T2CH SR ACR PCR IFR IER ORA /
TXT8A: .ASCIZ / EXPECTED: /
TXT8B: .ASCIZ / ACTUAL: /
TXT8C: .ASCIZ / XOR: /
TXT8D: .ASCIZ / LOADED: /
TXT8E: .ASCIZ / READ: /

TXTML0: .ASCIZ /NOP/
TXTML1: .ASCIZ /READ 1 BYTE/
TXTML2: .ASCIZ /WRITE 1 BYTE/
TXTML3: .ASCIZ /NPR-OUT 256 BYTES/
TXTML4: .ASCIZ /NPR-IN 256 BYTES/

CVDMACO DMV11 MCTRL DIAG #1
CVDMAC.P11 16-AUG-84 13:59

MACY11 30A(1052) 16-AUG-84 14:51 PAGE 42-1
TEXT STRINGS FOR ERROR HANDLERS -- "TXT_..."

5296	014217	123	052105	046440	TXTML5: .ASCIZ	/SET MICROPROCESSOR'S PC/
5297	014247	125	042116	043105	TXTML6: .ASCIZ	/UNDEFINED/
5298	014261	123	052105	046440	TXTML7: .ASCIZ	/SET MAINT INTR & CLR INTR DISABLE IN CPU STATUS/
5299						
5300	014341	126	040511	051040	TXTVR: .ASCIZ	/VIA REGISTER /
5301	014357	117	041122	000	TXTVR0: .ASCIZ	/ORB/
5302	014363	117	040522	000	TXTVR1: .ASCIZ	/ORA/
5303	014367	104	051104	000102	TXTVR2: .ASCIZ	/DORB/
5304	014374	042104	040522	000	TXTVR3: .ASCIZ	/DORA/
5305	014401	124	041461	000114	TXTVR4: .ASCIZ	/T1CL/
5306	014406	030524	044103	000	TXTVR5: .ASCIZ	/T1CH/
5307	014413	124	046061	000114	TXTVR6: .ASCIZ	/T1LL/
5308	014420	030524	044114	000	TXTVR7: .ASCIZ	/T1LH/
5309	014425	124	041462	000114	TXTVR8: .ASCIZ	/T2CL/
5310	014432	031124	044103	000	TXTVR9: .ASCIZ	/T2CH/
5311	014437	123	000122		TXTVRA: .ASCIZ	/SR/
5312	014442	041501	000122		TXTVRB: .ASCIZ	/ACR/
5313	014446	041520	000122		TXTVRC: .ASCIZ	/PCR/
5314	014452	043111	000122		TXTVRD: .ASCIZ	/IFR/
5315	014456	042511	000122		TXTVRE: .ASCIZ	/IER/
5316	014462	051117	000101		TXTVRF: .ASCIZ	/ORA/
5317						

CVDMACO DMV11 MCTRL DIAG #1
CVDMAC.P11 16-AUG-84 13:59

MACY11 30A(1052) 16-AUG-84 14:51 PAGE 43
ERROR MESSAGES -- "EM_..."

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5319 .SBTTL ERROR MESSAGES -- "EM_..."
5320 |-----|
5321 |----- ERROR MESSAGES USED BY ERROR CALL'S -----|
5322 |-----|
5323
5324 014466 044515 051103 026517 EM3: .ASCIZ /MICRO-DIAG. FAILURE/
5325 014512 051115 054504 052040 EM4: .ASCIZ /TRDY TIMEOUT/
5326 014527 115 051501 042524 EM5: .ASCIZ /MASTER CLR FAILURE/
5327 014552 051503 020122 042101 EM6: .ASCIZ /CSR ADDRESS FAILURE/
5328 014576 051503 020122 040504 EM7: .ASCIZ /CSR DATA PAT FAILURE/
5329 014623 102 042523 030114 EM8: .ASCIZ /BSELO SET=ALL ONES/
5330 014646 054105 042524 047122 EM9: .ASCIZ /EXTERNAL BUS RESET FAILURE/
5331 014701 102 042101 041440 EM14: .ASCIZ /BAD CSR VALUE(S) AFTER MASTER CLEAR/
5332 014745 042 051115 054504 EM15: .ASCIZ /"TRDY" DIDN'T GO LOW WHILE PROCESSING A COMMAND/
5333 015025 104 053115 051447 EM16: .ASCIZ /DMV'S RAM LOC. (CORRESPONDING TO BSELO) NOT PROPERLY WRITTEN/
5334 015122 032466 031060 053440 EM17: .ASCIZ /6502 WRITE FUNC. FAILURE AFTER "RUN" BIT IS SET/
5335 015202 032466 031060 051440 EM17A: .ASCIZ /6502 STILL RUNNING AFTER "RUN" BIT CLEARED/
5336 015255 126 040511 051440 EM20: .ASCIZ /VIA STATIC REGISTER ERROR/
5337 015307 126 040511 051440 EM20A: .ASCIZ /VIA STATIC REGISTER ERROR -- TIMER NOT RUNNING/
5338 015367 126 040511 051440 EM20B: .ASCIZ /VIA STATIC REGISTER ERROR -- TIMER CROSS TALK ERROR/
5339 015454 042522 044507 052123 EM21: .ASCIZ /REGISTER NOT PROPERLY ZEROED/
5340 015511 132 051105 044517 EM22: .ASCIZ /ZEROING DORB EFFECTED DORA/
5341 015544 042532 047522 047111 EM22A: .ASCIZ /ZEROING DORA EFFECTED DORB/
5342 015577 122 040505 027504 EM25: .ASCIZ /READ/WRITE DATA ERROR/
5343 015625 125 042516 050130 EM34: .ASCIZ /UNEXPECTED "A" INTERRUPT/
5344 015656 047125 054105 042520 EM34B: .ASCIZ /UNEXPECTED "B" INTERRUPT/
5345 015707 122 046501 042040 EM47A: .ASCIZ /RAM DATA ERROR ON INITIAL WRITE/
5346 015747 122 046501 042040 EM47B: .ASCIZ /RAM DATA ERROR ON RE-READ AFTER TEST AREA FILLED/
5347 016030 040522 020115 040504 EM48A: .ASCIZ /RAM DATA ERROR -- MOVING INVERSIONS TEST/
5348 016101 042 030524 020042 EM50A: .ASCIZ \ "T1" FLAG NOT CLEARED BY LOADING T1LH\
5349 016147 042 030524 020042 EM50B: .ASCIZ \ "T1" FLAG NOT CLEARED BY LOADING T1CH\
5350 016215 042 030524 020042 EM50C: .ASCIZ \ "T1" FLAG NOT CLEARED BY READING T1CL\
5351 016263 126 040511 051447 EM50D: .ASCIZ \ VIA'S T1CL NOT DECREMENTING\
5352 016317 126 040511 051447 EM50E: .ASCIZ \ VIA'S T1CH NOT DECREMENTING\
5353 016353 042 030524 020042 EM50F: .ASCIZ \ "T1" FLAG NOT SET ON TIMER 1 TIMEOUT\
5354 016420 052042 021061 043040 EM50G: .ASCIZ \ "T1" FLAG CLEARED BY READING T1CH\
5355 016462 044526 023501 020123 EM50H: .ASCIZ \ VIA'S T1LL IMPROPERLY LOADED BY WRITING T1CL @ ADDR 4\
5356 016550 052042 021061 043040 EM50I: .ASCIZ \ "T1" FLAG CLEARED BY READING T1LL\
5357 016612 044526 023501 020123 EM50J: .ASCIZ \ VIA'S T1LH IMPROPERLY LOADED BY WRITING T1CH @ ADDR 5\
5358 016700 052042 021061 043040 EM50K: .ASCIZ \ "T1" FLAG CLEARED BY READING T1LH\
5359 016742 052042 021061 043040 EM50L: .ASCIZ \ "T1" FLAG NOT SET AFTER RE-LOADING T1CH ( TIMEOUT\
5360 017024 052042 021061 043040 EM50M: .ASCIZ \ "T1" FLAG CLEARED BY LOADING T1LL\
5361 017066 052042 021061 043040 EM50N: .ASCIZ \ "T1" FLAG NOT CLEARED BY LOADING T1CH\
5362 017134 050042 033502 020042 EM50S: .ASCIZ \ "PB7" W/IN VIA NOT SET ON TIMER 1 TIMEOUT\
5363 017206 050042 033502 020042 EM50U: .ASCIZ \ "PB7" NOT SET AFTER TIMER 1 TIMEOUT\
5364 017252 050042 033502 020042 EM50V: .ASCIZ \ "PB7" NOT DRIVEN LOW BY LOADING T1CH\
5365 017317 042 041120 021067 EM50W: .ASCIZ \ "PB7" UNEXPECTEDLY MODIFIED BY TIMER 1\
5366 017366 052042 021061 047040 EM50X: .ASCIZ \ "T1" NOT RESET AFTER BEING CLEARED\
5367 017431 042 041120 021067 EM50Y: .ASCIZ \ "PB7" PREMATURELY SET DURING T1 COUNTDOWN\
5368 017503 042 041120 021067 EM50Z: .ASCIZ \ "PB7" NOT SET AFTER SECOND CYCLE\
5369
5370 .EVEN

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CVDMACO DMV11 MCTRL DIAG #1
CVDMAC.P11 16-AUG 84 13:59

MACY11 30A(1052) 16-AUG-84 14:51 PAGE 44
TEXT ADDRESS TABLES FOR ERROR HANDLERS -- "TXT__T"

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5383

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.SBTTL TEXT ADDRESS TABLES FOR ERROR HANDLERS -- "TXT__T"
;-----
;----- TEXT ADDRESS TABLES USED BY ERROR HANDLERS -----
;-----
TXTMLT: .WORD  TXTML0,TXTML1,TXTML2,TXTML3,TXTML4,TXTML5,TXTML6,TXTML7
          .WORD  TXTVR
TXTVRT: .WORD  TXTVR0,TXTVR1,TXTVR2,TXTVR3,TXTVR4,TXTVR5,TXTVR6,TXTVR7
          .WORD  TXTVR8,TXTVR9,TXTVRA,TXTVRB,TXTVRC,TXTVRD,TXTVRE,TXTVRF
.LIST  BEX

```

CVDMACO DMV11 MCTRL DIAG #1
CVDMAC.P11 16-AUG-84 13:59

MACY11 30A(1052) 16-AUG-84 14:51 PAGE 45
LOAD DEVICE PROTECTION TABLE

.SBTTL LOAD DEVICE PROTECTION TABLE

////////////////////////////////////
; THIS TABLE IDENTIFIES THE LOAD DEVICE TO THE SUPERVISOR, SO THAT IT CAN BE
; PROTECTED FROM TESTING. IF DESIRED.
////////////////////////////////////

5385
5386
5387
5388
5389
5390
5391
5392 017626
 (3) 017626
5393 017626 177777
5394 017630 177777
5395 017632 177777
5396 017634

BGNPROT

.WORD -1 ;DON'T CHK CSR ADRS
.WORD -1 ;DON'T CHK MASSBUS UNIT NO.
.WORD -1 ;DON'T CHK DRIVE NO.
ENDPROT

L#PROT::

CVDMACO DMV11 MCTRL DIAG #1
CVDMAC.P11 16-AUG-84 13:59

MACY11 30A(1052) 16-AUG-84 14:51 PAGE 46
INITIALIZE SECTION

```

5398          .SBTTL INITIALIZE SECTION
5399
5400          ;////////////////////////////////////
5401          ;// THE INITIALIZE SECTION CONTAINS THE CODING THAT IS PERFORMED
5402          ;// AT THE BEGINNING OF THE TEST SEQUENCE ON THE NEXT UNIT.
5403          ;////////////////////////////////////
5404
5405          BGNINIT
5406          (3) 017634
5407          (3) 017634
5408          L$INIT::
5409          017634 010637 002324      MOV     SP,PSTACK      ;SAVE BASE-LEVEL STACK POINTER
5410          ;SEE IF PROGRAM JUST STARTED, BR IF YES
5411          READef #EF.START
5412          (3) 017640 012700 000040      MOV     #EF.START,RO
5413          (3) 017644 104447      TRAP   C$REFG
5414          BCOMPLETE      STARST
5415          (2) 017646 103417      BCS    STARST
5416          ;SEE IF PROGRAM JUST RESTARTED, BR IF YES
5417          READef #EF.RESTART
5418          (3) 017650 012700 000037      MOV     #EF.RESTART,RO
5419          (3) 017654 104447      TRAP   C$REFG
5420          BCOMPLETE      RESTRT
5421          (2) 017656 103435      BCS    RESTRT
5422          ;SEE IF THIS IS A NEW PASS, BR IF YES
5423          READef #EF.NEW
5424          (3) 017660 012700 000035      MOV     #EF.NEW,RO
5425          (3) 017664 104447      TRAP   C$REFG
5426          BCOMPLETE      NEWST
5427          (2) 017666 103433      BCS    NEWST
5428          ;SEE IF PROGRAM WAS JUST CONTINUED
5429          READef #EF.CONTINUE
5430          (3) 017670 012700 000036      MOV     #EF.CONTINUE,RO
5431          (3) 017674 104447      TRAP   C$REFG
5432          BCOMPLETE      10$
5433          (2) 017676 103401      BCS    10$
5434          5420 017700 000436      BR     GETPRM
5435          5422 017702 000137 020106      10$:  JMP     CONTIN      ;(THIS IS TO FAR AWAY FOR A "BR" INSTRUCTION)
5436          5424 017706      STARST:      ;ENTER HERE IF "START" COMMAND ISSUED
5437          ; TEST FOR THE PRESENCE OR ABSENCE OF A CONSOLE TERMINAL.
5438          5428 017706 005037 002346      CLR     CONSOLE      ;RESET THE CONSOLE TERMINAL FLAG
5439          5429 017712      SETVEC #4,#CONST,#0 ;SETUP BUS TIMEOUT VECTOR TO TEST FOR A CONSOLE
5440          (7) 017712 012746 000000      MOV     #0,-(SP)
5441          (6) 017716 012746 020206      MOV     #CONST,-(SP)
5442          (5) 017722 012746 000004      MOV     #4,-(SP)
5443          (4) 017726 012746 000003      MOV     #3,-(SP)
5444          (3) 017732 104437      TRAP   C$SVEC
5445          (2) 017734 062706 000010      ADD    #10,SP
5446          5430 017740 005737 177564      TST    #0177564      ;TRY TO ACCESS THE CONSOLE TERMINAL'S "XCSR"
5447          5431 017744      CLRVEC #4      ;WE SHOULD BE THROUGH WITH THIS BY NOW
5448          (3) 017744 012700 000004      MOV     #4,RO
5449          (3) 017750 104436      TRAP   C$CVEC
5450          5432

```


CVDMAC0 DMV11 MCTRL DIAG #1
CVDMAC.P11 16-AUG-84 13:59

MACY11 30A(1052) 16-AUG-84 14:51 PAGE 46 1
INITIALIZE SECTION

```

5433 017752          RESTRT:          ;ENTER HERE IF "RESTART" COMMAND ISSUED
5434
5435          ;CLEAR DEVICE MAP
5436 017752 005037 002342          CLR          DEVMAP
5437
5438 017756          NEWST:          ;ENTER HERE BEFORE EACH TEST
5439
5440 017756 012737 177777 002322          MOV          #-1,LOGDEV          ;RESET LOGICAL DEVICE TO -1
5441 017764 005237 002340          INC          FRSPAS          ;INCREMENT NO. OF PASSES AFTER LOAD
5442 017770 012737 000001 002344          MOV          @BIT0,DEVPTR          ;INIT DEVICE MAP BIT PCINTER
5443          ; GET UNIBUS ADDRESS, VECTOR, PRIORITY LEVEL, SWITCH PACKS, TEST
5444          ; CONNECTOR INFORMATION FOR THIS LOGICAL DEVICE
5445 017776          GETPRM:
5446 017776 005237 002322          INC          LOGDEV          ;INCREMENT LOGICAL DEVICE NUMBER
5447 020002          GPMARD          LOGDEV,R1          ;GET P-TABLE POINTER INTO R1
5448          (3) 020002 013700 002322          MOV          LOGDEV,R0
5449          (3) 020006 104442          TRAP          CIGPMRD
5450          (3) 020010 010001          MOV          R0,R1
5451          BCOMPLETE 10#          ;BR IF DEVICE AVAILABLE
5452 020012          ASL          DEVPTR          ;IF UN-AVAILABLE, SHIFT DEVICE MAP BIT POINTER
5453 020014 006337 002344          BR          GETPRM          ; AND SKIP THIS DEVICE
5454          ;
5455          ; "R1" WAS RETURNED WITH A POINTER TO THE CURRENT "P-TABLE"
5456
5457 020034 012100          MOV          (R1)+,R0          ;GET THE DEVICE CSR ADDRESS
5458 020036 012703 000020          MOV          @16.,R3          ;WE HAVE TO SETUP THIS MANY ADDRESS POINTERS
5459 020042 012702 002352          MOV          @MPCSR,R2          ;THIS IS THE ADDRESS OF THE FIRST POINTER
5460 020046 010022          12#:          MOV          R0,(R2)+          ;SETUP ONE CSR POINTER
5461 020050 005200          INC          R0          ;POINT TO THE NEXT CSR ADDRESS
5462 020052 077303          SOB          R3,12#          ;LOOP AS LONG AS THERE ARE MORE TABLE ENTRIES
5463          ;ELSE, FALL THROUGH TO CONTINUE GETTING MORE
5464          ; P-TABLE DATA
5465
5466 020054 012100          MOV          (R1)+,R0          ;GET INTERRUPT VECTOR
5467 020056 010037 002412          MOV          R0,MPIVEC          ;SETUP "A" VECTOR PCINTER
5468 020062 022020          CMP          (R0)+,(R0)+          ;ADD 4 TO VECTOR TO GET ADDRESS OF "B" VECTOR
5469 020064 010037 002414          MOV          R0,MPOVEC          ;SETUP "B" VECTOR POINTER
5470
5471 020070 012100          MOV          (R1)+,R0          ;GET DMV11 DEVICE PRIORITY
5472 020072 006200          ASR          R0          ; RE-POSITION IT
5473 020074 006200          ASR          R0
5474 020076 006200          ASR          R0
5475 020100 006200          ASR          R0
5476 020102 010037 002416          MOV          R0,MPRIOR          ;SETUP OUR VARIABLE FOR INT. VECTOR INIT'S
5477
5478 020106          CONTIN:          ;ENTER HERE WHEN A "CONTINUE" COMMAND IS ISSUED
5479
5480 020106          SETVEC          @MPIVEC,@MPIHAN,@MPRIOR          ;SETUP "A" INT. VECTOR
5481          (7) 020106 013746 002416          MOV          @MPRIOR,-(SP)
5482          (6) 020112 012746 005164          MOV          @MPIHAN,-(SP)
5483          (5) 020116 013746 002412          MOV          @MPIVEC,-(SP)
5484          (4) 020122 012746 000003          MOV          @3,-(SP)

```

CVDMACO DMV11 MCTRL DIAG #1
CVDMAC.P11 16-AUG-84 13:59

MACY11 30A(1052) 16-AUG-84 14:51 PAGE 46-2
INITIALIZE SECTION

```

(3) 020126 104437
(2) 020130 062706 000010
5481 020134 005037 005234
5482 020140
(7) 020140 013746 002416
(6) 020144 012746 005236
(5) 020150 013746 002414
(4) 020154 012746 000003
(3) 020160 104437
(2) 020162 062706 000010
5483 020166 005037 005306
5484 020172 005037 002330
5485
5486 020176 012737 000001 002336
5487 020204
(3) 020204
(3) 020204 104411
5488
5489
5490
5491
5492
5493 020206 012737 177777 002346
5494 020214 000002
5495

                                TRAP  C#SVEC
                                ADD    #10,SP
CLR    IHILNK                    ;WE DON'T WANT THE HANDLER TO LINK ELSEWHERE
SETVEC @#MPOVEC,@#MPOHAN,@#MPRIOR ;SETUP "B" INT. VECTOR
                                MOV    @#MPRIOR,-(SP)
                                MOV    @#MPOHAN,-(SP)
                                MOV    @#MPOVEC,-(SP)
                                MOV    #3,-(SP)
                                TRAP  C#SVEC
                                ADD    #10,SP
CLR    IHOLNK                    ;WE DON'T WANT THE HANDLER TO LINK ELSEWHERE
CLR    INTWCH                    ;RESET "INTERRUPT WATCH" FLAGS (BOTH "A" & "B")
MOV    #1,FRSTIM                 ;MARK FLAG FOR NEXT TIME THROUGH
ENDINIT                          ;END OF "INIT" CODE
                                L10017:
                                TRAP  C#INIT

; ***** SUBROUTINES USED BY "INIT" CODE *****
;
; INTERRUPT HANDLER FOR CONSOLE TERMINAL PRESENCE TESTING
CONTST: MOV    #-1,CONSOL        ;INDICATE THAT NO CONSOLE TERMINAL EXISTS!
RTI                                ;RETURN

```

CVDMACO DMV11 MCTRL DIAG #1
CVDMAC.P11 16-AUG-84 13:59

MACY11 30A(1052) 16-AUG-84 14:51 PAGE 47
AUTO DROP UNIT SECTION

.SBTTL AUTO DROP UNIT SECTION

;/ THE AUTO DROP CODING DETERMINES WHETHER OR NOT THE DEVICE WHOSE P-TABLE
;/ WAS JUST OBTAINED IS READY FOR TESTING, AND IT IS DROPPED IF NOT READY.

THIS ALGORITHM IS THE SAME AS TEST # 1 EXCEPT THAT TEST 1
WILL JUST REPORT THE FAILURE AND GO ON -- THIS ROUTINE WILL CAUSE THE
DEVICE TO BE DROPPED IF A BUS-TIMEOUT OCCURS WHEN ANY OF THE CSR'S
ARE ACCESSED WITH EITHER A "TST" OR "TSTB" INSTRUCTION.

BGNAUTO

```

5497
5498
5499
5500
5501
5502
5503
5504
5505
5506
5507
5508
5509
5510
5511
5512
5513 020216          BGNAUTO
      (3) 020216          L$AUTO::
5514 020216          SETVEC #4,#AD.HIT,#0 ;SETUP INVALID-ADDRESS TRAP VECTOR
      (7) 020216 012746 000000          MOV #0,-(SP)
      (6) 020222 012746 020334          MOV #AD.HIT,-(SP)
      (5) 020226 012746 000004          MOV #4,-(SP)
      (4) 020232 012746 000003          MOV #3,-(SP)
      (3) 020236 104437          TRAP C$SVEC
      (2) 020240 062706 000010          ADD #10,SP
5515 020244 005037 002440          CLR TMO ;INITIALIZE TRAP FLAG REGISTER
5516 020250 012702 000001          MOV #1,R2 ;FLAG BIT
5517 020254 013703 002352          MOV BSELO,R3 ;INIT ADDRESS POINTER
5518
5519 020260 105723          1$: TSTB (R3)+ ;ACCESS THE CSR'S BY BYTES.
5520 020262 006302          ASL R2
5521 020264 103375          BCC 1$
5522
5523 020266 013703 002352          MOV BSELO,R3 ;RE-INIT ADDRESS POINTER
5524 020272 012702 000001          MOV #1,R2 ;RE-INIT FLAG BIT
5525 020276 005723          2$: TST (R3)+ ;ACCESS THE CSR'S BY WORDS.
5526 020300 006302          ASL R2
5527 020302 006302          ASL R2
5528 020304 103374          BCC 2$
5529
5530 020306          CLRVEC #4 ;RESTORE THE VECTOR TO DS
      (3) 020306 012700 000004          MOV #4,R0
      (3) 020312 104436          TRAP C$CVEC
5531 020314 005737 002440          TST TMO ;DID WE GET HIT WITH AN INVALID ADDRESS TRAP?
5532 020320 001403          BEQ AD.OK ;NO, EXIT TEST
5533 020322          DODU LOGDEV ;YES, DROP THIS LOGICAL DEV.
      (3) 020322 013700 002322          MOV LOGDEV,R0
      (3) 020326 104451          TRAP C$DODU
5534 020330 000240          AD.OK: NOP ;(FOR PATCHING IN A HALT IF NECESSARY)
5535 020332          ENDAUTO
      (3) 020332          L10020:
      (3) 020332 104461          TRAP C$AUTO
5536 020334 050237 002440          AD.HIT: BIS R2,TMO ;FLAG THE HIT IF WE GET IT!
5537 020340 000002          RTI ;RETURN

```


CVDMACO DMV11 MCTRL DIAG #1
 CVDMAC.P11 16-AUG-84 13:59

MACY11 30A(1052) 16-AUG-84 14:51 PAGE 50
 ADD UNIT SECTION

.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.AUNIT" IS SET, THE UNIT WILL BE TESTED AS A NEW UNIT.
://////
  
```

5563
 5564
 5565
 5566
 5567
 5568
 5569
 5570
 5571 020364
 (3) 020364
 5572 020364
 (3) 020364
 (3) 020364 104452

BGNAU
 ENDAU

L\$AU::
 L10023:
 TRAP C\$AU

CVDMACO DMV11 MCTRL DIAG #1
CVDMAC.P11 16 AUG 84 13:59

MACY11 30A(1052) 16-AUG-84 14:51 PAGE 51
TEST 1 -- DMV-11 AVAILABILITY

5590

(2)
(2)
(2)
(2)
(2)
(3)
(3)
(3)
(3)
(3)
(3)
(3)
(3)
(3)
(3)
(3)
(2)
(2)
(2)
(2)
(2)
(5)

.SBTTL TEST 1 -- DMV-11 AVAILABILITY

```
*****
;*
;* TEST 1 -- DMV-11 AVAILABILITY
;*
;* EACH NORMALLY USED CSR IS ACCESSED WITH A "TST" OR "TSTB" INSTRUCTION AND IF
;* A BUS TIMEOUT OCCURS (INTERRUPT @ VECTOR ADDR 4) A FLAG WILL BE SET SHOWING
;* WHICH CSR ADDR AND INSTRUCTION FAILED. "T1.HSW" REFLECTS "TST" INSTRUCTIONS
;* AND "T1.HSB" REFLECTS "TSTB" INSTRUCTIONS.
;*
;* EXAMPLES:
;*
;* IF "TSTB BSEL1" FAILS, BIT # 1 OF "T1.HSB" WILL BE SET.
;* IF "TST BSEL4" FAILS, BIT # 4 OF "T1.HSW" WILL BE SET
;* (NOTE: ONLY EVEN BITS IN "T1.HSW" CAN BE SET).
;*
;* THE FLAG WORDS ARE OUTPUT IN BINARY AS "EXTENDED ERROR INFORMATION".
;*****
```

5591 020366 005037 020532
5592 020372 012702 000001
5593 020376 013703 002352
5594 020402
(7) 020402 012746 000000
(6) 020406 012746 020524
(5) 020412 012746 000004
(4) 020416 012746 000003
(3) 020422 104437
(2) 020424 062706 000010

```

; BGNTST
;
; T1::
CLR T1.HSW ;INITIALIZE TRAP FLAG REGISTER
MOV #1,R2 ;FLAG BIT FOR BYTE ACCESSED CSR 0.
MOV BSEL0,R3 ;INIT ADDRESS POINTER
SETVEC #4,#T1.HIT,#0 ;SETUP INVALID-ADDRESS TRAP VECTOR
MOV #0,-(SP)
MOV #T1.HIT,-(SP)
MOV #4,-(SP)
MOV #3,-(SP)
TRAP C$SVEC
ADD #10,SP
```

5595
5596 020430 105723
5597 020432 006302
5598 020434 103375
5599

```
1$: TSTB (R3)+ ;ACCESS THE CSR'S BY BYTES.
ASL R2
BCC 1$
```

5600 020436 013737 020532 020534
5601 020444 005037 020532
5602 020450 012702 000001
5603 020454 013703 002352
5604

```
MOV T1.HSW,T1.HSB ;MOVE BYTE INTERRUPT FLAG TO PROPER LOCATION.
CLR T1.HSW ;INITIALIZE TRAP FLAG REGISTER
MOV #1,R2 ;FLAG BIT FOR WORD ACCESSED CSR 0.
MOV BSEL0,R3 ;RE-INIT ADDRESS POINTER
```

5605 020460 005723
5606 020462 006302
5607 020464 006302
5608 020466 103374
5609

```
2$: TST (R3)- ;ACCESS THE CSR'S BY WORDS.
ASL R2
ASL R2
BCC 2$
```

5610 020470
(3) 020470 012700 000004
(3) 020474 104436

```
CLRVEC #4 ;RESTORE THE VECTOR TO DS
MOV #4,R0
TRAP C$CVEC
```

5611 020476 005737 020532
5612 020502 001003
5613 020504 005737 020534
5614 020510 001404
5615 020512

```
TST T1.HSW ;DID WE GET AN INVALID ADDRESS TRAP?
BNE 3$ ;YES, REPORT FAILURE
TST T1.HSB
BEQ T1.OK
3$: GEDF T1.EHD,T1.EMI ;YES, REPORT THE ERROR
```

CVDMACO DMV11 MCTRL DIAG #1
CVDMAC.P11 16-AUG-84 13:59

MACY11 30A(1052) 16-AUG-84 14:51 PAGE 51-1
TEST 1 -- DMV-11 AVAILABILITY

```

(2)
(6) 020512 104455
(7) 020514 000011
(7) 020516 020654
(7) 020520 020536
5616 020522          T1.OK:  ENDTST
(3) 020522
(3) 020522 104401          L10024:  TRAP  C1ETST
5617
5618 020524 050237 020532  T1.HIT:  BIS      R2,T1.HSW  ;FLAG THE HIT IF WE GET IT!
5619 020530 000002          RTI      ;RETURN
5620
5621 020532 000000  T1.HSW:  .WORD  0      ;INVALID ADDRESS TRAP FLAG WORD:
5622                                     ;BITS SET INDICATE TRAPS ON WORD ACCESSES
5623                                     ;(BIT # SET = CSR # THAT FAILED)
5624 020534 000000  T1.HSB:  .WORD  0      ;INVALID ADDRESS TRAP FLAG WORD:
5625                                     ;BITS SET INDICATE TRAPS ON BYTE ACCESSES
5626                                     ;(BIT # SET = CSR # THAT FAILED)
5627 020536          BGNMSG  T1.EM1
(3) 020536          PRINTB  @T1.1,MPCSR  ;IDENTIFY ERROR AND ON WHAT DEVICE
5628 020536
(8) 020536 013746 002352          MOV      MPCSR,-(SP)
(7) 020542 012746 020703          MOV      @T1.1,-(SP)
(6) 020546 012746 000002          MOV      @2,-(SP)
(3) 020552 010600          MOV      SP,RO
(4) 020554 104414          TRAP    C1PNTB
(4) 020556 062706 000006          ADD     @6,SP
5629 020562          PRINTX  @T1.2      ;IF REQUESTED, ALSO INDICATE MISSES (TRAPS)
(7) 020562 012746 020765          MOV      @T1.2,-(SP)
(6) 020566 012746 000001          MOV      @1,-(SP)
(3) 020572 010600          MOV      SP,RO
(4) 020574 104415          TRAP    C1PNTX
(4) 020576 062706 000004          ADD     @4,SP
5630 020602          PRINTX  @T1.3
(7) 020602 012746 021020          MOV      @T1.3,-(SP)
(6) 020606 012746 000001          MOV      @1,-(SP)
(3) 020612 010600          MOV      SP,RO
(4) 020614 104415          TRAP    C1PNTX
(4) 020616 062706 000004          ADD     @4,SP
5631 020622          PRINTX  @T1.4,T1.HSW,T1.HSB
(9) 020622 013746 020534          MOV      T1.HSB,-(SP)
(8) 020626 013746 020532          MOV      T1.HSW,-(SP)
(7) 020632 012746 021072          MOV      @T1.4,-(SP)
(6) 020636 012746 000003          MOV      @3,-(SP)
(3) 020642 010600          MOV      SP,RO
(4) 020644 104415          TRAP    C1PNTX
(4) 020646 062706 000010          ADD     @10,SP
5632 020652          ENDMSG
(3) 020652          L10025:  TRAP  C1MSG
(3) 020652 104423
5633
5634          .NLIST  BEX

```


CVDMACO DMV11 MCTRL DIAG #1
CVDMAC.P11 16-AUG-84 13:59

MACY11 30A(1052) 16-AUG-84 14:51 PAGE 51 2
TEST 1 -- DMV-11 AVAILABILITY

5635	020654	053101	044501	040514	T1.END:	.ASCIZ	'AVAILABILITY TEST (01)'
5636	020703	045	022516	042101	T1.1:	.ASCIZ	'#KADPV-11 @ #0#A NOT RESPONDING TO CSR ACCESSING'
5637	020765	045	031116	051445	T1.2:	.ASCIZ	'#N2#S21#ASEL #S11#ABSEL #'
5638	021020	047045	051445	032461	T1.3:	.ASCIZ	'#S15#AE C A B 6 4 2 0 FEDCBA9876543210'
5639	021072	047045	022462	020101	T1.4:	.ASCIZ	'#N2#A TRAP FLAGS:#B16#S2#B16'
5640					.LIST	BEX	
5641		021132			.EVEN		

CVDMACO DMV11 MCTRL DIAG #1
 CVDMAC.P11 16-AUG-84 13:59

MACY11 30A(1052) 16-AUG-84 14:51 PAGE 52
 TEST 2 -- MASTER CLEAR, RUN MICRODIAGNOSTICS

5658
 (2)
 (2)
 (2)
 (2)
 (2)
 (3)
 (3)
 (3)
 (3)
 (3)
 (3)
 (3)
 (3)
 (3)
 (3)
 (2)
 (2)
 (2)
 (2)
 (5)
 5659
 5660
 5661
 5662
 5663
 5664
 (3)
 5665
 5666
 5667
 5668
 5669
 5670
 5671
 5672
 5673
 5674
 5675
 5676
 5677
 5678
 5679
 5680
 5681

021132

021132 004737 003614
 021136 103002
 021140 104460
 021142 000436
 021144 005001
 021146 005002
 021150 016203 003040
 021154 062702 000002
 021160 126271 003040 002352
 021166 001005
 021170 005202
 021172 005201
 021174 005201
 021176 077310
 021200 000417

```
.SBTTL TEST 2 -- MASTER CLEAR, RUN MICRODIAGNOSTICS
;.....
;
;   TEST 2 -- MASTER CLEAR, RUN MICRODIAGNOSTICS
;
;   A MASTER CLEAR IS ISSUED TO THE DMV-11, AND THE PROGRAM ALLOWS SUFFICIENT
;   TIME FOR THE MICRODIAGNOSTICS TO BE PERFORMED. THESE MICRODIAGNOSTICS RESIDE
;   IN 6502 PROGRAM MEMORY, AND THOROUGHLY VERIFY THE OPERATION OF THE 6502
;   MICROPROCESSOR CHIP. THEN, THEY CHECK OUT THE DATA RAM, THE 6502'S ACCESS TO
;   THE CSR'S, AND PERFORM A SIMPLE MESSAGE TEST USING THE 6522 CHIP AND THE
;   USYRT, WITH INTERNAL LOOPBACK.
;
;   NEXT, THE LSI-11 PROGRAM READS THE THE CSR S (SEL0-SEL6) AND CHECKS THEM FOR
;   THEIR EXPECTED INITIALIZED STATES. IF AN ERROR HAS OCCURRED IN THE MICRO-
;   DIAGNOSTICS THE NUMBER OF THE FAILING TEST WILL BE FOUND IN SEL4, AND RUN
;   (BIT 7) WILL NOT BE SET IN BSEL1.
;.....
;
;   BGNTST
;
;   T2::
;   ISSUE A MASTER CLEAR, AND DELAY FOR MICRO-DIAGNOSTICS TO COMPLETE BY CALLING
;   SUBROUTINE MASCLR.
;
;   JSR    PC,MASCLR    ; -ATTEMPT- TO RUN THE MICRO-DIAGNOSTIC
;   BCC    B1           ; IF NO ERROR, PROCEED
;   ERROR  ;ELSE, REPORT IT AND
;
;   BR     24#         ;   TRAP    C$ERROR
;
;   ; FIRST, INITIALIZE INDEX REGISTERS
;   81:   CLR     R1     ;R1 IS THE INDEX OF THE BYTE SELECT TABLE
;         CLR     R2     ;R2 IS THE INDEX OF THE RESULTS TABLE
;         MOV    RESFMC(R2),R3 ;GET THE NUMBER OF PATTERNS IN RESULTS TABLE
;         ADD    #2,R2   ;MOVE POINTER TO NEXT BYTE
;         CMPB   RESFMC(R2),BSEL(R1) ;COMPARE EXPECTED RESULTS WITH CSR'S.
;         BNE    1#     ;A MISMATCH IS A DEVICE FATAL ERROR
;         INC    R2     ;INCREMENT TABLE POINTER
;         INC    R1     ;INCREMENT POINTER
;         INC    R1     ; BY 2 (WORD INCREMENT)
;
;         SOB   R3,2#   ;CONTINUE TO LOOP THROUGH TABLE
;
;         BR    24#    ;TEST COMPLETE WITH NO ERRORS, GO END TEST.
```


CVDMACO DMV11 MCTRL DIAG #1
CVDMAC.P11 16-AUG-84 13:59

MACY11 30A(1052) 16-AUG-84 14:51 PAGE 53
TEST 3 -- CSR ADDRESSING

5700
(2)
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(2)
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(2)
(5) 021242

```
.SBTTL TEST 3 -- CSR ADDRESSING
;.....
;*
;* TEST 3 -- CSR ADDRESSING
;*
;* FIRST, HALT THE 6502 UP BY CLEARING ALL CSRS. THEN, WRITE A DIFFERENT WORD
;* OF DATA PATTERN A INTO EACH OF BSEL0-17, AND AFTER EACH WRITE, READ AND
;* COMPARE ALL REGS TO EXPECTED VALUES.
;*
;* DATA PATTERN A = 001, 002, 004, 010, 020, 040, 100, 200, 052, 300, 140,
;*                   060, 030, 014, 006, 003
;*
;-----
;
; BGNTST
;
; T3::
```

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5718
5719 021242 012703 000010
5720 021246 013701 002352
5721 021252 012702 003062
5722 021256 005021
5723 021260 005022
5724 021262 005022
5725 021264 077304
5726
5727
5728
5729 021266 005002
5730 021270 012703 000020
5731 021274 105772 002352
5732 021300 001035
5733 021302 005722
5734 021304 077305
5735
5736
5737
5738
5739 021306 005001

```
-----
; ***** DETAILED TEST DESCRIPTION *****
; THIS TEST PROCEEDS AS FOLLOWS:
;
; (1) CLEAR ALL CSRS AND VERIFY SAME (CLEARING BSEL01 HALTS 6502)
; (2) WRITE 01 INTO BSEL0; VERIFY BSEL0=01, ALL OTHERS=0
; (3) WRITE 02 INTO BSEL1; VERIFY BSEL0=01, BSEL1=02, ALL OTHERS=0.
; (4) WRITE 04 INTO BSEL2; VERIFY BSEL0=01, BSEL1=02, BSEL2=04, ALL OTHERS=0
;
; (5) => (17) CONTINUE TO INCREMENTALLY WRITE DATA-PATTERN-A INTO THE BSR'S,
; CHECKING ALL BSR'S AFTER EACH WRITE, UNTIL BSR'S COMPLETELY
; FILLED WITH DATA-PATTERN-A.
; NOTE: IF AN ERROR OCCURS, THE FIRST BAD BSR NUMBER AND GOOD/BAD VALUES ARE
; GIVEN, FOLLOWED BY A COMPLETE BSR DUMP.
;-----
; CLEAR DMV CSRS AND RESULTS TABLE
;
; MOV #10,R3 ;GET # OF CSRS
; MOV #BSEL,R1 ;GET 1ST CSR ADDRESS
; MOV #RESFT3,R2 ;GET 1ST RESULTS TABLE ADDRESS
1$: CLR (R1); ;CLEAR CSR, BUMP POINTER
; CLR (R2); ;CLEAR RESULTS TABLE LOC., BUMP POINTER
; CLR (R2); ; AND DO AGAIN
; SOB R3,1$ ;LOOP UNTIL ALL DONE
;
; NOW VERIFY CSRS ARE ALL ZEROED
;
; CLR R2 ;CLEAR BSR ADDRESS INDEX
; MOV #CSREGS,R3 ;GET # OF CSRS
2$: TSTB #BSEL(R2) ;IS THIS CSR=0 ?
; BNE 5$ ;IF NO: GO REPORT ERROR
; TST (R2); ; YES: BUMP INDEX
; SOB R3,2$ ;DO UNTIL ALL BSRS CHECKED
;-----
; INITIALIZE INDEX REGISTERS
; CLR R1 ;INITIALIZE PATTERN INDEX REGISTER
```

CVDMACO DMV11 MCTRL DIAG #1
CVDMAC.P11 16-AUG-84 13:59

MACY11 30A(1052) 16-AUG-84 14:51 PAGE 53-1
TEST 3 -- CSR ADDRESSING

```

5740 021310 012703 000020      MOV      #CSREGS,R3      ;GET NUMBER OF CSR'S
5741
5742                          ; THE FIRST WORD OF THE DATA TABLE CONTAINS THE NUMBER OF PATTERNS IN
5743                          ; THE TABLE:
5744 021314 016104 002504      MOV      PATA(R1),R4      ;INITIALIZE NUMBER OF PATTERNS COUNT
5745 021320 005721              TST      (R1).           ;MOVE TABLE POINTER
5746
5747                          ; PUT NEXT PATTERN OF DATA INTO NEXT REGISTER AND TEST AREA:
5748                          ;
5749                          ; CALCULATE INDEX INTO DATA AREA AND TO REGISTER
5750
5751 021322 010102              3#:     MOV      R1,R2      ;GET INDEX INTO TEST DATA AREA
5752 021324 105742              TSTB    -(R2)           ;IT'S ONE WORD TOO LARGE
5753 021326 006302              ASL     R2              ;CONVERT FROM BYTE TO WORD INDEX
5754
5755                          ; NOW, SETUP THE EXPECTED RESULTS AREA AND LOAD THE SELECT REGISTER
5756
5757 021330 116162 002504 003062  MOVB    PATA(R1),RESFT3(R2) ;UPDATE THE EXPECTED RESULTS TABLE
5758 021336 116172 002504 002352  MOVB    PATA(R1),BSEL(R2) ;PUT PATTERN INTO THE CSR
5759
5760 021344 005201              INC     R1              ;BUMP DATA POINTER FOR NEXT TIME AROUND
5761 021346 005002              CLR     R2              ;INITIALIZE TABLE INDEX
5762 021350 012703 000020      MOV     #CSREGS,R3      ;INITIALIZE NUMBER OF REGISTERS
5763
5764 021354 126272 003062 002352  4#:     CMPB    RESFT3(R2),BSEL(R2) ;COMPARE CSR WITH RESULTS TABLE
5765 021362 001004              BNE     5#              ;A MISMATCH IS A DEVICE FATAL ERROR
5766 021364 005722              TST    (R2).           ;BUMP TABLE POINTER BY 2 (WORD INCREMENT)
5767 021366 077306              SOB    R3,4#           ;CONTINUE TO READ & MATCH ALL REGISTERS BEFORE
5768                          ;LOADING THE NEXT PATTERN INTO NEXT REGISTER
5769
5770 021370 077424              SOB    R4,3#           ;LOOP UNTIL ALL PATTERNS ARE TESTED
5771 021372 000417              BR     24#             ;TEST COMPLETE **** NO ERRORS ****
5772
5773                          ;--PREPARE THE FAILURE MESSAGE --
5774
5775 021374 116237 003062 002310  5#:     MOVB    RESFT3(R2),GDATA ;# GET THE EXPECTED RESULT FROM TABLE
5776 021402 117237 002352 002312  MOVB    BSEL(R2),BDATA ;# GET THE FAILED BYTE
5777 021410 004737 004446      JSR    PC,GETBSR       ;GET THE BSEL REGISTERS FOR DUMPING
5778 021414 006202              ASR    R2              ;CONVERT WORD OFFSET TO BYTE CSR ADDRESS
5779 021416 010237 002334      MOV    R2,REGNUM       ;GET THE REGISTER THAT FAILED
5780 021422              GDF    EM6,ERR2       ;ERROR **** DEVICE FATAL ****
                    ;          "DEVICE FATAL" ERROR # 11
                    ;
                    TRAP    C$ERDF
                    .WORD  11
                    .WORD  EM6
                    .WORD  ERR2
(2)
(6) 021422 104455
(7) 021424 000013
(7) 021426 014552
(7) 021430 005316
5781 021432              24#:     ENDTST
(3) 021432
(3) 021432 104401
                    L10027:
                    TRAP    C$E1ST

```

CVDMACO DMV11 MCTRL DIAG #1
CVDMAC.P11 16-AUG-84 13:59

MACY11 30A(1052) 16-AUG-84 14:51 PAGE 54
TEST 4 -- CSR REGISTERS DATA READ/WRITE

```

5795 .SBTTL TEST 4 -- CSR REGISTERS DATA READ/WRITE
(2) ;*****
(2) ;
(2) ;* TEST 4 -- CSR REGISTERS DATA READ/WRITE
(2) ;*
(3) ;* WRITE, READ, AND COMPARE EACH BYTE OF DATA PATTERN B INTO REGISTER BSELO.
(3) ;* THEN, REPEAT THIS USING EACH OF THE REMAINING CSR'S, BSEL1-BSEL17. WHEN BSEL1
(3) ;* IS BEING TESTED, THE PROGRAM ALWAYS SETS BIT 7 IN THE DATA PATTERN SO THAT
(3) ;* RUN WILL NOT BE CLEARED, AND IT ALWAYS CLEARS BIT6 SO THAT MCLR WILL NOT BE
(3) ;* SET.
(3) ;*
(3) ;* DATA PATTERN B = 125, 252, 000, 377, 001, 002, 004, 010, 020, 040, 100,
(3) ;* 200, 376, 375, 373, 367, 357, 337, 277, 177, 000
(2) ;*
(2) ;*****
(2) ;
(2) ;
(5) ; BGNTST
5796 021434 004737 003774 JSR PC,MSTCLR ;CALL MAINTENANCE READY INITIALIZATION. IF T4::
5797 ;MSTCLR SHOULD FAIL BECAUSE THE MRDY FLAG DOES
5798 ;NOT BECOME SET, A DEVICE FATAL ERROR WILL BE
5799 ;REPORTED, AND MSTCLR WILL SET THE "C" BIT
5800 021440 103002 BCC 8# ;IF NO ERROR, PROCEED
5801 021442 ERROR ;ELSE, REPORT IT AND
(3) 021442 104460 ; TRAP C#ERROR
5802 021444 000453 BR 24# ; EXIT THIS TEST
5803 ;
5804 ; NOTE - THE FIRST BYTE LOCATION OF THE PATTERN B TABLE, USED IN THIS TEST,
5805 ; CONTAINS THE NUMBER OF TEST PATTERNS OF PATTERN B TABLE, NOT A
5806 ; TEST PATTERN.
5807 ;
5808 ; FIRST, INITIALIZE INDEX AND COUNT REGISTERS
5809 ;
5810 021446 005001 8#: CLR R1 ;R1 IS THE 'PATB' INDEX REGISTER
5811 021450 005002 CLR R2 ;R2 IS THE CSR INDEX REGISTER
5812 021452 016103 002526 MOV PATB(R1),R3 ;R3 CONTAINS THE NUMBER OF BYTES IN PATB
5813 021456 062702 000002 ADD #2,R2 ;MOVE POINTER TO FIRST BYTE OF DATA
5814 ;
5815 021462 113777 000101 160664 MOVB 101,BSEL1 ;STOP THE MICRO-PROCESSOR!!!
5816 ;
5817 021470 116137 002526 002310 1#: MOVB PATB(R1),GDATA ;GET THE PATB DATA BYTE, WE ARE TO USE
5818 ;
5819 ; DON'T GET CAUGHT BY THE NEXT INSTRUCTION! "R2" IS AN OFFSET INTO A
5820 ; WORD TABLE WHICH CONTAINS THE ADDRESSES OF THE CSR'S. THEREFORE, WHEN
5821 ; R2 = 0 -- IT POINTS TO BSELO'S ADDRESS, AND WHEN R2 = 2 -- IT POINTS TO
5822 ; BSEL1'S ADDRESS.
5823 ;
5824 021476 022702 000002 CMP #2,R2 ;IS "BSEL1" BEING TESTED?
5825 021502 001003 BNE 2# ;IF YES, ALTER PATB DATA SO THAT BIT 7 IS
5826 ; ALWAYS SET, AND BIT6 IS ALWAYS RESET.
5827 ; ELSE, USE PATB DATA AS IS.
5828 ;
5829 021504 142737 000300 002310 BICB #RUN:MCLR,GDATA ;FORCE PATTERN TO RESET BITS 7 & 6
5830 ;
5831 021512 113772 002310 002352 2#: MOVB GDATA,BSELO(R2) ;PUT PATB DATA INTO REGISTER BEING TESTED

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CVDMACO DMV11 MCTRL DIAG #1
CVDMAC.P11 16-AUG-84 13:59

MACY11 30A(1052) 16-AUG-84 14:51 PAGE 54-1
TEST 4 -- CSR REGISTERS DATA READ/WRITE

```

5832 021520 123772 002310 002352      CMPB   GDATA, @BSELO(R2) ; COMPARE PATTERN JUST WRITTEN
5833 021526 001414                BEQ    54 ; TEST PASSES IF A MATCH. ELSE, DEVICE FATAL ERROR
5834
5835                                ; --PREPARE FOR THE FAILURE PRINTOUT--
5836
5837 021530 010237 002334                MOV    R2, REGNUM ; GET THE REGISTER THAT FAILED
5838 021534 117237 002352 002312        MOVB   @BSELO(R2), BDATA ; SCORE THE BAD DATA
5839 021542 004737 004446                JSR    PC, GETBSR ; GET THE BSEL REGISTERS FOR DUMPING
5840 021546                GEDF   EM7, ERR2 ; REPORT ERROR AND EXIT THE TEST
(2)                                ; "DEVICE FATAL" ERROR # 12
(6) 021546 104455                TRAP   C$ERDF
(7) 021550 000014                .WORD 12
(7) 021552 014576                .WORD EM7
(7) 021554 005316                .WORD ERR2
5841 021556 000406                BR     244
5842
5843 021560 005201                54:   INC    R1 ; MOVE TABLE POINTER
5844 021562 077336                SOB   R3, 14 ; DECREMENT NUMBER OF PATTERNS LEFT. IF ZERO, EXIT.
5845                                ; ELSE, CONTINUE TO PATTERN TEST REGISTER
5846 021564 005722                TST   (R2) ; INCREMENT THE REGISTER INDEX BY 2
5847 021566 020227 000040        CMP   R2, @<CSREGS*2> ; COMPARE REGISTER INDEX TO NUMBER OF CSR'S
5848 021572 101336                BHI   14 ; IF R2 > 17, END THE TEST
5849
5850 021574                244:  ENDTST
5851 021574
(3) 021574
(3) 021574 104401                L10030: TRAP   C$ETST

```

CVDMACO DMV11 MCTRL DIAG #1
 CVDMAC.P11 16-AUG-84 13:59

MACY11 30A(1052) 16-AUG-84 14:51 PAGE 55
 TEST 5 -- BASIC MASTER CLEAR

```

5859          .SBTTL TEST 5 -- BASIC MASTER CLEAR
(2)
(2)          ;*****
(2)          ;*
(2)          ;*   TEST 5 -- BASIC MASTER CLEAR
(2)          ;*
(3)          ;* PERFORM INITIAL MASTER CLEAR. WRITE 356 INTO BSELO AND READ AND CHECK IT.
(3)          ;* THEN, ISSUE A MASTER CLEAR AND READ AND CHECK BSELO FOR 000.
(2)          ;*
(2)          ;*****
(2)          ;
(2)          ;   BGNTST
(5) 021576          ;   TS::
5860          ; ISSUE A MASTER CLEAR, AND DELAY FOR MICRO-DIAGNOSTICS TO COMPLETE BY CALLING
5861          ; SUBROUTINE MASCLR.
5862
5863 021576 004737 003614          JSR      PC,MASCLR          ; -ATTEMPT- TO RUN THE MICRO-DIAGNOSTIC
5864          ; FAILURES WILL BE REPORTED BY THE SUBROUTINE
5865          ; AS DEVICE FATAL AND THE "C" BIT WILL BE SET
5866 021602 103002          BCC      8#          ; IF NO ERROR, PROCEED
5867 021604          ERROR          ; ELSE, REPORT IT AND
(3) 021604 104460          BR       24#          ;   EXIT THIS TEST
5868 021606 000441          TRAP    C#ERROR
5869
5870 021610 112777 000356 160534 8#:  MOVB   #356,BSELO          ; # SET BSEL TO ALMOST ALL ONES
5871 021616 122777 000356 16052# CMPB   #356,BSELO          ; # COMPARE
5872 021624 001011          BNE     2#          ; A MISMATCH INDICATES A DEVICE FATAL ERROR
5873
5874          ;
5875          ; ISSUE A MASTER CLEAR, AND DELAY FOR MICRO-DIAGNOSTICS TO COMPLETE BY CALLING
5876          ; SUBROUTINE MASCLR.
5877
5878 021626 004737 003614          JSR      PC,MASCLR          ; -ATTEMPT- TO RUN THE MICRO-DIAGNOSTIC
5879          ; FAILURES WILL BE REPORTED BY THE SUBROUTINE
5880          ; AS DEVICE FATAL AND THE "C" BIT WILL BE SET
5881 021632 103002          BCC      9#          ; IF NO ERROR, PROCEED
5882 021634          ERROR          ; ELSE, REPORT IT AND
(3) 021634 104460          BR       24#          ;   EXIT THIS TEST
5883 021636 000425          TRAP    C#ERROR
5884
5885 021640 122777 000600 160504 9#:  CMPB   #000,BSELO          ; THIS REGISTER SHOULD BE ZEROED DURING
5886          ; INITIALIZATION
5887 021646 001421          BEQ     24#          ; IF ZERO, *** TEST PASSES ***, ELSE REPORT ERROR
5888          ; --PREPARE FOR THE FAILURE PRINTOUT--
5889 021650 112737 000356 002310 2#:  MOVB   #356,GDATA          ; # ALMOST ALL ONES IS EXPECTED DATA
5890 021656 117737 160470 002312  MOVB   BSELO,BDATA          ; SOMETHING OTHER THAN ALL ONES WAS FOUND. SCORE IT.
5891 021664 004737 004446          JSR      PC,GETBSR          ; GET THE BSEL REGISTERS FOR DUMPING
5892 021670 105077 160456          CLRB   BSELO          ; DISABLE INTERRUPTS AS A PRECAUTIONARY MEASURE
5893 021674 012737 000000 002334  MOV    #0,REGNUM          ; GET THE REGISTER THAT FAILED
    
```


CVDMAC0 DMV11 MCTRL DIAG #1
CVDMAC.P11 16-AUG-84 13:59

MACY11 30A(1052) 16-AUG-84 14:51 PAGE 55-1
TEST 5 -- BASIC MASTER CLEAR

```

5894 021702          GEDF  EMS,ERR2      ;REPORT DEVICE FATAL ERROR
      (2)                                     ; "DEVICE FATAL" ERROR # 13
      (6) 021702 104455                      TRAP  C#ERDF
      (7) 021704 000015                      .WORD 13
      (7) 021706 014527                      .WORD EMS
      (7) 021710 005316                      .WORD ERR2
5895 021712 105077 160434 24$: CLR8 88SELO  ;DISABLE INTERRUPTS AS A PRECAUTIONARY MEASURE
5896 021716          CLR8  88SELO
      (3) 021716          ENDTST
      (3) 021716 104401          L10031:
                                     TRAP  C#ETST

```

CVDMACO DMV11 MCTRL DIAG #1
 CVDMAC.P11 16-AUG-84 13:59

MACY11 30A(1052) 16-AUG-84 14:51 PAGE 56
 TEST 6 -- BUS RESET

```

5905 .SBTTL TEST 6 -- BUS RESET
(2)
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(2)
(5) 021720
5906 021720 032737 000001 002350
5907 021726 001075
5908
5909
5910
5911
5912 021730 004737 003614
5913
5914
5915 021734 103002
5916 021736
(3) 021736 104460
5917 021740 000470
5918
5919 021742 112777 000377 160402 8:
5920 021750 122777 000377 160374
5921 021756 001040
5922
5923 021760
(3) 021760 104433
5924
5925
5926
5927
5928
5929
5930
5931
5932
5933 021762 010246
5934 021764 012702 000010
5935 021770 013701 002316
5936 021774 005301
5937 021776 001376
5938 022000 005302
5939 022002 001372
5940
5941 022004 122777 000000 160340
5942 022012 001443
5943
5944
5945

;*****
;*
;* TEST 6 -- BUS RESET
;*
;* PERFORM AN INITIAL MASTER CLEAR. WRITE 377 INTO BSELO AND READ AND CHECK IT.
;* THEN, ISSUE A RESET INSTRUCTION, STALL FOR COMPLETION, AND READ AND CHECK
;* BSELO FOR 000.
;*****
;
; BGNTST
;
; BIT #BIT0,PFLAG ;IF BUS RESETS ARE NOT ALLOWED, T6::
; BNE 24; ; BYPASS THIS TEST
;
; ELSE, ISSUE A MASTER CLEAR, AND DELAY FOR MICRO-DIAGNOSTICS TO COMPLETE BY
; CALLING SUBROUTINE MASCLR.
;
; JSR PC,MASCLR ; -ATTEMPT- TO RUN THE MICRO-DIAGNOSTIC
; FAILURES WILL BE REPORTED BY THE SUBROUTINE
; AS DEVICE FATAL AND THE "C" BIT WILL BE SET
; IF NO ERROR, PROCEED
; ELSE, REPORT IT AND TRAP C#ERROR
; BCC 8;
; ERROR
; BR 24; ; EXIT THIS TEST
;
; MOVB #377,BSELO ;SET ALL BITS IN BSELO
; CMPB #377,BSELO ;COMPARE TO ALL BITS SET
; BNE 1; ;A MISMATCH IS A DEVICE FATAL ERROR
;
; BRESET ;FORCE AN EXTERNAL BUS RESET. THIS SHOULD
; TRAP C#RESET
; CAUSE BSELO=0 IN ABOUT 100 MICROSECONDS
;
; DELAY ABOUT 500 MILLISECONDS FOR THE MICRODIAGNOSTIC TO COMPLETE
;
; MOV DELAY1,R1 ;INITIALIZE COUNTER
; 2: TSTB DELAY1+1 ;THIS IS A DUMMY INSTRUCTION TO LENGTHEN THE DELAY
; ; TIME TO GET OUT OF THE DELAY?
; DEC R1 ;NO.
; BNE 2;
;
; MOV R2,-(SP) ; SAVE REGISTER 2
; MOV #10,R2
; 2: MOV DELAY1,R1 ;INITIALIZE THE LOOP COUNTER FOR DELAY LOOP
; 10: DEC R1 ; ELSE, DECREMENT THE LOOP COUNTER AND
; BNE 10; ; CONTINUE TO LOOP.
; DEC R2
; BNE 2;
;
; CMPB #000,BSELO ;YES, CHECK FOR REGISTER TO BE ZERO
; BEQ 24; ;A MISMATCH IS A DEVICE FATAL ERROR
; ;ELSE, END TEST.
;
; --PREPARE FOR THE FAILURE PRINTOUT--
    
```

CVDMACO DMV11 MCTRL DIAG #1
CVDMAC.P11 16-AUG-84 13:59

MACY11 30A(1052) 16-AUG-84 14:51 PAGE 56-1
TEST 6 -- BUS RESET

```

5946
5947 022014 117737 160332 002312      MOVB  BBSELO,BDATA      ;GET THE ACTUAL DATA
5948 022022 004737 004446              JSR   PC,GETBSR        ;GET THE BSEL REGISTERS FOR DUMPING
5949 022026 105077 160320              CLRB  BBSELO           ;DISABLE INTERRUPTS AS A PRECAUTIONARY MEASURE
5950 022032 012737 000000 002310      MOV   #000,GDATA      ;GET THE EXPECTED DATA
5951 022040 012737 000000 002334      MOV   #0,REGNUM       ;GET THE REGISTER THAT FAILED
5952 022046              GEDF  EM9,ERR2        ;EXTERNAL BUS RESET FAILURE
;          "DEVICE FATAL" ERROR # 14
;          TRAP      C#ERDF
;          .WORD    14
;          .WORD    EM9
;          .WORD    ERR2
(2)
(6) 022046 104455
(7) 022050 000016
(7) 022052 014646
(7) 022054 005316
5953 022056 000421              BR    244
5954
5955 022060 117737 160266 002312 14:   MOVB  BBSELO,BDATA      ;GET THE ACTUAL DATA
5956 022066 004737 004446              JSR   PC,GETBSR        ;GET THE BSEL REGISTERS FOR DUMPING
5957 022072 105077 160254              CLRB  BBSELO           ;DISABLE INTERRUPTS AS A PRECAUTIONARY MEASURE
5958 022076 112737 000377 002310      MOVB  #377,GDATA      ;ALL ONES WAS EXPECTED DATA
5959 022104 012737 000000 002334      MOV   #0,REGNUM       ;GET THE REGISTER THAT FAILED
5960 022112              GEDF  EM8,ERR2        ;BSELO COULD NOT BE SET TO ALL ONES
;          "DEVICE FATAL" ERROR # 15
;          TRAP      C#ERDF
;          .WORD    15
;          .WORD    EM8
;          .WORD    ERR2
(2)
(6) 022112 104455
(7) 022114 000017
(7) 022116 014623
(7) 022120 005316
5961 022122 105077 160224 244:   CLRB  BBSELO           ;DISABLE INTERRUPTS AS A PRECAUTIONARY MEASURE
5962 022126 012602              MOV   (SP)+,R2
5963 022130              ENDTST
(3) 022130
(3) 022130 104401              L10032: TRAP      C#ETST

```

CVDMACO DMV11 MCTRL DIAG #1
CVDMAC.P11 16-AUG-84 13:59

MACY11 30A(1052) 16-AUG-84 14:51 PAGE 57
TEST 7 -- CSR, MAINTENANCE MICROCODE INTERACTION

5985
(2)
(2)
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(2)

```
.SBTTL TEST 7 -- CSR, MAINTENANCE MICROCODE INTERACTION
:.....
:*
:* TEST 7 -- CSR, MAINTENANCE MICROCODE INTERACTION
:*
:* THIS TEST INVOKES THE MAINTENANCE REQUEST MECHANISM THROUGH WHICH THE LSI-11
:* AND 6502 CAN COMMUNICATE. FIRST, A MASTER CLEAR IS DONE WITH ONLY BIT 0
:* (MREQ) SET IN BSEL1. THE PROGRAM THEN CHECKS FOR THE SETTING OF BSEL2 BIT 7
:* (MRDY) BY THE MAINTENANCE MICROCODE WITHIN ABOUT 50 MICRO-SEC., AND IF MRDY
:* DOES NOT GET SET, AN ERROR IS REPORTED.
:*
:* NEXT, THE PROGRAM LOADS SEL4 WITH 000010 AND BSEL6 WITH 125. THEN, ALL CSR'S
:* ARE READ AND CHECKED FOR EXPECTED CONTENTS.
:*
:* BSEL2 IS THEN LOADED WITH A WRITE COMMAND, WHICH SHOULD CAUSE THE MICROCODE
:* TO TRANSFER THE 125 INTO BSEL0. ALL CSR'S ARE THEN READ AND CHECKED FOR
:* EXPECTED CONTENTS.
:*
:* THEN, THE PROGRAM LOADS 252 INTO BSEL0 AND READS AND CHECKS ALL CSR'S. BSEL2
:* IS THEN LOADED WITH A READ COMMAND, WHICH SHOULD CAUSE THE MICROCODE TO
:* TRANSFER THE 252 INTO BSEL6. ALL CSR'S ARE READ AND CHECKED.
:*
:--.....
```

5986	022132					BGNTST		T7::	
(3)	022132					BGNSUB		T7.1:	
5987	022132	104402						TRAP	C#BSUB
5988	022134	004737	003774			JSR	PC,MSTCLR	;PUT THE MICROPROCESSOR IN THE MAINTENANCE LOOP	
5989	022140	103003				BCC	10#	;IF NO ERROR, PROCEED	
(3)	022142	104460				ERROR		;ELSE, REPORT IT AND	
5990	022144	000137	022636			JMP	ENDT7	TRAP	C#ERROR
5991								; EXIT THIS TEST	
5992	022150	012777	000020	160204	10#:	MOV	#SLT0,BSEL4	;PUT ADDRESS OF SELECT REGISTER 0 IN 'ADDRESS' REG	
5993	022156	012777	000125	160202		MOV	#125,BSEL6	;PUT THE DATA TO BE WRITTEN IN 'DATA' REGISTER	
5994									
5995	022164	027727	160162	000400		CMP	BSEL0,#400	;ONLY "MREQ" SHOULD BE SET	
5996	022172	001411				BEQ	1#	;IF IT IS, PROCEED WITH TESTING	
5997								;ELSE, SETUP FOR (& REPORT) THE ERROR	
5998	022174	017737	160152	002312		MOV	BSEL0,BDATA	; BAD DATA	
5999	022202	012737	000400	002310		MOV	#400,GDATA	; GOOD DATA	
6000	022210	005037	002334			CLR	REGNUM	; REG. NUMBER	
6001	022214	000451				BR	4#		
6002									
6003	022216	027727	160134	000200	1#:	CMP	BSEL2,#200	;"MRDY" SET? (ALSO CHECKED BY "MSTCLR")	
6004	022224	001412				BEQ	2#	;YES, PROCEED WITH TESTING	
6005	022226	017737	160124	002312		MOV	BSEL2,BDATA	; BAD DATA	
6006	022234	012737	000200	002310		MOV	#200,GDATA	; GOOD DATA	
6007	022242	012737	000002	002334		MOV	#2,REGNUM	; THE REG. THAT FAILED	
6008	022250	000433				BR	4#	;EXIT TEST	
6009									
6010	022252	027727	160104	000020	2#:	CMP	BSEL4,#SLT0	;COMPARE SELECT REGISTER 4 WITH THE ADDRESS SENT	
6011	022260	001412				BEQ	3#	;A MISMATCH IS A DEVICE FATAL ERROR	

CVDPMAC0 DMV11 MCTRL DIAG #1
CVDPMAC.P11 16-AUG-84 13:59

MACY11 30A(1052) 16-AUG-84 14:51 PAGE 57-1
TEST 7 -- CSR, MAINTENANCE MICROCODE INTERACTION

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6012 022262 017737 160074 002312      MOV      BSEL4,BDATA      ;GET THE BAD DATA
6013 022270 012737 000020 002310      MOV      #SLT0,GDATA      ;GET THE GOOD DATA
6014 022276 012737 000004 002334      MOV      #4,REGNUM        ;GET THE REGISTER NUMBER WHICH FAILED
6015 022304 000415
6016
6017 022306 027727 160054 000125 31:    CMP      BSEL6,#000125    ;COMPARE SELECT REGISTER 6 WITH THE DATA SENT
6018 022314 001415      BEQ      601              ;THIS PART OF THE TEST PASSES IF A MATCH IS FOUND
6019 022316 017737 160044 002312      MOV      BSEL6,BDATA      ;GET THE BAD DATA
6020 022324 012737 000125 002310      MOV      #000125,GDATA    ;GET THE GOOD DATA
6021 022332 012737 000006 002334      MOV      #6,REGNUM        ;GET THE REGISTER NUMBER
6022
6023
6024
6025
6026 022340      41:    GEDF     EM7,ERRS        ;ELSE, AN ERROR HAS BEEN FOUND
        ; "DEVICE FATAL" ERROR # 16
        ;
        TRAP      C1ERDF
        .WORD     16
        .WORD     EM7
        .WORD     ERRS
6027 022350      601:    ENDSUB
        ;
        L10034:
        TRAP      C1ESUB
6028
6029 022352      ;***** > P A R T 2 < *****
        ;
        BGNSUB
        ;
        T7.2:
        TRAP      C1BSUB
6030
6031 022354 112777 000002 157774      MOVB     #WRILOC,BSEL2    ;SEND THE WRITE LOCATION COMMAND
6032
6033 022362 032777 000200 157766      BIT      #200,BSEL2       ;WE SHOULD HAVE IMMEDIATELY LOST "RDY".
6034 022370 001421      BEQ      51              ;GOT WHAT WE EXPECTED, WAIT FOR READY AGAIN
6035 022372 017737 157760 002312      MOV      BSEL2,BDATA      ;SOMETHING WRONG, SETUP FOR AND REPORT ERROR
6036 022400 004737 004446      JSR      PC,GETBSR        ;GET THE BSEL REGISTERS FOR DUMPING
6037 022404 012737 000002 002310      MOV      #002,GDATA       ;EXPECTED DATA
6038 022412 012737 000002 002334      MOV      #2,REGNUM        ;WE WERE TESTING BSEL2
6039 022420      GEDF     EM15,ERR2
        ;
        ; "DEVICE FATAL" ERROR # 17
        ;
        TRAP      C1ERDF
        .WORD     17
        .WORD     EM15
        .WORD     ERR2
6040 022430      ESCAPE  TST
        ;
        TRAP      C1ESCAPE
        .WORD     L10033-.
6041
6042 022434 132777 000200 157714 51:    BITB     #200,BSEL2       ;WAIT FOR "RDY" TO GO HIGH AGAIN
6043 022442 001774      BEQ      51
6044
6045 022444 004737 004610      JSR      PC,GETWSR        ;WHEN IT DOES, GET CURRENT REGISTER CONTENTS
6046
6047 022450 023727 002246 000525      CMP      WSR0,#000525     ;COMPARE BYTE SELECT REGISTERS 0 AND 1
6048 022456 001412      BEQ      61              ;REG 0 = 125, REG 1 = 001
6049 022460 012737 000525 002310      MOV      #000525,GDATA    ;THIS PART OF THE TEST PASSES IF A MATCH IS FOUND
6050 022466 013737 002246 002312      MOV      WSR0,BDATA       ;GET THE GOOD DATA
6051

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CVDMACO DMV11 MCTRL DIAG #1
CVDMAC.P11 16-AUG-84 13:59

MACY11 30A(1052) 16-AUG-84 14:51 PAGE 57-2
TEST 7 -- CSR, MAINTENANCE MICROCODE INTERACTION

6052	022474	012737	000000	002334		MOV	#0,REGNUM	;GET THE REGISTER NUMBER
6053	022502	000451				BR	98	;EXIT TEST
6054								
6055	022504	023727	002250	000200	68:	CMP	WSR2,#000200	;COMPARE BYTE SELECT REGISTERS 2 AND 3
6056								;REG 2 = 200 -- "TRDY" IS SET & COMMAND IS CLEARED
6057								;REG 3 = 000 SHOULD BE ZEROES.
6058	022512	001412				BEQ	78	;THIS PART OF THE TEST PASSES IF A MATCH IS FOUND
6059	022514	012737	000200	002310		MOV	#000200,GDATA	;GET THE GOOD DATA
6060	022522	013737	002250	002312		MOV	WSR2,BDATA	;GET THE BAD DATA
6061	022530	012737	000002	002334		MOV	#2,REGNUM	;GET THE REGISTER NUMBER
6062	022536	000433				BR	98	;EXIT TEST
6063								
6064								;SUBROUTINE ATTEMPTED TO ZERO THIS LOCATION.
6065	022540	023727	002252	000020	78:	CMP	WSR4,#SLTO	;REG 4 = 020, THE 6502 ADDRESS TO PUT DATA
6066								;REG 5 = 000, ZEROED BY MSTCLR
6067	022546	001412				BEQ	88	;THIS PART OF THE TEST PASSES IF A MATCH IS FOUND
6068	022550	012737	000020	002310		MOV	#SLTO,GDATA	;GET THE GOOD DATA
6069	022556	013737	002252	002312		MOV	WSR4,BDATA	;GET THE BAD DATA
6070	022564	012737	000004	002334		MOV	#4,REGNUM	;GET THE REGISTER NUMBER
6071	022572	000415				BR	98	;EXIT TEST
6072								
6073	022574	023727	002254	000125	88:	CMP	WSR6,#000125	;REG 6 = 125, THE WRITE DATA
6074	022602	001415				BEQ	ENDT7	;THIS PART OF THE TEST PASSES IF A MATCH IS FOUND
6075	022604	012737	000125	002310		MOV	#000125,GDATA	;GET THE GOOD DATA
6076	022612	013737	002254	002312		MOV	WSR6,BDATA	;GET THE BAD DATA
6077	022620	012737	000006	002334		MOV	#6,REGNUM	;GET THE REGISTER NUMBER
6078								;REG 7 = 000, ZEROED BY MSTCLR.
6079								
6080								;--PREPARE FOR THE FAILURE PRINTOUT--
6081								
6082	022626				98:	GEDF	EM7,ERR5	;REPORT ERROR.
(2)								; "DEVICE FATAL" ERROR # 18
(6)	022626	104455						TRAP C1ERDF
(7)	022630	000022						.WORD 18
(7)	022632	014576						.WORD EM7
(7)	022634	005564						.WORD ERR5
6083	022636					ENDT7:	ENDSUB	
(3)	022636							L10035:
(3)	022636	104403						TRAP C1ESUB
6084	022640						ENDTST	
(3)	022640							L10033:
(3)	022640	104401						TRAP C1ETST

CVDMACO DMV11 MCTRL DIAG #1
 CVDMAC.P11 16-AUG-84 13:59

MACY11 30A(1052) 16-AUG-84 14:51 PAGE 58
 TEST 8 -- RUN FLIP-FLOP

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.SBTTL TEST 8 -- RUN FLIP-FLOP
;.....
; *
; * TEST 8 -- RUN FLIP-FLOP
; *
; * THE PROGRAM PUTS THE MICROCODE INTO THE MAINTENANCE LOOP. A 125 CHARACTER
; * IS LOADED INTO BSEL6 AND A REQUEST IS MADE TO WRITE THE CONTENTS OF BSEL6
; * INTO BSELO. THE PROGRAM THEN READS AND CHECKS BSELO TO CONTAIN 125.
; * NEXT, THE RUN FLIP-FLOP IS CLEARED BY LOADING A 0 INTO RUN (BSEL1 BIT 7).
; * BSELO IS THEN CLEARED AND THE REQUEST IS MADE AGAIN TO WRITE THE CONTENTS
; * OF BSEL6 INTO BSELO. THE PROGRAM STALLS FOR 50 MICRO-SEC. AND CHECKS FOR
; * MRDY (BSEL2 BIT 7) NOT SET, AND BSELO STILL CLEARED.
; * THEN, THE PROGRAM SETS THE RUN FLIP-FLOP AGAIN BY LOADING A 1 INTO RUN,
; * AND CHECKS FOR MRDY SET WITHIN 50 MICRO-SEC. AND BSELO = 125.
; *
; * .....
```

```

(5) 022642 004737 003774      ; BGNTST
6100 022642 004737 003774      JSR    PC,MSTCLR      ;CALL SUBROUTINE TO INITIALIZE THE CSR'S AND
6101                                ;PUT THE 6502 INTO THE MAINTENANCE LOOP
6102 022646 103003              BCC    24             ;IF NO ERROR, PROCEED
6103 022650                      ERROR                   ;ELSE, REPORT IT AND
(3) 022650 104460                      TRAP    C$ERROR
6104 022652 000137 023206      JMP    244           ; EXIT THIS TEST
6105                                ; DO NORMAL WRITE INTO LOCATION USED BY BSELO
6106
6107
6108 022656 004537 004334      24:   JSR    R5,WRITEI ;WRITE INTO BSELO THROUGH THE BACK DOOR!
6109 022662 000020              SLTO   ; ADDRESS OF BSELO WITHIN RAM
6110 022664 000125              104:  125     ; TEST DATA
6111 022666 103002              BCC    54             ;IF AN ERROR OCCURED,
6112 022670                      ERROR                   ;REPORT IT &
(3) 022670 104460                      TRAP    C$ERROR
6113 022672 000545              BR     244           ; EXIT
6114 022674 123777 022664 157450 54:   CHPB   104,BSELO    ;DID THE DATA GO INTO BSELO?
6115 022702 001416              BEQ    114           ;YES, NOW TRY IT WITH THE "RUN" BIT OFF
6116 022704 017737 157442 002312 MOV    BSELO,BDATA ;NO, SETUP & PRINT ERROR MESSAGE
6117 022712 013737 022664 002310 MOV    104,GDATA
6118 022720 005037 002334      CLR    REGNUM
6119 022724                      GEDF   EM16,ERR5   ;WE'RE SINGLING OUT SELO FOR THE MESSAGE
(2)                                ; "DEVICE FATAL" ERROR # 19
(6) 022724 104455                      TRAP    C$ERDF
(7) 022726 000023                      .WORD   19
(7) 022730 015025                      .WORD   EM16
(7) 022732 005564                      .WORD   ERR5
6120 022734                      ESCAPE TST          ;IF THIS WRITE DIDN'T WORK, THERE IS NO SENSE
(3) 022734 104410                      TRAP    C$ESCAPE
(3) 022736 000250                      .WORD   L10036-.
6121                                ;IN TRYING IT WITH "RUN" OFF!
6122
6123 022740 105077 157406      114:  CLRB   BSELO       ;CLEAR BSELO AGAIN
6124                                ;REG'S ARE ALREADY SETUP FROM PREVIOUS WRITE
6125 022744 142777 000200 157402 BICB   @RUN,BSEL1   ;TURN OFF THE RUN BIT -- & HOPEFULLY THE 6502 ALSO
6126 022752 112777 000002 157376 MOVB   @WRILOC,BSEL2 ;TELL MLOOP TO WRITE AGAIN
    
```

CVDMACO DMV11 MCTRL DIAG #1
CVDMAC.P11 16-AUG-84 13:59

MACY11 30A(1052) 16-AUG-84 14:51 PAGE 58-1
TEST 8 -- RUN FLIP-FLOP

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6127
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6133
6134
6135 022760 013701 002320      MOV      DELAY2,R1      ;SETUP AND WAIT FOR A WHILE.
6136 022764 132777 000200 157364 12: BITB      #MRDY,BSEL2 ;WHILE WE'RE WAITING, WE MAY AS WELL CHECK "MRDY"
6137 022772 001042                BNE      14:           ;IF IT GETS SET, WE HAVE AN ERROR BECAUSE
6138                                ;NOTHING WAS SUPPOSED TO HAPPEN WITHIN
6139                                ;THE 6502 MICRO-PROCESSOR
6140 022774 105777 157352                TSTB     BSELO         ;WHILE WE'RE AT IT, WE MAY AS WELL LOOK AT
6141 023000 001063                BNE      15:           ;BSELO. THAT ALSO ISN'T SUPPOSED TO CHANGE.
6142 023002 077110                SOB      R1,12:        ;DECREMENT AND CHECK COUNTER -- LOOP TILL DONE
6143
6144                                ;IF EVERYTHING GOES OK, WE SHOULD FALL OUT OF THE LOOP TO HERE. OTHERWISE,
6145                                ;"MRDY" OR BSELO COULD CHANGE SENDING US TO "14:" OR "15:" RESPECTIVELY TO
6146                                ;PRINT AN APPROPRIATE (WE HOPE) ERROR MESSAGE.
6147
6148                                ;IF WE DO GET TO HERE, WE CAN NOW SET "RUN" AND THE MLOOP SHOULD PERFORM THE
6149                                ;REQUESTED FUNCTION.
6150
6151 023004 152777 000200 157342                BISB     #RUN,BSEL1    ;SET "RUN" AND ALLOW THE 6502 TO RUN AGAIN
6152
6153                                ;NOW ALL WE HAVE TO DO IS WAIT AGAIN AS BEFORE. EXCEPT THAT THIS TIME "MRDY"
6154                                ;OR BSELO GETTING SET IS THE VALID CONDITION -- NOT THE ERROR. FAILURE TO
6155                                ;PERFORM IS NOW THE ERROR WE'RE LOOKING FOR.
6156
6157 023012 013701 002320      MOV      DELAY2,R1      ;SETUP AND WAIT FOR A WHILE.
6158 023016 132777 000200 157332 13: BITB      #MRDY,BSEL2 ;WHILE WE'RE WAITING, "MRDY" SHOULD GO NON-ZERO
6159 023024 001070                BNE      24:           ;IF IT GETS SET, WE CAN ASSUME THAT SOMETHING
6160                                ;COMPLETED. AT LEAST WE WERE ABLE TO GET THE
6161                                ;6502 MICRO-PROCESSOR RUNNING AGAIN
6162 023026 077105                SOB      R1,13:        ;DECREMENT AND CHECK COUNTER -- LOOP TILL DONE
6163
6164                                ;IF WE GET HERE, WE WEREN'T ABLE TO RESTORE THE 6502 TO A RUNNING STATE!
6165
6166 023030 117737 157322 002312      MOVB     BSEL2,BDATA    ;SETUP FOR THE ERROR MESSAGE -- GET BAD DATA
6167 023036 004737 004446      JSR      PC,GETBSR     ;GET THE BSEL REGISTERS FOR DUMPING
6168 023042 113737 002312 002310      MOVB     BDATA,GDATA   ;PICK THE REGISTER'S DATA. THE ONLY DIFFERENCE
6169 023050 152737 000200 002310      BISB     #MRDY,GDATA   ;BETWEEN GOOD & BAD IS THE "MRDY" BIT
6170 023056 012737 000002 002334      MOV      #2,REGNUM     ;INDICATE THAT WE'RE LOOKING AT BSEL2
6171 023064                GEDF     EM17,ERR2     ;NOW REPORT THE ERROR
6172                                ;      "DEVICE FATAL" ERROR # 20
6173                                ;
6174                                TRAP      C#ERDF
6175                                .WORD    20
6176                                .WORD    EM17
6177                                .WORD    ERR2
6178
6179                                ESCAPE  TST                ;EXIT TEST (OR LOOP, MAYBE?)
6180                                TRAP      C#ESCAPE
6181                                .WORD    L10036-.
6182
6183                                ;IF WE GET HERE, BSEL2 CHANGED WHEN THE 6502 WASN'T SUPPOSED TO BE RUNNING!

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CVDMACO DMV11 MCTRL DIAG #1
CVDMAC.P11 16-AUG-84 13:59

MACY11 30A(1052) 16-AUG-84 14:51 PAGE 58-2
TEST 8 -- RUN FLIP-FLOP

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6176 023100 117737 157252 002312 14: MOVB BSEL2,BDATA ;GET THE UNEXPECTEDLY ALTERED CONTENTS OF BSEL2
6177 023106 004737 004446 JSR PC,GETBSR ;GET THE BSEL REGISTERS FOR DUMPING
6178 023112 113737 002312 002310 MOVB BDATA,GDATA ;PICK THE REGISTER'S DATA. THE ONLY DIFFERENCE
6179 023120 142737 000200 002310 BICB #MRDY,GDATA ;BETWEEN GOOD & BAD IS THE "MRDY" BIT
6180 023126 012737 000002 002334 MOV #2,REGNUM ;INDICATE THAT WE'RE LOOKING AT BSEL2
6181 023134 GEDF EM17A,ERR2 ;NOW REPORT THE ERROR
(2) ; "DEVICE FATAL" ERROR # 21
(6) 023134 104455 TRAP C#ERDF
(7) 023136 000025 .WORD 21
(7) 023140 015202 .WORD EM17A
(7) 023142 005316 .WORD ERR2
6182 023144 ESCAPE TST ;EXIT TEST (OR LOOP, MAYBE;)
(3) 023144 104410 TRAP C#ESCAPE
(3) 023146 000040 .WORD L10036-.
6183
6184 ;IF WE GET HERE, BSELO CHANGED WHEN THE 6502 WASN'T SUPPOSED TO BE RUNNING!
6185
6186 023150 117737 157176 002312 15: MOVB BSELO,BDATA ;GET THE UNEXPECTEDLY ALTERED CONTENTS OF BSELO
6187 023156 004737 004446 JSR PC,GETBSR ;GET THE BSEL REGISTERS FOR DUMPING
6188 023162 105037 002310 CLRB GDATA ;IT WAS SUPPOSED TO STAY AT ZERO
6189 023166 105037 002334 CLRB REGNUM ;INDICATE THAT WE'RE LOOKING AT BSELO
6190 023172 GEDF EM17A,ERR2 ;NOW REPORT THE ERROR
(2) ; "DEVICE FATAL" ERROR # 22
(6) 023172 104455 TRAP C#ERDF
(7) 023174 000026 .WORD 22
(7) 023176 015202 .WORD EM17A
(7) 023200 005316 .WORD ERR2
6191 023202 ESCAPE TST ;EXIT TEST (OR LOOP, MAYBE?)
(3) 023202 104410 TRAP C#ESCAPE
(3) 023204 000002 .WORD L10036-.
6192
6193 ;IF WE GET HERE, THE TEST APPEARS TO HAVE PASSED WITH FLYING COLOURS
6194
6195 023206 24: ENDTST
(3) 023206 L10036: TRAP C#ETST
(3) 023206 104401

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CVDMACO DMV11 MCTRL DIAG #1
 CVDMAC.P11 16-AUG-84 13:59

MACY11 30A(1052) 16-AUG-84 14:51 PAGE 59
 TEST 9 -- LOW RAM (00-OF) SCRATCHPAD

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 (5) 023210
 6211 023210 004737 003774
 6212 023214 103003
 6213 023216
 (3) 023216 104460
 6214 023220
 (3) 023220 104410
 (3) 023222 000152
 6215 023224 012737 000001 002444 1#:
 6216 023232 012737 003777 002474
 6217 023240 004737 023376 2#:
 6218 023244 005037 002450
 6219 023250 005037 002452
 6220
 6221
 6222
 6223 023254 004737 023414 4#:
 6224 023260 103003
 6225 023262
 (3) 023262 104460
 6226 023264
 (3) 023264 104410
 (3) 023266 000106
 6227 023270 005237 002464 5#:
 6228 023274 023737 002464 002474
 6229 023302 101764
 6230 023304
 (3) 023304 104422
 6231
 6232
 6233
 6234
 6235
 6236 023306 004737 023376
 6237 023312 004737 023612 8#:
 6238 023316 103001
 6239 023320

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.SBTTL TEST 9 -- LOW RAM (00-OF) SCRATCHPAD
;*****
;*
;* TEST 9 -- LOW RAM (00-OF) SCRATCHPAD
;*
;* HIS TEST FIRST PERFORMS AN ADDRESSING TEST OF RAM LOCATIONS (00-OF), BY
;* WRITING THE ADRS INTO EACH LOCATION AND AFTER EACH WRITE, ALL THE LOCATIONS
;* ARE READ AND CHECKED FOR EXPECTED CONTENTS.
;*
;* THEN, THE TEST PERFORMS READ/WRITE DATA TESTING OF RAM LOCATIONS 00-OF,
;* BY WRITING, READING, AND COMPARING ALL BYTES OF DATA PATTERN B IN EACH
;* LOCATION.
;* DATA PATTERN B = 125, 252, 000, 377, 001, 002, 004, 010, 020, 040, 100,
;* 200, 376, 375, 373, 367, 357, 337, 277, 177, 000
;*
;-----*-----
;
; BGNTST
;
; T9::
; JSR PC,MSTCLR ;INIT DMV & ENTER M-LOOP
; BCC 1# ;IF NO ERROR, PROCEED WITH TESTING
; ERROR ;ELSE, REPORT ERROR
; TRAP C#ERROR
; ESCAPE TST ; & EXIT TEST
; TRAP C#ESCAPE
; .WORD L10037-.
; 1#: MOV #1,TMP2 ;DATA GENERATION ALGORITHM CODE
; MOV #2047.,TMPE ;LAST VALID ADDRESS
; 2#: JSR PC,T9.RST ;RESET TMP3, TMPA, & TMPF
; CLR TMPA ;TEST DATA
; CLR TMP5 ;ACTUAL DATA
;
; IN THIS PHASE OF TESTING WE WRITE, READ & CHECK EACH LOCATION INDIVIDUALLY.
; 4#: JSR PC,WRCRAM ;WRITE, READ, & CHECK 1 BYTE OF RAM
; BCC 5# ;IF NO ERROR, PROCEED
; ERROR ;ELSE, REPORT IT
; TRAP C#ERROR
; ESCAPE TST ; & LOOP IF ERROR
; TRAP C#ESCAPE
; .WORD L10037-.
; 5#: INC TMPA ;POINT TO NEXT LOCATION
; CMP TMPA,TMPE ;HAVE WE TESTED ALL OF RAM?
; BLOS 4# ;NO, TEST ANOTHER BYTE
; BREAK ;ELSE, SEE IF A +C HAS BEEN STRUCK
; TRAP C#BRK
; THEN PROCEED TO THE NEXT PHASE OF TESTING
;
; IN THIS PHASE OF TESTING WE READ & CHECK DATA WHICH SHOULD ALREADY BE IN
; EACH LOCATION OF RAM BEING CHECKED.
; 8#: JSR PC,T9.RST ;RESET TMP3, TMPA, & TMPF
; JSR PC,RCRAM ;READ & CHECK 1 BYTE OF RAM
; BCC 9# ;IF NO ERROR, PROCEED
; ERROR ;ELSE, REPORT IT
```

CVDMACO DMV11 MCTRL DIAG #1
CVDMAC.P11 16-AUG-84 13:59

MACY11 30A(1052) 16-AUG-84 14:51 PAGE 59-1
TEST 9 -- LOW RAM (00-0F) SCRATCHPAD

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(3) 023320 104460                                TRAP C#ERROR
6240 023322 005237 002464          9$: INC      TMPA      ;POINT TO NEXT LOCATION
6241 023326 023737 002464 002474  CMP      TMPA, TMPE ;HAVE WE TESTED ALL OF RAM?
6242 023334 101766                   BLOS     8$         ;NO, TEST ANOTHER BYTE
6243 023336                                BREAK      ;ELSE, SEE IF A 'C HAS BEEN STRUCK
(3) 023336 104422                                TRAP C#BRK
6244                                ;THEN PROCEED TO THE NEXT PHASE OF TESTING
6245
6246 023340 005037 007116                   CLR      ER47CT    ;RESET ERROR PRINT COUNT
6247 023344 005237 002444                   INC      TMP2      ; ADVANCE TO NEXT DATA GEN. ALGORITHM CODE
6248 023350 023727 002444 000007  CMP      TMP2, #7  ;HAVE WE DONE ALL THE CODES WE'RE GOING TO DO?
6249 023356 002730                   BLT      2$         ;NO, THEN GO DO THIS PATTERN IN RAM
6250 023360 004537 004334                   JSR      R5,WRITEI ;ELSE, CLEAR RAM LOCATION 00B3 (HEX) & EXIT
6251 023364 000173                   173              ; (THIS CONVERTS TO 00B3 HEX.)
6252 023366 000000                   0                ; (THIS WE HOPE, WILL CLEAR IT)
6253 023370 103001                   BCC      .+4      ;IF NO ERROR, PROCEED
6254 023372                                ERROR              ;ELSE, REPORT IT
(3) 023372 104460                                TRAP C#ERROR
6255 023374                                ENDTST
(3) 023374                                L10037:
(3) 023374 104401                                TRAP C#ETST
6256
6257                                ; RESET THE FOLLOWING THREE REGISTERS
6258
6259 023376 005037 002446          T9.RST: CLR      TMP3      ;TEST DATA PATTERN INDEX
6260 023402 005037 002464          CLR      TMPA      ;RAM LOCATION ADDRESS
6261 023406 005037 002476          CLR      TMPF      ;RESET ALL ERROR FLAGS
6262 023412 000207          RTS      PC
6263
6264                                ; WRITE, READ, & CHECK ONE LOCATION
6265
6266 023414 010046          WRCRAM: MOV     R0, -(SP) ;SAVE WORKING REGISTERS
6267
6268 023416 004737 023772          JSR      PC,PATGEN ;GENERATE ONE DATA PATTERN BYTE
6269
6270 023422 013700 002464          MOV      TMPA, R0  ;GET ADDRESS WHERE WE CAN CHECK IT MORE EASILY
6271 023426 020027 000020          CMP      R0, #SLT0 ;IS ADDRESS BELOW THE SELECT REGISTER AREA?
6272 023432 103412                   BLO      2$         ;YES, GOOD. IT CAN BE TESTED.
6273 023434 020027 000030          CMP      R0, #SLT0+8. ;IS IT ABOVE THE SELECT REGISTER AREA?
6274 023440 103007                   BHS      2$         ;YES, GOOD. IT CAN BE TESTED.
6275 023442 023727 002444 000006  CMP      TMP2, #6  ;NO, IF "INCREMENTAL", BACK UP INDEX
6276 023450 001055                   BNE      12$        ;ELSE JUST BYPASS TEST
6277 023452 005337 002446          DEC      TMP3      ;DECREMENT INDEX TO WHAT IT WAS BEFORE "PATGEN"
6278 023456 000452                   BR       12$        ; AND THEN BYPASS THE TESTING
6279
6280 023460 010037 023474          2$: MOV      R0, 4$  ;SETUP ALL POINTERS FOR THE CURRENT RAM LOCATION
6281 023464 010037 023506          MOV      R0, 8$
6282
6283 023470 004537 004322          JSR      R5,WRITE  ;WRITE ONE BYTE OF THE TEST DATA
6284 023474 000000          4$: .WORD    0      ;**** MODIFIED FROM ABOVE ****
6285 023476 002450          TMP4      ;TEST DATA IS IN TMP4
6286 023500 103442                   BCS      14$        ;IF ERROR WRITING, FORGET THE REST
6287
6288 023502 004537 004076          JSR      R5,READ   ;READ THAT BYTE BACK AGAIN
6289 023506 000000          8$: .WORD    0      ;**** MODIFIED FROM ABOVE ****
6290 023510 002452          TMP5

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CVDMAC0 DMV11 MCTRL DIAG #1
CVDMAC.P11 16-AUG-84 13:59

MACY11 30A(1052) 16-AUG-84 14:51 PAGE 59-2
TEST 9 -- LOW RAM (00-0F) SCRATCHPAD

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6291 023512 103435          BCS      14#          ;IF ERROR READING, FORGET THE REST
6292
6293 023514 123737 002450 002452    CMPB    TMP4,TMP5    ;DID WE READ WHAT WE WROTE?
6294 023522 001430          BEQ     12#          ;YES, EXIT
6295 023524 132737 000002 002476    BITB    @BIT1,TMPF   ;NO, HAVE WE ALREADY DONE THIS ERROR'S HEADER?
6296 023532 001020          BNE     9#           ;YES, ONLY REPORT DATA
6297 023534 112737 000002 002476    MOVB    @BIT1,TMPF   ;ELSE, CALL MONITOR & PRINT HEADING
6298 023542          GTDF    EM47A,ERR47 ;QUEUE UP THE ERROR MESSAGE
(2)
(5) 023542 012737 000001 002236          MOV     @T.EDF,ERRTYP
(5) 023550 012737 000027 002240          MOV     @23,ERRNBR
(5) 023556 012737 015707 002242          MOV     @EM47A,ERRMSG
(5) 023564 012737 006736 002244          MOV     @ERR47,ERRBLK
6299 023572 000402          BR      10#
6300
6301 023574 004737 007122          9#:    JSR     PC,ERR47. ;JUST PRINT DATA
6302 023600 000261          10#:   SEC
6303 023602 000401          BR      14#          ; & SET THE ERROR FLAG
6304
6305 023604 000241          12#:   CLC          ;NORMAL EXIT - MAKE SURE THE ERROR FLAG IS CLEAR
6306 023606 012600          14#:   MOV     (SP)+,RO   ;RESTORE WORK REGISTERS
6307 023610 000207          RTS     PC
6308
6309 023612 010046          RCRAM: MOV     RO,-(SP)  ;SAVE WORKING REGISTERS
6310
6311 023614 004737 023772          JSR     PC,PATGEN    ;GENERATE ONE DATA PATTERN BYTE
6312
6313 023620 013700 002464          MOV     TMPA,RO      ;GET ADDRESS WHERE WE CAN CHECK IT MORE EASILY
6314 023624 020027 000020          CMP     RO,@SLTO     ;IS ADDRESS BELOW THE SELECT REGISTER AREA?
6315 023630 103412          BLO     2#           ;YES, GOOD. IT CAN BE TESTED.
6316 023632 020027 000030          CMP     RO,@SLTO+8. ;IS IT ABOVE THE SELECT REGISTER AREA?
6317 023636 103007          BHIS   2#           ;YES, GOOD. IT CAN BE TESTED.
6318 023640 023727 002444 000006    CMP     TMP2,@6      ;NO, IF "INCREMENTAL", BACK UP INDEX
6319 023646 001046          BNE     12#          ;ELSE JUST BYPASS TEST
6320 023650 005337 002446          DEC     TMP3         ;DECREMENT INDEX TO WHAT IT WAS BEFORE "PATGEN"
6321 023654 000443          BR      12#          ; AND THEN BYPASS THE TESTING
6322
6323 023656 010037 023666          2#:    MOV     RO,8#     ;SETUP POINTER FOR THE CURRENT RAM LOCATION
6324
6325 023662 004537 004076          JSR     R5,READ      ;READ THAT BYTE BACK AGAIN
6326 023666 000000          8#:    .WORD  0          ;**** MODIFIED FROM ABOVE ****
6327 023670 002452          TMP5
6328 023672 103435          BCS     14#          ;IF ERROR READING, FORGET THE REST
6329
6330 023674 123737 002450 002452    CMPB    TMP4,TMP5    ;WAS THIS LOC. STILL OK?
6331 023702 001430          BEQ     12#          ;YES, EXIT
6332 023704 132737 000004 002476    BITB    @BIT2,TMPF   ;NO, HAVE WE ALREADY DONE THIS ERROR'S HEADER?
6333 023712 001020          BNE     9#           ;YES, ONLY REPORT DATA
6334 023714 112737 000004 002476    MOVB    @BIT2,TMPF   ;ELSE, CALL MONITOR & PRINT HEADING
6335 023722          GTDF    EM47B,ERR47 ;QUEUE UP THE ERROR MESSAGE
(2)
(5) 023722 012737 000001 002236          MOV     @T.EDF,ERRTYP
(5) 023730 012737 000030 002240          MOV     @24,ERRNBR
(5) 023736 012737 015747 002242          MOV     @EM47B,ERRMSG
(5) 023744 012737 006736 002244          MOV     @ERR47,ERRBLK
6336 023752 000402          BR      10#

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CVDMACO DMV11 MCTRL DIAG #1
CVDMAC.P11 16-AUG-84 13:59

MACY11 30A(1052) 16-AUG-84 14:51 PAGE 59-3
TEST 9 -- LOW RAM (00-0F) SCRATCHPAD

6337
6338 023754 004737 007122
6339 023760 000261
6340 023762 000401
6341
6342 023764 000241
6343 023766 012600
6344 023770 000207
6345

9\$: JSR PC,ERR47. ;JUST PRINT DATA
10\$: SEC ; & SET THE ERROR FLAG
BR 14\$; & GO DIRECTLY TO THE EXIT "RTS"

12\$: CLC ;NORMAL EXIT - MAKE SURE THE ERROR FLAG IS CLEAR
14\$: MOV (SP),R0 ;RESTORE WORK REGISTERS
RTS PC

6346
6347
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; PATGEN -- SUBROUTINE TO GENERATE A TEST DATA BYTE FOR A SPECIFIC ELEMENT
;
; CALLING SEQUENCE:
;
; <SET TEST PATTERN CODE # IN "TMP2">
; <SET TEST PATTERN INDEX IN "TMP3">
; JSR PC,PATGEN
; <NEXT SEQUENTIAL INSTRUCTION>
;
; TEST PATTERN CODES:
;
; 1 -- ALL ONES
; 2 -- ALL ZEROES
; 3 -- 1 BIT ALTERNATING
; 4 -- 2 BITS ALTERNATING
; 5 -- ADDRESS IN ADDRESS
; 6 -- INCREMENTAL (INDEX IN ADDRESS)
;
; THE TEST PATTERN INDEX INDICATES HOW FAR INTO THE TEST PATTERN STRING OF
; BYTES WE ARE. I.E. IT SPECIFIES THE NUMBER OF THE BYTE OF THE WHOLE STRING
; OF BYTES COMPOSING THE COMPLETE TEST PATTERN.
;-----

6372 023772
6373 023772 023727 002444 000002
6374 024000 002414
6375 024002 001417
6376 024004 023727 002444 000004
6377 024012 002416
6378 024014 001431
6379 024016 023727 002446 000006
6380 024024 002441
6381 024026 001444
6382 024030 000404
6383
6384 024032 112737 000377 002450
6385 024040 000443
6386
6387 024042 105037 002450
6388 024046 000440
6389
6390 024050 132737 000001 002446
6391 024056 001404
6392 024060 112737 000125 002450

PATGEN:
CMP TMP2,#2 ;DECODE THE TEST PATTERN IDENTIFIER
BLT 1\$;0, 1, OR NEGATIVE WILL GIVE "ALL ONES"
BEQ 2\$;2 = "ALL ZEROES"
CMP TMP2,#4 ;3 = "1 BIT ALTERNATING"
BIT 3\$;4 = "2 BIT ALTERNATING PATTERN"
BEQ 4\$
CMP TMP3,#6 ;5 = "ADDRESS IN ADDRESS"
BLT 5\$;6 = "INCREMENTAL" (INDEX IN ADDRESS)
BEQ 6\$;UNDEFINED = "ALL ZEROES"
BR 2\$

1\$: MOVB #377,TMP4 ;"ALL ONES" DATA PATTERN
BR 60\$

2\$: CLRB TMP4 ;"ALL ZEROES" DATA PATTERN
BR 60\$

3\$: BITB #1,TMP3 ;"1 BIT ALTERNATING" PATTERN
BEQ 20\$;IF EVEN, USE "252"
MOVB #125,TMP4 ;IF ODD, USE "125"

CVDMACO DMV11 MCTRL DIAG #1
CVDMAC.P11 16-AUG 84 13:59

MACY11 30A(1052) 16 AUG-84 14:51 PAGE 60-1
TEST 10 -- DATA RAM MOVING INVERSIONS (LOC'S 0018-01FF HEX)

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(3)      ;*      TMPD  DATA FLAG. BIT 0 OF THIS WORD IS THE VALUE TO WHICH THE BIT
(3)      ;*      IDENTIFIED IN TMPB IS BEING SET ON EACH WRITE IN THE CURRENT
(3)      ;*      PASS.
(3)      ;*
(3)      ;*      TMPD  DIRECTION SWITCH. 0 = FORWARD    NON-ZERO = BACKWARD
(3)      ;*
(3)      ;*      TMPE  LAST VALID ADDRESS TO BE TESTED. (I.E. THE END OF RAM)
(3)      ;*
(3)      ;*      TMPF  ERROR FLAGS. BIT 1 SET = THE LAST DETECTED ERROR WAS THE READ
(3)      ;*      OF THE PREVIOUS DATA BEFORE WRITING THE NEW DATA. IF BIT2 IS
(3)      ;*      SET, THE READ AFTER WRITE FAILED. IF EITHER IS SET WHEN AN
(3)      ;*      ERROR IS DETECTED, THE SUPERVISOR IS NOT CALL'D AND THEREFOR
(3)      ;*      IT'S ERROR COUNTER WILL NOT REFLECT THE ERROR -- INSTEAD, THE
(3)      ;*      DATA LINE IS PRINTED. (UNLESS THE ERROR HANDLER'S DATA LINE
(3)      ;*      PRINT COUNT HAS EXCEEDED ITS LIMIT -- IN WHICH CASE ITS
(3)      ;*      INVOCATION IS IGNORED.)
(2)      ;*
(2)      ;*
(2)      ;*
(2)      ;*
(5)      ;*      BGNTST
6486 024156 004737 003774      JSR      PC,MSTCLR      ;INIT DMV & ENTER M-LOOP      T10::
6487 024162 103003              BCC      1$              ;IF NO ERROR, PROCEED WITH TESTING
6488 024164 104460              ERROR     ;ELSE, REPORT ERROR
(3) 024164 104460              ESCAPE   TST              ; & EXIT TEST      TRAP      C$ERROR
6489 024166 104410              .WORD   L10040-        TRAP      C$ESCAPE
(3) 024170 000744              ;
6490 024172
6491 ;----- ACTUAL MOVING INVERSIONS ALGORITHM -----
6492 ;----- INITIALIZE OUTER LOOP -----
6493 ;
6494 ;
6495 024172 012737 000030 002440      MOV      #24.,TMP0      ;INIT. POINTER TO 1'ST RAM LOC. AFTER SEL REG'S
6496 024200 012737 003777 002474      MOV      #2047.,TMPE    ;IDENTIFY LAST ADDRESS TO BE TESTED
6497 024206 005037 002462              CLR      TMP9
6498 024212 005037 002476              CLR      TMPF            ;ERROR FLAG -- INDICATE NO ERRORS YET
6499 024216 012737 177777 002470      MOV      #-1.,TMPD      ;DATA = 1'S FIRST
6500 ;----- INITIALIZE THE AREA BEING TESTED BY CLEARING IT TO ZEROES ---
6501 ;
6502 ;
6503 ;
6504 ;
6505 024224 005037 024240              CLR      3$              ;INITIALIZE ADDRESS
6506 024230 012703 000020              MOV      #SLTO,R3        ;RAM ADDRESS OF BSELO WILL DO AS BYTE COUNT
6507 ;
6508 024234 004537 004334      2$:   JSR      R5,WRITEI    ;ZERO OUT LOC'S 0 --> 10 (HEX)
6509 024240 000000      3$:   .WORD   0            ; ADDRESS
6510 024242 000000              0              ; DATA
6511 024244 103003              BCC      .+10           ;IF NO ERROR, PROCEED
6512 024246 104460              ERROR     ;ELSE, REPORT IT
(3) 024246 104460              ESCAPE   TST              ; AND EXIT THIS TEST      TRAP      C$ERROR
6513 024250 104410              .WORD   L10040-        TRAP      C$ESCAPE
(3) 024252 000662              ;
6514 024254 005237 024240              INC      3$              ;POINT TO NEXT LOCATION

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CVDMAC0 DMV11 MCTRL DIAG #1
CVDMAC.P11 16-AUG-84 13:59

MACY11 30A(1052) 16-AUG-84 14:51 PAGE 60-2
TEST 10 -- DATA RAM MOVING INVERSIONS (LOC'S 0018-01FF HEX)

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6515 024260 077313          SOB      R3,2#          ;IF MORE TO BE DONE, DO IT
6516
6517          ; ZERO OUT THE REST OF RAM -- ALL LOC'S ABOVE THE SELECT REGISTERS
6518
6519 024262 013737 002440 024306  MOV      TMP0,6#          ;FIRST LOCATION OF TEST AREA (18 HEX)
6520 024270 013703 002474          MOV      TMPE,R3          ;START WITH "LAST ADDR. TO BE TESTED" AND CALC.
6521 024274 163703 002440          SUB      TMP0,R3          ;THE # OF LOCATIONS TO BE TESTED (800-18 (HEX))
6522 024300 005203          INC      R3              ; (THIS MAKES SURE WE GET EVERY SINGLE BYTE)
6523
6524 024302 004537 004334  4#:     JSR      R5,WRITEI          ;ZERO OUT THE ALL OF THE TEST AREA
6525 024306 000J00  6#:     .WORD   0
6526 024310 000000          0
6527 024312 103003          BCC     .+10              ;IF NO ERROR, PROCEED
6528 024314          ERROR          ;ELSE, REPORT IT
(3) 024314 104460          ESCAPE  TST              ; AND EXIT THIS TEST          TRAP    C#ERROR
6529 024316          ESCAPE  TST              ; AND EXIT THIS TEST          TRAP    C#ESCAPE
(3) 024316 104410          .WORD   L10040-.
(3) 024320 000614
6530 024322 005237 024306          INC      6#              ;POINT TO NEXT LOCATION
6531 024326 077313          SOB     R3,4#            ;IF MORE TO BE DONE, DO IT
6532 024330 105037 002450          CLRB   TMP4             ;THIS IS WHAT WE JUST SET ALL RAM LOCATIONS TO
6533
6534          ;----- BEGINNING OF OUTER LOOP -----
6535
6536 024334 005037 002472  8#:     CLR     TMPD          ;"SET FWD SEQUENCE" (DIRECTION FLAG)
6537 024340 005037 002466          CLR     TMPB          ;"SET BIT POSITION = 0" (BIT POINTER)
6538          ;"SET ADDRESS = 0" BUT OUR MEMORY STARTS @
6539          ; 18 HEX. SO:
6540 024344 005037 002464          CLR     TMPA          ; INITIALIZE ADDRESS POINTER
6541 024350 112737 0000C1 002451  MOVB    #BIT0,TMP4+1    ;INITIALIZE CURRENT & NEXT DATA BYTES
6542
6543          ;----- "READ CURRENT ADDRESS" -----
6544
6545 024356 000240  10#:    NOP
6546 024360 000240          NOP
6547 024362          BREAK          ;FIRST SEE IF A +C HAS BEEN STRUCK BY OPERATOR          TRAP    C#BRK
(3) 024362 104422
6548 024364 013737 002464 024376  MOV     TMPA,40#        ;NO. PUT ADDRESS INTO READ CALL
6549 024372 004537 004076          JSR     R5,READ        ;GO READ ONE LOCATION
6550 024376 000000  40#:    0          ;**** MODIFIED ABOVE **** (ADDRESS)
6551 024400 002452          TMP5   ;ADDRESS OF DATA READ
6552 024402 103003          BCC     .+10              ;IF NO ERROR, PROCEED
6553 024404          ERROR          ;ELSE, REPORT IT
(3) 024404 104460          ESCAPE  TST              ; AND EXIT THIS TEST          TRAP    C#ERROR
6554 024406          ESCAPE  TST              ; AND EXIT THIS TEST          TRAP    C#ESCAPE
(3) 024406 104410          .WORD   L10040 .
(3) 024410 000524
6555
6556          ;----- CHECK DATA (FIRST TIME) -----
6557
6558 024412 000240          NOP
6559 024414 000240          NOP
6560 024416 123737 002452 002450  CMPB    TMP5,TMP4      ;CHECK AGAINST EXPECTED DATA
6561 024424 001421          BEQ     12#            ;IF OK, PROCEED
6562 024426 032737 000006 002476  BIT     #BIT1+BIT2,TMPF ;NO, HAS AN ERROR ALREADY BEEN REPORTED?
6563 024434 001010          BNE     42#            ;YES, JUST PRINT DATA IF WANTED

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CYDMACO DMV11 MCTRL DIAG #1
CYDMAC.P11 16-AUG-84 13:59

MACY11 30A(1052) 16-AUG-84 14:51 PAGE 60-3
TEST 10 -- DATA RAM MOVING INVERSIONS (LOC'S 0018-01FF HEX)

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6564 024436 012737 000002 002476      MOV      @BIT1.TMPF      ;NO, SET FLAG FOR NEXT TIME
6565 024444      GEDF      EM48A,ERR48  ; AND PRINT COMPLETE ERROR MESSAGE
(2)                                     ; "DEVICE FATAL" ERROR # 25
(6) 024444 104455      TRAP      C1ERDF
(7) 024446 000031      .WORD    25
(7) 024450 016030      .WORD    EM48A
(7) 024452 007644      .WORD    ERR48
6566 024454 000405      BR        124          ;PROCEED WITH TESTING
6567 024456 012737 000002 002476 421:  MOV      @BIT1.TMPF      ;INDICATE A "PRE" WRITE ERROR
6568 024464 004737 010042      JSR      PC,ERR48.    ;USE ERROR HANDLER ONLY -- NO HEADER
6569
6570      ;----- WRITE NEW DATA -----
6571
6572 024470 013737 002464 024502 121:  MOV      TMPA,441      ;GET THIS ADDRESS FOR THIS WRITE CALL
6573 024476 004537 004322      JSR      R5,WRITE      ;WRITE THE UPDATED DATA IN THIS LOCATION
6574 024502 000000      441:  .WORD    0
6575 024504 002451      TMP4.1      ;NEW DATA ELEMENT RESIDES IN TMPD.1
6576 024506 103003      BCC      .+10         ;IF NO ERROR, PROCEED
6577 024510      ERROR      ;ELSE, REPORT IT
(3) 024510 104460      ESCAPE  TST          ; AND EXIT THIS TEST      TRAP      C1ERROR
6578 024512      .WORD    L10040-..    TRAP      C1ESCAPE
(3) 024512 104410      .WORD    L10040-..
(3) 024514 000420
6579
6580      ;----- RE-"READ CURRENT ADDRESS" -----
6581
6582 024516 013737 002464 024530      MOV      TMPA,461      ;GET ADDRESS FOR THIS READ
6583 024524 004537 004076      JSR      R5,READ      ;READ DATA JUST WRITTEN
6584 024530 000000      461:  .WORD    0
6585 024532 002452      TMP5      ;IF NO ERROR, PROCEED
6586 024534 103003      BCC      .+10         ;ELSE, REPORT IT
6587 024536      ERROR      ;ELSE, REPORT IT      TRAP      C1ERROR
(3) 024536 104460      ESCAPE  TST          ; AND EXIT THIS TEST
6588 024540      .WORD    L10040-..    TRAP      C1ESCAPE
(3) 024540 104410      .WORD    L10040-..
(3) 024542 000372
6589
6590      ;----- CHECK NEW DATA VALUE -----
6591
6592 024544 000240      NOP
6593 024546 000240      NOP
6594 024550 123737 002451 002452      CMPB    TMP4.1,TMP5   ;DID THE WRITE WORK CORRECTLY?
6595 024556 001421      BEQ      141          ;YES, PROCEED WITH TESTING
6596 024560 032737 000006 002476      BIT     @BIT1. BIT2.TMPF ;NO, WAS AN ERROR ALREADY BEEN REPORTED?
6597 024566 001010      BNE     481          ;YES, ONLY USE ERROR HANDLER - NO HEADER PLEASE
6598 024570 012737 000004 002476      MOV     @BIT2.TMPF      ;NO, INDICATE THAT WE'RE PRINTING A HEADER HERE
6599 024576      GEDF     EM48A,ERR48  ;REPORT RE-WRITE ERROR
(2)                                     ; "DEVICE FATAL" ERROR # 26
(6) 024576 104455      TRAP     C1ERDF
(7) 024600 000032      .WORD   26
(7) 024602 016030      .WORD   EM48A
(7) 024604 007644      .WORD   ERR48
6600 024606 000405      BR        141          ;PROCEED WITH TESTING
6601
6602 024610 012737 000004 002476 481:  MOV     @BIT2.TMPF      ;INDICATE A "POST" WRITE ERROR
6603 024616 004737 010042      JSR     PC,ERR48.    ;JUST REPORT DATA -- NO HEADER

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CVDMACO DMV11 MCTRL DIAG #1
CVDMAC.P11 16 AUG 84 13:59

MACY11 30A(1052) 16-AUG-84 14:51 PAGE 60.4
TEST 10 -- DATA RAM MOVING INVERSIONS (LOC'S 0018-01FF HEX)

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6604
6605      ;----- "FORWARD SEQUENCE ?" -----
6606
6607 024622 000240      141:  NOP
6608 024624 005737 002472      TST      TMPD      ;CHECK DIRECTION -- 0 = FORWARD
6609 024630 001056      BNE      261      ;REVERSE ----> PROCESS REVERSE ADDRESSING
6610                                     ;FORWARD
6611
6612      ;----- PROCESS FORWARD SEQUENCE -- "LAST ADDRESS" -----
6613
6614 024632 000240      161:  NOP
6615 024634 023737 002464 002474      CMP      TMPA,TMPE ;WAS THIS ADDR. THE LAST ONE?
6616 024642 001413      BEQ      181      ;YES, THEN CHECK THE BIT POSITION
6617 024644 005237 002464      501:  INC      TMPA      ;NO, THEN INCREMENT THE ADDR.
6618
6619      ; HERE WE MAKE SURE THE ADDRESS IS NOT WITHIN THE SELECT REGISTER AREA. IF IT
6620      ; IS, WE WON'T USE IT -- BUT GO BACK AND DECREMENT TO THE NEXT ADDRESS AGAIN.
6621
6622 024650 022737 000020 002464      511:  CMP      @SLTO,TMPA ;IS IT BELOW THE AREA WE CAN'T CHECK?
6623 024656 101237      BMI      101      ;YES, THEN WE CAN CHECK THIS LOCATION -- DO IT
6624 024660 023737 002440 002464      CMP      TMPD,TMPA ;IS IT BELOW THE BOTTOM ADDRESS?
6625 024666 101633      BLOS    101      ;NO, TEST THIS LOCATION
6626 024670 000765      BR      501      ;YES, PERFORM THE INCREMENT AGAIN
6627
6628      ;----- "FWD" SEQUENCE -- "LAST BIT POSITION?" -----
6629
6630 024672 000240      181:  NOP
6631 024674 005037 010036      CLR      ER48CT    ;RESET ERROR PRINT COUNT
6632 024700 023727 002466 000007      CMP      TMPB,#7   ;DID WE JUST PROCESS THE LAST BIT POSITION?
6633 024706 002016      BGE      201      ;YES, THEN WERE WE DOING 1'S OR 0'S
6634 024710 005237 002466      INC      TMPB      ;NO, THEN INCREMENT THE BIT COUNTER
6635 024714 005037 002464      241:  CLR      TMPA      ;RE-INITIALIZE ADDRESS POINTER
6636 024720 113737 002451 002450      571:  MOVB    TMP4+1,TMP4 ;USE "NEXT" DATA AS "CURRENT" DATA
6637 024726 013700 002470      MOV      TMPD,RO   ;USE ONE BIT OF THE "DATA" SWITCH TO
6638 024732 006000      ROR      RO
6639 024734 106137 002451      ROLB    TMP4+1    ;BUILD A NEW "NEXT" DATA VALUE
6640 024740 000137 024356      551:  JMP      101      ;      & TEST IT
6641
6642      ;----- "FWD" SEQUENCE -- "DATA = 1?" -----
6643
6644 024744 000240      201:  NOP
6645 024746 005037 002466      CLR      TMPB      ;POINT TO BIT 0,
6646 024752 005137 002470      COM     TMPD      ;SWITCH DATA. IF 1'S, DO 0'S; IF 0'S DO 1'S
6647 024756 001756      BEQ     241      ;IF WENT TO FORWARD, .....
6648 024760 005137 002472      COM     TMPD      ;SWITCH DIRECTION
6649 024764 000755      BR      571      ;ELSE, BACKWARD.....
6650
6651      ;----- "BKWD" SEQUENCE -- "ADDRESS = 0?" -----
6652
6653 024766 000240      261:  NOP
6654 024770 005737 002464      TST     TMPA      ;HAVE WE JUST PROCESSED THE FIRST ADDRESS?
6655 024774 001413      BEQ     281      ;YES, CHECK BIT POSITION
6656 024776 005337 002464      521:  DEC     TMPA      ;NO, DECREMENT THE ADDRESS
6657
6658      ; HERE WE MAKE SURE THE ADDRESS IS NOT WITHIN THE SELECT REGISTER AREA. IF IT
6659      ; IS, WE WON'T USE IT - BUT GO BACK AND DECREMENT TO THE NEXT ADDRESS AGAIN.

```

CVDMACO DMV11 MCTRL DIAG #1
CVDMAC.P11 16 AUG-84 13:59

MACY11 30A(1052) 16-AUG-84 14:51 PAGE 60-5
TEST 10 - DATA RAM MOVING INVERSIONS (LOC'S 0018-01FF HEX)

```

6660
6661 025002 022737 000020 002464 561:  CMP    @SLTO,TMPA    ;IS IT BELOW THE AREA WE CAN'T CHECK?
6662 025010 101031                BHI    581          ;YES, THEN WE CAN CHECK THIS LOCATION -- DO IT
6663 025012 023737 002440 002464  CMP    TMP0,TMPA    ;IS IT BELOW THE BOTTOM ADDRESS?
6664 025020 101425                BLOS   581          ;NO, TEST THIS LOCATION
6665 025022 000765                BR     521          ;YES, PERFORM THE DECREMENT AGAIN
6666
6667 ;----- "BKWD" SEQUENCE -- "LAST BIT POSITION" -----
6668
6669 025024 000240                281:  NOP
6670 025026 005037 010036  CLR    ER48CT      ;RESET ERROR PRINT COUNT
6671 025032 022737 000007 002466  CMP    @7,TMPB     ;LAST BIT POSITION?
6672 025040 003417                BLE    301          ;YES, CHECK DATA
6673 025042 005237 002466  INC    TMPB        ;NO, INCREMENT BIT POINTER,
6674 025046 113737 002451 002450 291:  MOVB   TMP4+1,TMP4 ;USE "NEXT" DATA AS "CURRENT" DATA
6675 025054 013700 002470  MOV    TMPC,RO     ;USE ONE BIT OF THE "DATA" SWITCH TO
6676 025060 006000                ROR    RO
6677 025062 106137 002451  ROLB   TMP4+1     ;BUILD A NEW "NEXT" DATA VALUE
6678 025066 013737 002474 002464  MOV    TMPE,TMPA   ; POINT TO LAST ADDRESS AGAIN,
6679 025074 000137 024356 581:  JMP    101         ; & TEST IT
6680
6681 ;----- "BKWD" SEQUENCE -- "DATA = 1?" -----
6682
6683 025100 000240                301:  NOP
6684 025102 005137 002470  COM    TMPC        ;SWITCH DATA TYPE
6685 025106 001003                BNE    321          ;NOW 1'S -- CHECK ADDRESS'S "LSB"
6686 025110 005037 002466  CLR    TMPB        ;NOW 0'S -- POINT TO BIT POSITION 0 AGAIN
6687 025114 000754                BR     291          ; RESET ADDRESS & TEST IT
6688
6689
6690 ;----- "STOP" -----
6691
6692 025116 000240                321:  NOP
6693 025120 004537 004334 381:  JSR    RS,WRITEI  ;CLEAR RAM LOCATION 00B3 (HEX) & EXIT
6694 025124 000173                173          ; (THIS CONVERTS TO 00B3 HEX.)
6695 025126 000000                0           ; (THIS WE HOPE, WILL CLEAR IT)
6696 025130 103001                BCC    .+4         ;IF NO ERROR, PROCEED
6697 025132                ERROR        ;ELSE, REPORT IT
(3) 025132 104460                TRAP    C#ERROR
6698 025134                ENDTST         ;THATS ALL FOLKS!
(3) 025134                L10040:
(3) 025134 104401                TRAP    C#ETST
6699
6700 ;-----
.EVEN
    
```

CVDMACO DMV11 MCTRL DIAG #1
 CVDMAC.P11 16-AUG-84 13:59

MACY11 30A(1052) 16-AUG-84 14:51 PAGE 61
 TEST 11 -- VIA REGISTER ADDRESSING

6726
 (2)
 (2)
 (2)
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 (3)
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 (3)
 (2)
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 (2)
 (5)

.SBTTL TEST 11 -- VIA REGISTER ADDRESSING

```

;.....
;*
;*   TEST 11 -- VIA REGISTER ADDRESSING
;*
;*   VIA -- "6522 VERSATILE INTERFACE ADAPTER"
;*
;* A MASTER CLEAR IS PERFORMED, NEXT, TIMER 1 LATCHES
;* ARE CLEARED BY WRITING 000 INTO VIA REGS 6 & 7
;* THEN, 377 IS LOADED INTO DATA DIRECTION REGISTERS A, B (DDRA, DDRB) TO
;* SET THE PORT PINS FOR OUTPUT MODE.
;* THEN, A DIFFERENT BYTE OF DATA PATTERN C IS WRITTEN INTO EACH VIA
;* LOCATION, (EXCEPT THE TIMER REGS 4,5,10,11 OCT) AND AFTER EACH IS WRITTEN,
;* ALL VIA REGS (EXCEPT 4,5,10,11) ARE READ AND COMPARED TO EXPECTED
;* CONTENTS. NOTE THAT SOME VIA REGS ARE ALTERED BY THE LOADING OF OTHERS,
;* AND THE PROGRAM TAKES THIS INTO ACCOUNT, IN THE SETTING OF EXPECTED REG
;* VALUES. THE DATA PATTERN IS CHOSEN TO AVOID ACTIVATING THE VIA CHIP (SUCH
;* AS GENERATING OUTPUTS ON CA1, CA2, CB1, CB2, OR CAUSING 6502
;* INTERRUPT REQUESTS).
;* DATA PATTERN C (WITH VIA REGS AND THEIR DATA SHOWN IN OCTAL) :
;* REGISTER = 00 01 02 03 06 07 12 13 14 15 16 17
;* DATA = 100, 101, 377, 377, 106, 107, 112, 040, 042, 000, 200, 117
;* NEXT, 000 IS LOADED INTO DDRA, AND DDRB IS READ AND COMPARED TO 377. THEN,
;* THE 377 IS LOADED BACK INTO DDRA, AND DDRA IS LOADED WITH 000 AND DDRA IS
;* READ AND COMPARED TO 377.
;*
;.....

```

6727 025136 004737 003774
 6728 025142 103002
 6729 025144
 (3) 025144 104460
 6730 025146 000546
 6731
 6732 025150 004537 004334
 6733 025154 120006
 6734 025156 000000
 6735 025160 103002
 6736 025162
 (3) 025162 104460
 6737 025164 000537
 6738 025166 004537 004334
 6739 025172 120007
 6740 025174 000000
 6741 025176 103002
 6742 025200
 (3) 025200 104460
 6743 025202 000530
 6744
 6745
 6746
 6747 025204 013703 002556
 6748 025210 012702 002560

```

;
;   BGNTST
;
;   T11::
;   JSR   PC,MSTCLR   ;INIT DMV AND START UP THE MAINT. LOOP
;   BCC   11         ;IF NO ERROR, PROCEED
;   ERROR ;ELSE, REPORT IT AND
;
;   BR    254        ;   EXIT THIS CLEAR
;
;   11:   JSR   R5,WRITEI ;CLEAR THE TIMER 1 LATCHES
;   TILL
;   0
;   BCC   304        ;IF AN ERROR OCCURED,
;   ERROR ;REPORT IT &
;
;   BR    254        ;   EXIT
;
;   304:  JSR   R5,WRITEI
;   TILH
;   0
;   BCC   314        ;IF AN ERROR OCCURED,
;   ERROR ;REPORT IT &
;
;   BR    254        ;   EXIT
;
;   ; LOAD UP THE VIA'S REGISTERS WITH THE FIXED DATA STREAM OF PATTERN "C"
;
;   314:  MOV   PATC,R3   ;GET COUNT OF # OF WRITES TO BE PERFORMED
;   MOV   #PATC+2,R2   ;SETUP POINTER TO REGISTER ADDRESSES & DATA

```

CYDMACO DMV11 MCTRL DIAG #1
CYDMAC.P11 16-AUG-84 13:59

MACY11 30A(1052) 16-AUG-84 14:51 PAGE 61-1
TEST 11 -- VIA REGISTER ADDRESSING

```

6749
6750 025214 012737 120000 025236 24:  MOV  #0RB,4# ;ADDRESS OF FIRST REGISTER
6751 025222 152237 025236          BISB (R2)+,4# ;OR IN REGISTER # TO BUILD REGISTER ADDRESS
6752 025226 112237 025240          MOVB (R2)+,5# ;THIS IS THE DATA WE WANT TO WRITE
6753
6754 025232 004537 004534          JSR  R5,WRITEI ;WRITE ONE REGISTER WITH THE DESIRED DATA
6755 025236 000000          44:  0 ;*** MODIFIED FROM ABOVE *** DESTINATION ADDR.
6756 025240 000000          54:  0 ;*** MODIFIED FROM ABOVE *** DATA
6757
6758 025242 103002          BCC  32# ;IF AN ERROR OCCURED,
6759 025244          ERROR ;REPORT IT &
(3) 025244 104460          TRAP  C#ERROR
6760 025246 000506          BR   25# ; EXIT
6761 025250 077317          324: SOB  R3,2# ;LOOP UNTIL THE WHOLE TABLE HAS BEEN WRITTEN
6762
6763          ; READ BACK THE VIA'S REGISTERS
6764
6765 025252 012703 000020          MOV  #PATCH-PATCH,R3 ;GET COUNT OF # OF REG'S TO BE READ
6766 025256 012737 120000 025276  MOV  #0RB,7# ;ADDRESS OF FIRST REGISTER
6767 025264 012737 003122 025300  MOV  #BT1,8# ;DESTINATION BUFFER AREA
6768
6769 025272 004537 004076          64:  JSR  R5,READ ;READ ONE REGISTER
6770 025276 000000          74:  0 ;*** MODIFIED FROM ABOVE *** SOURCE ADDRESS
6771 025300 000000          84:  0 ;*** MODIFIED IN LINE *** DESTINATION ADDRESS
6772 025302 103002          BCC  33# ;IF AN ERROR OCCURED,
6773 025304          ERROR ;REPORT IT &
(3) 025304 104460          TRAP  C#ERROR
6774 025306 000466          BR   25# ; EXIT
6775
6776 025310 005237 025276          334: INC  7# ;POINT TO NEXT REGISTER
6777 025314 005237 025300          INC  8# ;POINT TO NEXT BUFFER LOCATION
6778 025320 077314          SOB  R3,6# ;LOOP UNTIL ALL REGISTERS HAVE BEEN READ
6779
6780          ; CHECK THE VALUES READ AGAINST THE EXPECTED VALUES
6781
6782 025322 012701 002604          MOV  #PATCH,R1 ;POINTER TO EXPECTED DATA VALUES
6783 025326 012702 003122          MOV  #BT1,R2 ;POINTER TO DATA READ
6784 025332 012704 003206          MOV  #BT2,R4 ;POINTER TO "XOR" VALUES
6785 025336 012705 002624          MOV  #PATCH,R5 ;POINTER TO "MASK" VALUES
6786 025342 012703 000010          MOV  #8,R3 ;NUMBER OF WORDS TO BE PROCESSED
6787 025346 005037 002332          CLR  ERRFLG ;RESET THE ERROR FLAG
6788
6789 025352 012114          94:  MOV  (R1)+,(R4) ;GET EXPECTED VALUE (2 BYTES AT A TIME)
6790 025354 012200          MOV  (R2)+,R0 ;GET ACTUAL VALUE AND SETUP FOR "XOR"
6791 025356 074014          XOR  R0,(R4) ;DEVELOPE "XOR"
6792 025360 042524          BIC  (R5)+,(R4)+ ;CLEAR THOSE BITS WE DON'T CARE ABOUT
6793 025362 001402          BEQ  10# ;IF NO ERROR, SKIP NEXT INSTRUCTION
6794 025364 005237 002332          INC  ERRFLG ;IF ERROR, SET FLAG TO SAY SO!
6795 025370 077310          104: SOB  R3,9# ;LOOP UNTIL ALL VALUES CHECKED
6796
6797 025372 005737 002332          TST  ERRFLG ;WAS THERE AN ERROR DETECTED?
6798 025376 001406          BEQ  12# ;NO, PROCEED WITH TESTING
6799 025400          GEDF EM20,ERR6 ;YES, REPORT A VIA REGISTER ERROR
(2)          ; "DEVICE FATAL" ERROR # 27
(6) 025400 104455          TRAP  C#ERDF
(7) 025402 000033          .WORD 27

```

CVDMACO DMV11 MCTRL DIAG #1
CVDMAC.P11 16-AUG-84 13:59

MACY11 30A(1052) 16-AUG-84 14:51 PAGE 61-2
TEST 11 -- VIA REGISTER ADDRESSING

```

(7) 025404 015255 .WORD EM20
(7) 025406 005662 .WORD ERR6
6800 025410 ESCAPE TST ;EXIT FROM THIS TEST -- LOOP IF REQUESTED
(3) 025410 104410 TRAP C$ESCAPE
(3) 025412 000344 .WORD L10041 .
6801
6802
6803
6804 025414 004537 004210 124: JSR R5,READI ;GET THE CURRENT VALUE OF THE VIA'S
6805 025420 120003 DDRA ; "DDRA" REGISTER FOR LATER ERROR CHECKING
6806 025422 000000 154: 0
6807 025424 103002 BCC 344 ;IF AN ERROR OCCURED,
6808 025426 ERROR ;REPORT IT &
(3) 025426 104460 TRAP C$ERROR
6809 025430 000415 BR 254 ; EXIT
6810 025432 004537 004334 344: JSR R5,WRITEI ;LOAD DORB WITH 000
6811 025436 120002 DORB
6812 025440 000000 0
6813 025442 103002 BCC 354 ;IF AN ERROR OCCURED,
6814 025444 ERROR ;REPORT IT &
(3) 025444 104460 TRAP C$ERROR
6815 025446 000406 BR 254 ; EXIT
6816 025450 004537 004076 354: JSR R5,READ ;READ IT BACK AND CHECK IT
6817 025454 120002 DORB
6818 025456 002312 BDATA
6819 025460 103002 BCC 364 ;IF AN ERROR OCCURED,
6820 025462 ERROR ;REPORT IT &
(3) 025462 104460 TRAP C$ERROR
6821 025464 000534 BR 244 ; EXIT
6822 025466 105737 002312 364: TSTB BDATA ;THIS SHOULD NOW BE ZERO
6823 025472 001413 BEQ 144 ;IT IS, PRECEDE TESTING
6824 025474 105037 002310 CLR B GDATA ;IT ISN'T! SETUP FOR & REPORT ERROR
6825 025500 012737 000002 002334 MOV #2,REGNUM ;IDENTIFY THE DORB REG.
6826 025506 GEDF EM21,ERR7 ; REPORT ERROR
(2) ; "DEVICE FATAL" ERROR # 28
(6) 025506 104455 TRAP C$ERDF
(7) 025510 000034 .WORD 28
(7) 025512 015454 .WORD EM21
(7) 025514 006624 .WORD ERR7
6827 025516 ESCAPE TST ;EXIT FROM THIS TEST -- LOOP IF REQUESTED
(3) 025516 104410 TRAP C$ESCAPE
(3) 025520 000236 .WORD L10041..
6828
6829 025522 113737 025422 002310 144: MOVB 154,GDATA ;THIS IS WHAT WE EXPECT TO READ NOW
6830 025530 004537 004076 JSR R5,READ ;READ BACK DDRA -- IT SHOULD BE = 366
6831 025534 120003 DDRA
6832 025536 002312 BDATA
6833 025540 103002 BCC 374 ;IF AN ERROR OCCURED,
6834 025542 ERROR ;REPORT IT &
(3) 025542 104460 TRAP C$ERROR
6835 025544 000504 BR 244 ; EXIT
6836 025546 123737 002310 002312 374: CMPB GDATA,BDATA ;IS IT REALLY A 377?
6837 025554 001411 BEQ 164 ;YES, PROCEED WITH TESTING
6838 025556 012737 000003 002334 MOV #3,REGNUM ;IDENTIFY THE DDRA REG.
6839 025564 GEDF EM22,ERR7 ;NO, REPORT ERROR
(2) ; "DEVICE FATAL" ERROR # 29

```

CVDMACO DMV11 MCTRL DIAG #1
CVDMAC.P11 16-AUG-84 13:59

MACY11 30A(1052) 16-AUG-84 14:51 PAGE 61-3
TEST 11 -- VIA REGISTER ADDRESSING

```

(6) 025564 104455 TRAP C$ERDF
(7) 025566 000035 .WORD 29
(7) 025570 015511 .WORD EM22
(7) 025572 006624 .WORD ERR7
6840 025574 104410 ESCAPE TST ;EXIT FROM THIS TEST -- LOOP IF REQUESTED
(3) 025574 104410 TRAP C$E. CAPE
(3) 025576 000160 .WORD L10041-.

6841
6842 025600 004537 004334 16: JSR R5,WRITEI ;RE-LOAD DDRB WITH 377
6843 025604 120002 DDRB
6844 025606 177777 17: -1
6845 025610 103002 BCC 38: ;IF AN ERROR OCCURED,
6846 025612 104460 ERROR ;REPORT IT &
(3) 025612 104460 TRAP C$ERROR
6847 025614 000460 BR 24: ; EXIT
6848 025616 004537 004334 38: JSR R5,WRITEI ;AND NOW CLEAR DDRA TO ZEROS
6849 025622 120003 DDRA
6850 025624 000000 0
6851 025626 103002 BCC 39: ;IF AN ERROR OCCURED,
6852 025630 104460 ERROR ;REPORT IT &
(3) 025630 104460 TRAP C$ERPOR
6853 025632 000451 BR 24: ; EXIT
6854
6855 025634 004537 004076 39: JSR R5,READ ;NOW, DID DDRA GO TO ZEROES
6856 025640 120003 DDRA
6857 025642 002312 BDATA
6858 025644 105737 002312 TST BDATA
6859 025650 001413 BEQ 18: ;YES, BUT WHAT ABOUT DDRB?
6860 025652 105037 002310 CLR BDATA
6861 025656 012737 000003 002334 MOV GDATA
6862 025664 012737 000003 002334 MOV #3,REGNUM
GEDF EM21,ERR7 ;IDENTIFY THE DDRA REG.
; REPORT THE ERROR
; "DEVICE FATAL" ERROR # 30
(2)
(6) 025664 104455 TRAP C$ERDF
(7) 025666 000036 .WORD 30
(7) 025670 015454 .WORD EM21
(7) 025672 006624 .WORD ERR7
6863 025674 104410 ESCAPE TST ;EXIT FROM THIS TEST -- LOOP IF REQUESTED
(3) 025674 104410 TRAP C$ESCAPE
(3) 025676 000060 .WORD L10041-.

6864
6865 025700 004537 004076 18: JSR R5,READ ;WHAT ABOUT DDRB -- IT SHOULD BE 377 NOW
6866 025704 120002 DDRB
6867 025706 002312 BDATA
6868 025710 103002 BCC 40: ;IF AN ERROR OCCURED,
6869 025712 104460 ERROR ;REPORT IT &
(3) 025712 104460 TRAP C$ERROR
6870 025714 000420 BR 24: ; EXIT
6871 025716 123737 002312 025606 40: CMPB BDATA,17: ;IS IT?
6872 025724 001414 BEQ 24: ;YES, EXIT TEST
6873 025726 113737 025606 002310 MOV BDATA,17:GDATA ;NO, SETUP FOR AND
6874 025734 012737 000002 002334 MOV #2,REGNUM ;IDENTIFY THE DDRB REG.
6875 025742 012737 000002 002334 MOV #2,REGNUM ;REPORT ERROR
GEDF EM22A,ERR7 ; "DEVICE FATAL" ERROR # 31
(2)
(6) 025742 104455 TRAP C$ERDF
(7) 025744 000037 .WORD 31
(7) 025746 015544 .WORD EM22A

```


CVDMACO DMV11 MCTRL DIAG #1
CVDMAC.P11 16-AUG-84 13:59

MACY11 30A(1052) 16-AUG-84 14:51 PAGE 61-4
TEST 11 -- VIA REGISTER ADDRESSING

(7) 025750 006624
6876 025752
(3) 025752 104410
(3) 025754 000002
6877
6878 025756
(3) 025756
(3) 025756 104401

ESCAPE TST

;EXIT FROM THIS TEST -- LOOP IF

.WORD ERR7
REQUESTED
TRAP C\$ESCAPE
.WORD L10041-

244: ENDTST

L10041:

TRAP C\$ETST

CVDMACO DMV11 MCTRL DIAG #1
CVDMAC.P11 16-AUG-84 13:59

MACY11 30A(1052) 16-AUG-84 14:51 PAGE 62
TEST 12 -- VIA'S DDRB DATA READ/WRITE

.SBTTL TEST 12 -- VIA'S DDRB DATA READ/WRITE

6890
(2)
(2)
(2)
(2)
(2)
(3)
(3)
(3)
(3)
(3)
(3)
(2)
(2)
(2)
(2)
(5) 025760
6891 025760 004737 003774
6892 025764 103003
6893 025766
(3) 025766 104460
6894 025770
(3) 025770 104410
(3) 025772 000046
6895
6896 025774 012701 002526
6897 026000 012103
6898
6899 026002
6900 026002
(3) 026002
(3) 026002 104402
6901
6902 026004 111137 002306
6903 026010 112137 002310
6904 026014 012700 120002
6905 026020 004737 005046
6906 026024 103003
6907 026026
(3) 026026 104460
6908 026030
(3) 026030 104410
(3) 026032 000006
6909
6910 026034
(3) 026034
(3) 026034 104403
6911
6912 026036 077317
6913
6914
6915 026040
(3) 026040
(3) 026040 104401

```
*****  
;*  
;* TEST 12 -- VIA'S DDRB DATA READ/WRITE  
;*  
;* DDRB == "DATA DIRECTION REGISTER B"  
;* FIRST, A MASTER CLEAR IS PERFORMED, THEN :  
;* READ/WRITE BITS 0-7 OF VIA DATA DIRECTION REGISTER B ARE TESTED BY WRITING,  
;* READING, AND COMPARING EACH BYTE OF DATA PATTERN B.  
;* DATA PATTERN B = 125, 252, 000, 377, 001, 002, 004, 010, 020, 040, 100,  
;* 200, 376, 375, 373, 367, 357, 337, 277, 177, 000  
;*  
;-----  
;  
; BGNTST  
; T12::  
; JSR PC,MSTCLR ;INIT DMV & START UP THE MAINT. LOOP  
; BCC 30$ ;IF AN ERROR OCCURED,  
; ERROR ;REPORT IT &  
; TRAP C$ERROR  
; ESCAPE TST ; EXIT  
; TRAP C$ESCAPE  
; .WORD L10042-.  
30$: MOV #PATB,R1 ;POINT TO PATTERN TABLE  
; MOV (R1)+,R3 ;GET # OF ENTRIES IN TABLE  
T12.LP: BGNSUB ;THE SUBTEST ONLY TESTS THE ONE PATTERN  
; T12.1:  
; TRAP C$BSUB  
; MOVB (R1),TDATA ;SETUP TEST DATA BYTE FOR "STREG"  
; MOVB (R1)+,GDATA ;SETUP EXPECTED DATA BYTE FOR "STREG"  
; MOV #DDRBR,R0 ;SPECIFY THE REGISTER BEING TESTED  
; JSR PC,STREG ;PERFORM STATIC TEST OF THE SPECIFIED REGISTER  
; BCC 10$ ;WAS AN ERROR FOUND?  
; ERROR ;YES, REPORT IT AND  
; TRAP C$ERROR  
; ESCAPE TST ; EXIT FROM THE TEST. "CKLOOP" IS IMPLIED  
; TRAP C$ESCAPE  
; .WORD L10042-.  
10$: ENDSUB  
; L10043:  
; TRAP C$ESUB  
; SOB R3,T12.LP ;IF THERE IS IN FACT MORE DATA, LOOP BACK TO  
; ;TEST IT. ELSE, FALL OUT OF LOOP AND TEST  
; ENDTST  
; L10042:  
; TRAP C$ETST
```

CVDMACO DMV11 MCTRL DIAG #1
CVDMAC.P11 16-AUG-84 13:59

MACY11 30A(1052) 16-AUG-84 14:51 PAGE 63
TEST 13 -- VIA'S DDRA DATA READ/WRITE

6928
(2)
(2)
(2)
(2)
(2)
(3)
(3)
(3)
(3)
(3)
(3)
(3)
(3)
(2)
(2)
(2)
(2)
(5) 026042
6929 026042 004737 003774
6930 026046 103003
6931 026050
(3) 026050 104460
6932 026052
(3) 026052 104410
(3) 026054 000046
6933
6934 026056 012701 002526
6935 026062 012103
6936
6937 026064
6938 026064
(3) 026064
(3) 026064 104402
6939
6940 026066 111137 002306
6941 026072 112137 002310
6942 026076 012700 120003
6943 026102 004737 005046
6944 026106 103003
6945 026110
(3) 026110 104460
6946 026112
(3) 026112 104410
(3) 026114 000006
6947
6948 026116
(3) 026116
(3) 026116 104403
6949
6950 026120 077317
6951
6952
6953 026122
(3) 026122
(3) 026122 104401

```
.SBTTL TEST 13 -- VIA'S DDRA DATA READ/WRITE
;*****
;*
;* TEST 13 -- VIA'S DDRA DATA READ/WRITE
;*
;* DDRA == "DATA DIRECTION REGISTER A"
;*
;* FIRST, A MASTER CLEAR IS PERFORMED. THEN :
;* READ/WRITE BITS 0-7 OF VIA DATA DIRECTION REGISTER A ARE TESTED BY WRITING,
;* READING, AND COMPARING EACH BYTE OF DATA PATTERN B.
;* DATA PATTERN B = 125, 252, 000, 377, 001, 002, 004, 010, 020, 040, 100,
;* 200, 376, 375, 373, 367, 357, 337, 277, 177, 000
;*
;-----
;
; BGNTST
;
; T13::
; INIT DMV & START UP THE MAINT. LOOP
; IF AN ERROR OCCURED,
; REPORT IT &
; TRAP C$ERROR
; EXIT
; TRAP C$ESCAPE
; .WORD L10044-.
;
; 304: MOV #PATB,R1 ;POINT TO PATTERN TABLE
; MOV (R1)+,R3 ;GET # OF ENTRIES IN TABLE
;
; T13.LP:
; BGNSUB ;THE SUBTEST ONLY TESTS THE ONE PATTERN
; T13.1:
; TRAP C$BSUB
;
; MOVB (R1),TDATA ;SETUP TEST DATA BYTE FOR "STREG"
; MOVB (R1)+,GDATA ;SETUP EXPECTED DATA BYTE FOR "STREG"
; MOV #DDRA,R0 ;SPECIFY THE REGISTER BEING TESTED
; JSR PC,STREG ;PERFORM STATIC TEST OF THE SPECIFIED REGISTER
; BCC 104 ;WAS AN ERROR FOUND?
; ERROR ;YES, REPORT IT AND
; TRAP C$ERROR
; ESCAPE TST ; EXIT FROM THE TEST. "CKLOOP" IS IMPLIED
; TRAP C$ESCAPE
; .WORD L10044-.
;
; 104: ENDSUB
;
; L10045:
; TRAP C$ESUB
;
; SOB R3,T13.LP ;IF THERE IS IN FACT MORE DATA, LOOP BACK TO
; TEST IT. ELSE, FALL OUT OF LOOP AND TEST
;
; ENDTST
;
; L10044:
; TRAP C$ETST
```

CVDMACO DMV11 MCTRL DIAG #1
CVDMAC.P11 16-AUG-84 13:59

MACY11 30A(1052) 16-AUG-84 14:51 PAGE 64
TEST 14 -- VIA'S ORB DATA READ/WRITE

6967
(2)
(2)
(2)
(2)
(2)
(3)
(3)
(3)
(3)
(3)
(3)
(3)
(3)
(2)
(2)
(2)
(2)
(5)
6968
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(3)
(3)
6985
6986
6987
6988
6989
6990
6991
(3)
6992
(3)
(3)
6993

026124 004737 003774
026130 103003
026132 104460
026134 104410
026136 000066
026140 004537 004334
026144 120002
026146 177777
026150 103003
026152 104460
026154 104410
026156 000046
026160 012701 002526
026164 012103
026166
026166 104402
026170 111137 002306
026174 112137 002310
026200 012700 120000
026204 004737 005046
026210 103003
026212 104460
026214 104410
026216 000006

```
.SBTTL TEST 14 -- VIA'S ORB DATA READ/WRITE
;*****
;*
;* TEST 14 -- VIA'S ORB DATA READ/WRITE
;*
;* ORB == "OUTPUT REGISTER PORT B"
;*
;* FIRST, A MASTER CLEAR IS PERFORMED. NEXT, 377 IS LOADED INTO DATA
;* DIR. REG. B (DORB) TO SET ALL B PORT PINS FOR OUTPUT MODE. THEN
;* READ/WRITE BITS 0-7 OF VIA OUTPUT REG. PORT B ARE TESTED BY WRITING,
;* READING, AND COMPARING EACH BYTE OF DATA PATTERN B.
;* DATA PATTERN B = 125, 252, 000, 377, 001, 002, 004, 010, 020, 040, 100,
;* 200, 376, 375, 373, 367, 357, 337, 277, 177, 000
;*
;*****
;
; BGNTST
;
; T14.:
; JSR PC.MSTCLR ;INIT DMV & START UP THE MAINT. LOOP
; BCC 304 ;IF AN ERROR OCCURED.
; ERROR ;REPORT IT &
; TRAP C#ERROR
; ESCAPE TST ; EXIT
; TRAP C#ESCAPE
; .WORD L10046-.
;
; 304: JSR R5.WRITEI ;INITIALIZE PORT B FOR I/O
; DORB
; -1
; BCC 314 ;IF AN ERROR OCCURED.
; ERROR ;REPORT IT &
; TRAP C#ERROR
; ESCAPE TST ; EXIT
; TRAP C#ESCAPE
; .WORD L10046-.
;
; 314: MOV #PATB,R1 ;POINT TO PATTERN TABLE
; MOV (R1)+,R3 ;GET # OF ENTRIES IN TABLE
;
; T14.LP:
; BGNSUB ;THE SUBTEST ONLY TESTS THE ONE PATTERN
; T14.1:
; TRAP C#BSUB
;
; MOVB (R1),TDATA ;SETUP TEST DATA BYTE FOR "STREG"
; MOVB (R1)+,GDATA ;SETUP EXPECTED DATA BYTE FOR "STREG"
; MOV #ORB,R0 ;SPECIFY THE REGISTER BEING TESTED
; JSR PC,STREG ;PERFORM STATIC TEST OF THE SPECIFIED REGISTER
; BCC 104 ;WAS AN ERROR FOUND?
; ERROR ;YES, REPORT IT AND
; TRAP C#ERROR
; ESCAPE TST ; EXIT FROM THE TEST. "CKLOOP" IS IMPLIED
; TRAP C#ESCAPE
; .WORD L10046-.
```

CVDMACO DMV11 MCTRL DIAG #1
CVDMAC.P11 16-AUG-84 13:59

MACY11 30A(1052) 16-AUG-84 14:51 PAGE 64-1
TEST 14 -- VIA'S ORB DATA READ/WRITE

6994 026220
(3) 026220
(3) 026220 104403
6995
6996 026222 077317
6997
6998
6999 026224
(3) 026224
(3) 026224 104401

104: ENDSUB

L10047: TRAP C#ESUB

S08 R3.T14.LP

;IF THERE IS IN FACT MORE DATA, LOOP BACK TO
;TEST IT. ELSE, FALL OUT OF LOOP AND TEST

ENDTST

L10046: TRAP C#ETST

CVDNACO DMV11 MCTRL DIAG #1
CVDNAC.P11 16-AUG-84 13:59

MACY11 30A(1052) 16-AUG-84 14:51 PAGE 65-1
TEST 15 -- VIA'S T1 DATA READ/WRITE

(3)
(3)
(3)
(3)
(3)
(2)
(2)
(2)
(2)
(5) 026226
7061
7062
7063
7064 026226 004737 003774
7065 026232 103003
7066 026234
(3) 026234 104460
7067 026236
(3) 026236 104410
(3) 026240 001030
7068 026242
7069
7070
7071
7072 026242 004537 004672
7073 026246 000000
7074 026250 000000
7075 026252 103003
7076 026254
(3) 026254 104460
7077 026256
(3) 026256 104410
(3) 026260 001010
7078
7079
7080
7081
7082
7083
7084
7085 026262
(3) 026262
(3) 026262 104402
7086 026264 012701 002526
7087 026270 012103
7088
7089 026272
7090 026272 112137 002306
7091 026276 013737 002306 002310
7092
7093 026304
(3) 026304 104404
7094
7095
7096
7097 026306 004537 004322

; * D. T1L-L(ADR 06) IS READ AND COMPARED TO 000.
; * E. STEPS B-D ARE REPEATED USING EACH BYTE OF DATA PATTERN B.
; *
; * DATA PATTERN B = 125, 252, 000, 377, 001, 002, 004, 010, 020, 040, 100,
; * 200, 376, 375, 373, 367, 357, 337, 277, 177, 000
; *
;
; BGNTST
; T15::
; * * * * * STEP A * * * * *
JSR PC,MSTCLR ;INIT DMV & START UP M-LOOP
BCC 10 ;IF NO ERRORS, PROCEED
ERRCP ;ELSE, REPORT ERROR &
; TRAP C1ERROR
ESC/PE TST ; GET OUT OF THE TEST
; TRAP C1ESCAPE
; .WORD L10050-.
10:
; * * * * * STEP B * * * * *
JSR R5,INITT1 ;INITIALIZE THE TIMER'S REGISTERS
0 ; WITH ZEROES
.WORD 0 ; 00 --> ACR6 & ACR7 AND DISABLE INTERRUPTS
BCC .+10 ;IF NO ERROR, PROCEED
ERROR ;ELSE, REPORT IT
; TRAP C1ERROR
ESCAPE TST ; AND EXIT THIS TEST
; TRAP C1ESCAPE
; .WORD L10050-.
; WE WANT THE LEAST ACTIVE OPERATING MODE FOR THIS TIMER WHILE WE ARE TESTING
; IT. THE MODE WE'RE USING HERE IS DOCUMENTED THUSLY: "GENERATE A SINGLE
; TIME-OUT INTERRUPT EACH TIME T1 IS LOADED. PB7 DISABLED."
; AS AN ADDED PRECAUTION, WE ARE DISABLING INTERRUPTS BY CLEARING THE "T1" FLAG
; WITHIN "IER".
BGNSUB ;BEGIN THE FIRST SUBTEST
; T15.1:
; TRAP C1BSUB
MOV @PATB,R1 ;POINT TO THE APPROPRIATE PATTERN TABLE
MOV (R1),R3 ;EXTRACT THE BYTE COUNT FROM THE TABLE
T16.LP:
MOVB (R1),TDATA ;GET ONE BYTE OF THE TEST DATA
MOV TDATA,GDATA ;THE TEST DATA IS NORMALLY THE GOOD DATA TOO
BGNSEG
; TRAP C1BSEG
; * * * * * STEP C * * * * *
JSR R5,WRITE ;LOAD T1L-L(ALDR 04)

CVDMACO DMV11 MCTRL DIAG #1
CVDMAC.P11 16-AUG-84 13:59

MACY11 30A(1052) 16-AUG-84 14:51 PAGE 65 2
TEST 15 -- VIA'S T1 DATA READ/WRITE

```

7098 026312 120004          TICL
7099 026314 002306          TDATA          ;THE TEST DATA FROM "TDATA"
7100
7101
7102          ; ---- STEP D ----
7103
7104 026316 004537 004076      JSR      R5,READ          ;READ T1L-L(ADDR 06)
7105 026322 120006          TILL
7106 026324 002312          BDATA
7107 026326 123737 002310 002312  CMPB     GDATA,BDATA      ;AND CHECK IT
7108 026334 001407          BEQ      2#              ;IF OK, PROCEED
7109 026336 012737 000006 002334  MOV      #6,REGNUM        ;IDENTIFY THE FAILING REGISTER &
7110 026344          GEDF     EM20,ERR7      ; REPORT FAILURE
          ;          "DEVICE FATAL" ERROR # 32
          ;          TRAP      C1ERDF
          ;          .WORD    32
          ;          .WORD    EM20
          ;          .WORD    ERR7
(2)
(6) 026344 104455
(7) 026346 000040
(7) 026350 015255
(7) 026352 006624
7111
7112          ; ---- STEP E ----
7113
7114 026354 004537 004076      2#:     JSR      R5,READ          ;READ TIC-L(ADDR 04)
7115 026360 120004          TICL
7116 026362 002312          BDATA
7117 026364 123737 002310 002312  CMPB     GDATA,BDATA      ;AND CHECK IT. SEEING AS THE TIMER IS RUNNING,
7118 026372 001017          BNE     4#              ;THIS MUST NOT EQUAL THE SET VALUE!
7119 026374 004537 004076      JSR      R5,READ          ;IF IT IS, MAYBE WE JUST READ IT AT THE WRONG
7120 026400 120004          TICL          ;TIME! RE-READ AND CHECK ONE MORE TIME.
7121 026402 002312          BDATA
7122 026404 123737 002310 002312  CMPB     GDATA,BDATA      ;CHECK IT AGAIN, SAM.
7123 026412 001007          BNE     4#              ;THIS TIME IT SHOULD BE DIFFERENT.
7124          ;OTHERWISE, WE HAVE A LEGITIMATE FAILURE
7125 026414 012737 000004 002334  MOV      #4,REGNUM        ; IDENTIFY THE FAILING REGISTER &
7126 026422          GEDF     EM20A,ERR7      ; REPORT FAILURE
          ;          "DEVICE FATAL" ERROR # 33
          ;          TRAP      C1ERDF
          ;          .WORD    33
          ;          .WORD    EM20A
          ;          .WORD    ERR7
(2)
(6) 026422 104455
(7) 026424 000041
(7) 026426 015307
(7) 026430 006624
7127
7128          ; ---- STEP F ----
7129
7130 026432 105137 002306      4#:     COMB     TDATA          ;USE THE ONE'S COMPLEMENT THIS TIME
7131 026436 105137 002310      COMB     GDATA          ;THE EXPECTED DATA IS ALSO THE COMPLEMENT
7132 026442 004537 004322      JSR      R5,WRITE        ;LOAD T1L-L(ADDR 06)
7133 026446 120006          TILL
7134 026450 002306          TDATA          ;THE TEST DATA FROM "TDATA"
7135
7136          ; ---- STEP G ----
7137
7138 026452 004537 004076      6#:     JSR      R5,READ          ;READ T1L-L(ADDR 06)
7139 026456 120006          TILL
7140 026460 002312          BDATA
7141 026462 123737 002310 002312  CMPB     GDATA,BDATA      ;AND CHECK IT
7142 026470 001407          BEQ      8#              ;IF OK, PROCEED
7143 026472 012737 000006 002334  MOV      #6,REGNUM        ;IDENTIFY THE FAILING REGISTER &

```


CVDMAC0 DMV11 MCTRL DIAG #1
CVDMAC.P11 16-AUG-84 13:59

MACY11 30A(1052) 16-AUG-84 14:51 PAGE 65-3
TEST 15 -- VIA'S T1 DATA READ/WRITE

```

7144 026500          GEDF  EM20,ERR7      ; REPORT FAILURE
(2)                                     ; "DEVICE FATAL" ERROR # 34
(6) 026500 104455                                     TRAP  C1ERDF
(7) 026502 000042                                     .WORD 34
(7) 026504 015255                                     .WORD EM20
(7) 026506 006624                                     .WORD ERR7
7145
7146 ; -----STEP H -----
7147
7148 026510 105137 002306 84:  COMB  TDATA      ;RESTORE THE DATA TO THE ORIGINAL VALUE
7149 026514 105137 002310      COMB  GDATA
7150 026520 004537 004334      JSR   R5,WRITEI    ;SET THE LOW LATCH TO MAKE SURE THE HIGH
7151 026524 120006              TILL                ;COUNTER IS DOING MOST OF THE WORK
7152 026526 000001              1
7153 026530 004537 004322      JSR   R5,WRITE      ;LOAD T1L-H(ADDR 05)
7154 026534 120005              T1CH
7155 026536 002306              TDATA                ;THE TEST DATA FROM "TDATA"
7156
7157 ; -----STEP I -----
7158
7159 026540 004537 004076      JSR   R5,READ       ;READ T1L-H(ADDR 07)
7160 026544 120007              T1LH
7161 026546 002312              BDATA
7162 026550 123737 002310 002312  CMPB  GDATA,BDATA  ;AND CHECK IT
7163 026556 001407              BEQ   104           ;IF OK, PROCEED
7164 026560 012737 000007 002334  MOV   #7,REGNUM    ;IDENTIFY THE FAILING REGISTER &
7165 026566              GEDF  EM20,ERR7    ; REPORT FAILURE
(2)                                     ; "DEVICE FATAL" ERROR # 35
(6) 026566 104455                                     TRAP  C1ERDF
(7) 026570 000043                                     .WORD 35
(7) 026572 015255                                     .WORD EM20
(7) 026574 006624                                     .WORD ERR7
7166
7167 ; -----STEP J -----
7168
7169 026576 004537 004076 104:  JSR   R5,READ       ;READ T1C-H(ADDR 05)
7170 026602 120005              T1CH
7171 026604 002312              BDATA
7172 026606 012737 000005 002334  MOV   #5,REGNUM    ;IDENTIFY THE REGISTER BEING CHECKED
7173 026614 105737 002306      TSTB  TDATA        ;WAS THE TEST DATA "000"?
7174 026620 001410              BEQ   144           ;YES, THEN WE CAN'T BE SURE OF THE RESULTS!
7175 026622 123737 002310 002312  CMPB  GDATA,BDATA  ;NO, CHECK IT
7176 026630 001004              BNE  144           ;IT SHOULDN'T = THE LOADED VALUE
7177 026632              GEDF  EM20A,ERR7  ;IT DID! REPORT FAILURE
(2)                                     ; "DEVICE FATAL" ERROR # 36
(6) 026632 104455                                     TRAP  C1ERDF
(7) 026634 000044                                     .WORD 36
(7) 026636 015307                                     .WORD EM20A
(7) 026640 006624                                     .WORD ERR7
7178
7179 ; -----STEP K -----
7180
7181 026642 105137 002306 144:  COMB  TDATA      ;USE THE ONE'S COMPLEMENT THIS TIME
7182 026646 105137 002310      COMB  GDATA        ;THE EXPECTED DATA IS ALSO THE COMPLEMENT
7183 026652 004537 004322      JSR   R5,WRITE      ;LOAD T1L-H(ADDR 07)
7184 026656 120007              T1LH

```

CVDMACO DMV11 MCTRL DIAG #1
CVDMAC.P11 16-AUG-84 13:59

MACY11 30A(1052) 16-AUG-84 14:51 PAGE 65-4
TEST 15 -- VIA'S T1 DATA READ/WRITE

```

7185 026660 002306          TDATA          ;THE TEST DATA FROM "TDATA"
7186
7187          ; ****--*** STEP L ****--***
7188
7189 026662 004537 004076      JSR      R5,READ          ;READ T1L-H(ADDR 07)
7190 026666 120007          T1LH
7191 026670 002312          BDATA
7192 026672 123737 002310 002312  CMPB    GDATA,BDATA      ;AND CHECK IT
7193 026700 001407          BEQ     16$              ;IF OK, PROCEED
7194 026702 012737 000007 002334  MOV     @7,REGNUM        ;IDENTIFY THE FAILING REGISTER &
7195 026710          GEDF    EM20,ERR7      ; REPORT FAILURE
(2)
(6) 026710 104455          ;          "DEVICE FATAL" ERROR # 37
(7) 026712 000045          TRAP    C$ERDF
(7) 026714 015255          .WL 'D  37
(7) 026716 006624          .WORD  EM20
7196          .WORD  ERR7
7197          ; ****--*** STEP M ****--***
7198
7199 026720          16$:  ENDSEG
(3) 026720          10000$: TRAP    C$ESEG
(3) 026720 104405
7200
7201 026722 000402          BR     21$
7202 026724 000137 026272      20$:  JMP     T16.LP
7203 026730 077303          21$:  SOB    R3,20$      ;IF MORE DATA, DO ANOTHER BYTE
7204          ;ELSE, EXIT SUBTEST
7205 026732          ENDSUB
(3) 026732          L10051: TRAP    C$ESUB
(3) 026732 104403
7206
7207
7208 026734          BGNSUB          ;BEGIN THE SECOND SUBTEST
(3) 026734          T15.2: TRAP    C$BSUB
(3) 026734 104402
7209 026736 012701 002526      MOV     @PATB,R1        ;POINT TO THE APPROPRIATE PATTERN TABLE
7210 026742 012103          MOV     (R1)+,R3      ;EXTRACT THE BYTE COUNT FROM THE TABLE
7211
7212          T16.L1:
7213 026744 112137 002306      MOVB    (R1)+,TDATA    ;GET ONE BYTE OF THE TEST DATA
7214 026750 013737 002306 002310  MOV     TDATA,GDATA    ;THE TEST DATA IS NORMALLY THE GOOD DATA TOO
7215
7216          ; ****--*** STEP A ****--***
7217
7218
7219 026756 004537 004334      JSR     R5,WRITEI      ;CLEAR T1L-H(ADDR 07)
7220 026762 120007          T1LH
7221 026764 000000          0              ;THE TEST DATA FROM "TDATA"
7222
7223 026766          BGNSEG
(3) 026766 104404          TRAP    C$BSEG
7224
7225          ; ****--*** STEP B ****--***
7226
7227 026770 004537 004322      JSR     R5,WRITE
7228 026774 120006          T1LL          ;LOAD T1L-L(ADDR 06)

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CVDMACO DMV11 MCTRL DIAG #1
CVDMAC.P11 16-AUG-84 13:59

MACY11 30A(1052) 16-AUG-84 14:51 PAGE 65-5
TEST 15 -- VIA'S T1 DATA READ/WRITE

```

7229 026776 002306          TDATA          ;THE TEST DATA FROM "TDATA"
7230
7231          ; ***---*** STEP C ***- -***
7232
7233 027000 004537 004076      JSR      R5,READ          ;READ T1L-L(ADDR 06)
7234 027004 120006              T1LL
7235 027006 002312              BDATA
7236 027010 123737 002310 002312  CMPB     GDATA,BDATA      ;AND CHECK IT
7237 027016 001407              BEQ      21                ;IF OK, PROCEED
7238 027020 012737 000006 002334  MOV      #6,REGNUM        ;IDENTIFY THE FAILING REGISTER &
7239 027026              GEDF     EM20,ERR7        ; REPORT FAILURE
(2)
(6) 027026 104455              ;          "DEVICE FATAL" ERROR # 38
(7) 027030 000046              TRAP    C$ERDF
(7) 027032 015255              .WORD  38
(7) 027034 006624              .WORD  EM20
7240
7241          ; ***---*** STEP D ***---***
7242
7243 027036 004537 004076      21:     JSR      R5,READ          ;READ T1L-H(ADDR 07)
7244 027042 120007              T1LH
7245 027044 002312              BDATA
7246 027046 105737 002312      TSTB     BDATA            ;AND CHECK IT -- THIS SHOULD STILL BE ZERO
7247 027052 001411              BEQ      101              ;IF OK, PROCEED
7248 027054 005037 002310 002334  CLR      GDATA
7249 027060 012737 000007 002334  MOV      #7,REGNUM        ;IDENTIFY THE FAILING REGISTER &
7250 027066              GEDF     EM20B,ERR7       ; REPORT FAILURE
(2)
(6) 027066 104455              ;          "DEVICE FATAL" ERROR # 39
(7) 027070 000047              TRAP    C$ERDF
(7) 027072 015367              .WORD  39
(7) 027074 006624              .WORD  EM20B
7251
7252          ; ***---*** STEP E ***---***
7253
7254 027076              101:     ENDSEG
(3) 027076              100001: TRAP    C$ESEG
(3) 027076 104405
7255
7256 027100 000402              BR      211
7257 027102 000137 026744      201:     JMP      T16.L1
7258 027106 077303              211:     SOB      R3,201
7259
7260 027110              ENDSUB
(3) 027110              L10052: TRAP    C$ESUB
(3) 027110 104403
7261
7262
7263 027112              BGNSUB          ;BEGIN THE THIRD SUBTEST
(3) 027112              T15.3:
(3) 027112 104402              TRAP    C$BSUB
7264 027114 012701 002526      MOV      #PATB,R1
7265 027120 012103              MOV      (R1)+,R3
7266
7267 027122              T16.L2:
7268 027122 112137 002306      MOVB     (R1)+,TDATA      ;GET ONE BYTE OF THE TEST DATA
    
```

CVDMAC0 DMV11 MCTRL DIAG #1
CVDMAC.P11 16-AUG-84 13:59

MACY11 30A(1052) 16-AUG-84 14:51 PAGE 65-6
TEST 15 -- VIA'S T1 DATA READ/WRITE

```

7269 027126 013737 002306 002310      MOV      TDATA,GDATA      ;THE TEST DATA IS NORMALLY THE GOOD DATA TOO
7270
7271
7272      ; ***** STEP A *****
7273
7274 027134 004537 004334      JSR      R5,WRITEI      ;CLEAR T1L-L(ADDR 04)
7275 027140 120004      T1CL
7276 027142 000000      0
7277
7278 027144      BGNSEG
(3) 027144 104404                                TRAP      C#BSEG
7279
7280      ; ***** STEP B *****
7281
7282 027146 004537 004322      JSR      R5,WRITE      ;LOAD T1L-H(ADDR 07)
7283 027152 120007      T1LH
7284 027154 002306      TDATA      ;THE TEST DATA FROM "TDATA"
7285
7286      ; ***** STEP C *****
7287
7288 027156 004537 004076      JSR      R5,READ      ;READ T1L-H(ADDR 07)
7289 027162 120007      T1LH
7290 027164 002312      BDATA
7291 027166 123737 002310 002312      CMPB    GDATA,BDATA      ;AND CHECK IT
7292 027174 001407      BEQ      10$      ;IF OK, PROCEED
7293 027176 012737 000007 002334      MOV      #7,REGNUM      ;IDENTIFY THE FAILING REGISTER &
7294 027204      GEDF    EM20,ERR7      ; REPORT FAILURE
(2)                                ; "DEVICE FATAL" ERROR # 40
(6) 027204 104455                                TRAP      C#ERDF
(7) 027206 000050                                .WORD    40
(7) 027210 015255                                .WORD    EM20
(7) 027212 006624                                .WORD    ERR7
7295
7296      ; ***** STEP D *****
7297
7298 027214 004537 004076      10$: JSR      R5,READ      ;READ T1L-L(ADDR 06)
7299 027220 120006      T1LL
7300 027222 002312      BDATA
7301 027224 105737 002312      TSTB    BDATA      ;AND CHECK IT
7302 027230 001411      BEQ      2$      ;IF OK, PROCEED
7303 027232 005037 002310      CLR      GDATA
7304 027236 012737 000006 002334      MOV      #6,REGNUM      ;IDENTIFY THE FAILING REGISTER &
7305 027244      GEDF    EM20B,ERR7      ; REPORT FAILURE
(2)                                ; "DEVICE FATAL" ERROR # 41
(6) 027244 104455                                TRAP      C#ERDF
(7) 027246 000051                                .WORD    41
(7) 027250 015367                                .WORD    EM20B
(7) 027252 006624                                .WORD    ERR7
7306
7307      ; ***** STEP E *****
7308
7309 027254      2$:  ENDSEG
(3) 027254                                10000$:
(3) 027254 104405                                TRAP      C#ESEG
7310
7311 027256 000402      BR      21$
    
```

CVDMACO DMV11 MCTRL DIAG #1
CVDMAC.P11 16-AUG-84 13:59

MACY11 30A(1052) 16-AUG-84 14:51 PAGE 65-7
TEST 15 -- VIA'S T1 DATA READ/WRITE

7312 027260 000137 027122
7313 027264 077303
7314
7315 027266
(3) 027266
(3) 027266 104403
7316
7317 027270
(3) 027270
(3) 027270 104401

201: JMP T16.L2
211: SOB R3,201

;IF MORE DATA, DO ANOTHER BYTE
;ELSE, EXIT SUBTEST

ENDSUB

L10053: TRAP CIESUB

ENDTST

L10050: TRAP C1ETST

CVDMACO DMV11 MCTRL DIAG #1
CVDMAC.P11 16-AUG-84 13:59

MACY11 30A(1052) 16-AUG-84 14:51 PAGE 66
TEST 16 -- VIA'S SR DATA READ/WRITE

7330
(2)
(2)
(2)
(2)
(2)
(3)
(3)
(3)
(3)
(3)
(3)
(3)
(2)
(2)
(2)
(2)
(5) 027272
7331 027272 004737 003774
7332 027276 103003
7333 027300
(3) 027300 104460
7334 027302
(3) 027302 104410
(3) 027304 000046
7335
7336 027306 012701 002526
7337 027312 012103
7338
7339 027314
7340 027314
(3) 027314
(3) 027314 104402
7341
7342 027316 111137 002306
7343 027322 112137 002310
7344 027326 012700 120012
7345 027332 004737 005046
7346 027336 103003
7347 027340
(3) 027340 104460
7348 027342
(3) 027342 104410
(3) 027344 000006
7349
7350 027346
(3) 027346
(3) 027346 104403
7351
7352 027350 077317
7353
7354
7355 027352
(3) 027352
(3) 027352 104401

```
.SBTTL TEST 16 -- VIA'S SR DATA READ/WRITE
;*****
;*
;* TEST 16 -- VIA'S SR DATA READ/WRITE
;*
;* SR == "SHIFT REGISTER"
;*
;* FIRST, A MASTER CLEAR IS PERFORMED AND THE ACR IS SET TO 000. THEN :
;* READ/WRITE BITS 0-7 OF VIA SHIFT REGISTER ARE TESTED BY WRITING, READING,
;* AND COMPARING EACH BYTE OF DATA PATTERN B.
;* DATA PATTERN B = 125, 252, 000, 377, 001, 002, 004, 010, 020, 040, 100,
;*                   200, 376, 375, 373, 367, 357, 337, 277, 177, 000
;*
;*****
;
; BGNTST
;
;                               T16::
7331 JSR    PC,MSTCLR           ;INIT DMV & START UP THE MAINT. LOOP
7332 BCC    30$                ;IF AN ERROR OCCURED.
7333 ERROR                                ;REPORT IT &
;                               TRAP    C$ERROR
7334 ESCAPE TST                ; EXIT
;                               TRAP    C$ESCAPE
;                               .WORD   L10054-.
7335
7336 30$:  MOV    #PATB,R1       ;POINT TO PATTERN TABLE
7337      MOV    (R1)+,R3       ;GET # OF ENTRIES IN TABLE
7338
7339 T18.LP:
7340      BGNSUB                ;THE SUBTEST ONLY TESTS THE ONE PATTERN
;                               T16.1:
;                               TRAP    C$BSUB
7341
7342      MOVB   (R1),TDATA      ;SETUP TEST DATA BYTE FOR "STREG"
7343      MOVB   (R1)+,GDATA     ;SETUP EXPECTED DATA BYTE FOR "STREG"
7344      MOV    #SR,R0         ;SPECIFY THE REGISTER BEING TESTED
7345      JSR    PC,STREG       ;PERFORM STATIC TEST OF THE SPECIFIED REGISTER
7346      BCC    10$           ;WAS AN ERROR FOUND?
7347      ERROR                                ;YES, REPORT IT AND
;                               TRAP    C$ERROR
7348      ESCAPE TST                ; EXIT FROM THE TEST. "CKLOOP" IS IMPLIED
;                               TRAP    C$ESCAPE
;                               .WORD   L10054-.
7349
7350 10$:  ENDSUB
;                               L10055:
;                               TRAP    C$ESUB
7351
7352      SOB    R3,T18.LP       ;IF THERE IS IN FACT MORE DATA, LOOP BACK TO
7353      ;TEST IT. ELSE, FALL OUT OF LOOP AND TEST
7354
7355      ENDTST
;                               L10054:
;                               TRAP    C$ETST
```

CVDMACO DMV11 MCTRL DIAG #1
 CVDMAC.P11 16-AUG-84 13:59

MACY11 30A(1052) 16-AUG-84 14:51 PAGE 67
 TEST 17 -- VIA'S ACR DATA READ/WRITE

7368
 (2)
 (2)
 (2)
 (2)
 (2)
 (3)
 (3)
 (3)
 (3)
 (3)
 (3)
 (3)
 (3)
 (2)
 (2)
 (2)
 (2)
 (5) 027354
 7369 027354 004737 003774
 7370 027360 103003
 7371 027362
 (3) 027362 104460
 7372 027364
 (3) 027364 104410
 (3) 027366 000046
 7373
 7374 027370 012701 002526
 7375 027374 012103
 7376
 7377 027376
 7378 027376
 (3) 027376
 (3) 027376 104402
 7379
 7380 027400 111137 002306
 7381 027404 112137 002310
 7382 027410 012700 120013
 7383 027414 004737 005046
 7384 027420 103003
 7385 027422
 (3) 027422 104460
 7386 027424
 (3) 027424 104410
 (3) 027426 000006
 7387
 7388 027430
 (3) 027430
 (3) 027430 104403
 7389
 7390 027432 077317
 7391
 7392
 7393 027434
 (3) 027434
 (3) 027434 104401

```
.SBTTL TEST 17 -- VIA'S ACR DATA READ/WRITE
;*****
;*
;* TEST 17 -- VIA'S ACR DATA READ/WRITE
;*
;* ACR == "AUXILIARY CONTROL REGISTER"
;*
;* FIRST, A MASTER CLEAR IS PERFORMED. THEN :
;* READ/WRITE BITS 0-7 OF THE ACR ARE TESTED BY WRITING, READING,
;* AND COMPARING EACH BYTE OF DATA PATTERN B.
;* DATA PATTERN B = 125, 252, 000, 377, 001, 002, 004, 010, 020, 040, 100,
;* 200, 376, 375, 373, 367, 357, 337, 277, 177, 000
;*
;-----*****
;
; BGNTST
;
;                               T17.:
; JSR PC,MSTCLR ;INIT DMV & START UP THE MAINT. LOOP
; BCC 30$ ;IF AN ERROR OCCURED,
; ERROR ;REPORT IT &
;                               TRAP C$ERROR
; ESCAPE TST ; EXIT
;                               TRAP C$ESCAPE
;                               .WORD L10056-.
;
; 30$: MOV #PATB,R1 ;POINT TO PATTERN TABLE
; MOV (R1)+,R3 ;GET # OF ENTRIES IN TABLE
;
; T19.LP:
; BGNSUB ;THE SUBTEST ONLY TESTS THE ONE PATTERN
;                               T17.1:
;                               TRAP C$BSUB
;
; MOVB (R1),TDATA ;SETUP TEST DATA BYTE FOR "STREG"
; MOVB (R1)+,GDATA ;SETUP EXPECTED DATA BYTE FOR "STREG"
; MOV #ACR,R0 ;SPECIFY THE REGISTER BEING TESTED
; JSR PC,STREG ;PERFORM STATIC TEST OF THE SPECIFIED REGISTER
; BCC 10$ ;WAS AN ERROR FOUND?
; ERROR ;YES, REPORT IT AND
;                               TRAP C$ERROR
; ESCAPE TST ; EXIT FROM THE TEST. "CKLOOP" IS IMPLIED
;                               TRAP C$ESCAPE
;                               .WORD L10056-.
;
; 10$: ENDSUB
;                               L10057:
;                               TRAP C$ESUB
;
; SOB R3,T19.LP ;IF THERE IS IN FACT MORE DATA, LOOP BACK TO
; ;TEST IT. ELSE, FALL OUT OF LOOP AND TEST
;
; ENDTST
;                               L10056:
;                               TRAP C$ETST
```

CVDMACO DMV11 MCTRL DIAG #1
CVDMAC.P11 16 AUG-84 13:59

MACY11 30A(1052) 16-AUG-84 14:51 PAGE 68
TEST 18 -- VIA'S PCR DATA READ/WRITE

```

7406 .SBTTL TEST 18 -- VIA'S PCR DATA READ/WRITE
(2)
(2)
(2)
(2)
(2)
(3)
(3)
(3)
(3)
(3)
(3)
(3)
(3)
(2)
(2)
(2)
(2)
(5) 027436
7407 027436 004737 003774
7408 027442 103003
7409 027444
(3) 027444 104460
7410 027446
(3) 027446 104410
(3) 027450 000050
7411
7412 027452 012701 002530
7413 027456 012703 002543
7414
7415 027462
7416 027462
(3) 027462
(3) 027462 104402
7417
7418 027464 111137 002306
7419 027470 112137 002310
7420 027474 012700 120014
7421 027500 004737 005046
7422 027504 103003
7423 027506
(3) 027506 104460
7424 027510
(3) 027510 104410
(3) 027512 000006
7425
7426 027514
(3) 027514
(3) 027514 104403
7427
7428 027516 077317
7429
7430 027520
(3) 027520
(3) 027520 104401

```

```

;*****
;*
;* TEST 18 -- VIA'S PCR DATA READ/WRITE
;*
;* PCR == "PERIPHERAL CONTROL REGISTER"
;*
;* FIRST, A MASTER CLEAR IS PERFORMED. THEN :
;* READ/WRITE BITS 0-7 OF THE PCR REGISTER ARE TESTED BY WRITING, READING,
;* AND COMPARING EACH BYTE OF A SUBSET OF DATA PATTERN B.
;* DATA PATTERN B (SUBSET) = 125, 252, 000, 377, 001, 002, 004, 010, 020,
;* 040, 100, 200.
;*****
;
; BGNTST
;
; T18::
; JSR PC,MSTCLR ;INIT DMV & START UP THE MAINT. LOOP
; BCC 30$ ;IF AN ERROR OCCURED,
; ERROR ;REPORT IT &
; TRAP C$ERROR
; ESCAPE TST ; EXIT
; TRAP C$ESCAPE
; .WORD L10060-.
;
; 30$: MOV #PATB+2,R1 ;POINT TO PATTERN TABLE
; MOV #PATB+15,R3 ;GET # OF ENTRIES IN TABLE
;
; T20.LP:
; BGNSUB ;THE SUBTEST ONLY TESTS THE ONE PATTERN
; T18.1:
; TRAP C$BSUB
;
; MOVB (R1),TDATA ;SETUP TEST DATA BYTE FOR "STREG"
; MOVB (R1),GDATA ;SETUP EXPECTED DATA BYTE FOR "STREG"
; MOV #PCR,R0 ;SPECIFY THE REGISTER BEING TESTED
; JSR PC,STREG ;PERFORM STATIC TEST OF THE SPECIFIED REGISTER
; BCC 10$ ;WAS AN ERROR FOUND?
; ERROR ;YES, REPORT IT AND
; TRAP C$ERROR
; ESCAPE TST ; EXIT FROM THE TEST. "CKLOOP" IS IMPLIED
; TRAP C$ESCAPE
; .WORD L10060-.
;
; 10$: ENDSUB
;
; L10061:
; TRAP C$ESUB
;
; SOB R3,T20.LP ;IF THERE IS IN FACT MORE DATA, LOOP BACK TO
; TEST IT. ELSE, FALL OUT OF LOOP AND TEST
;
; ENDTST
;
; L10060:
; TRAP C$ETST

```


CVDMACO DMV11 MCTRL DIAG #1
CVDMAC.P11 16-AUG-84 13:59

MACY11 30A(1052) 16-AUG-84 14:51 PAGE 69
TEST 19 -- VIA'S IER DATA READ/WRITE

7449
(2)
(2)
(2)
(2)
(2)
(3)
(3)
(3)
(3)
(3)
(3)
(3)
(3)
(3)
(3)
(3)
(3)
(3)
(2)
(2)
(2)
(2)
(5) 027522
7450 027522 004737 003774
7451 027526 103003
7452 027530
(3) 027530 104460
7453 027532
(3) 027532 104410
(3) 027534 000052
7454
7455 027536 012701 002644
7456 027542 012103
7457 027544 012702 002676
7458
7459 027550
7460 027550
(3) 027550
(3) 027550 104402
7461
7462 027552 112137 002306
7463 027556 112237 002310
7464 027562 012700 120016
7465 027566 004737 005046
7466 027572 103003
7467 027574
(3) 027574 104460
7468 027576
(3) 027576 104410
(3) 027600 000006
7469
7470 027602
(3) 027602
(3) 027602 104403
7471

```
.SBTTL TEST 19 -- VIA'S IER DATA READ/WRITE
;*****
;*
;* TEST 19 -- VIA'S IER DATA READ/WRITE
;*
;* IER == "INTERRUPT ENABLE REGISTER"
;*
;* BITS 0-6 OF THE IER CAN BE SET OR CLEARED ON A WRITE, UNDER CONTROL OF THE
;* SET/CLEAR CONTROL BIT 7. TO TEST THIS, EACH BYTE OF DATA PATTERN D IS
;* WRITTEN INTO IER, AND THE REGISTER IS READ AND COMPARED TO THE CORRESPOND-
;* ING BYTE OF DATA PATTERN E.
;*
;* DATA PATTERN D = 200, 201, 202, 204, 210, 220, 240, 300, 200, 000, 001,
;*                   002, 004, 010, 020, 040, 100, 000, 325, 125, 252, 052
;*
;* DATA PATTERN E = 000, 001, 003, 007, 017, 037, 077, 177, 177, 177, 176,
;*                   174, 170, 160, 140, 100, 000, 000, 125, 000, 052, 000
;*
;*****
;
; BGNTST
;
; T19::
; JSR PC,MSTCLR ;INIT DMV & START UP THE MAINT. LOOP
; BCC 30$ ;IF AN ERROR OCCURED,
; ERROR ;REPORT IT &
; TRAP C$ERROR
; ESCAPE TST ; EXIT
; TRAP C$ESCAPE
; .WORD L10062-.
;
; 30$: MOV #PATD,R1 ;POINT TO PATTERN TABLE
; MOV (R1)+,R3 ;GET # OF ENTRIES IN TABLE
; MOV #PATE+2,R2 ;POINT TO "EXPECTED" DATA PATTERN TABLE
;
; T21.LP:
; BGNSUB ;THE SUBTEST ONLY TEST; THE ONE PATTERN
; T19.1: TRAP C$BSUB
;
; MOVB (R1)+,TDATA ;SETUP TEST DATA BYTE FOR "STREG"
; MOVB (R2)+,GDATA ;SETUP EXPECTED DATA BYTE FOR "SIREG"
; MOV #IENR,R0 ;SPECIFY THE REGISTER BEING TESTED
; JSR PC,STREG ;PERFORM STATIC TEST OF THE SPECIFIED REGISTER
; BCC 10$ ;WAS AN ERROR FOUND?
; ERROR ;YES, REPORT IT AND
; TRAP C$ERROR
; ESCAPE TST ; EXIT FROM THE TEST. "CKLOOP" IS IMPLIED
; TRAP C$ESCAPE
; .WORD L10062-.
;
; 10$: ENDSUB
;
; L10063: TRAP C$ESUB
```

CVDMACO DMV11 MCTRL DIAG #1
CVDMAC.P11 16-AUG-84 13:59

MACY11 30A(1052) 16-AUG-84 14:51 PAGE 69-1
TEST 19 -- VIA'S IER DATA READ/WRITE

7472 027604 077317
7473
7474
7475 027606
(3) 027606
(3) 027606 104401

S08 R3.T21.LP

;IF THERE IS IN FACT MORE DATA, LOOP BACK TO
;TEST IT. ELSE, FALL OUT OF LOOP AND TEST

ENDTST

L10062:
TRAP C#ETST

CVDMACO DMV11 MCTRL DIAG #1
 CVDMAC.P11 16-AUG-84 13:59

MACY11 30A(1052) 16-AUG-84 14:51 PAGE 70
 TEST 20 -- VIA'S ORB/DIRB MASTER CLEAR TEST

7488
 (2)
 (2)
 (2)
 (2)
 (2)
 (3)
 (3)
 (3)
 (3)
 (3)
 (3)
 (3)
 (2)
 (2)
 (2)
 (2)
 (5)

```
.SBTTL TEST 20 -- VIA'S ORB/DIRB MASTER CLEAR TEST
:*****
:*
:* TEST 20 -- VIA'S ORB/DIRB MASTER CLEAR TEST
:*
:* ORB == "OUTPUT REGISTER PORT B"
:* DIRB == "DATA DIRECTION REGISTER B"
:*
:* FIRST, A MASTER CLEAR IS PERFORMED. NEXT, 377 IS LOADED INTO DIRB TO SET
:* ALL B PORT PINS FOR OUTPUT MODE. THEN, A 000 BYTE IS WRITTEN INTO ORB AND
:* THE REGISTER IS READ BACK AND CHECKED FOR 000. THEN, A MASTER CLEAR IS
:* PERFORMED AND ORB IS READ AND CHECKED FOR 377.
:*
:-----*****
:
: BGNTST
```

```

027610 T20::
7489
7490 027610 004737 003774 JSR PC,MSTCLR ;INIT DMV & START UP THE MAINT. LOOP
7491 027614 103003 BCC 1$ ;IF AN ERROR OCCURED,
7492 027616 ERROR ;REPORT IT &
(3) 027616 104460 TRAP C$ERROR
7493 027620 ESCAPE TST ; EXIT
(3) 027620 104410 TRAP C$ESCAPE
(3) 027622 000252 .WORD L10064-.
7494
7495 027624 012737 000377 002310 1$: MOV #377,GDATA ;SETUP FOR CALL TO STREG
7496 027632 013737 002310 002306 MOV GDATA,TDATA
7497
7498 ; WE'LL USE "STREG" TO LOAD & CHECK "DIRB" WITH 377 THEREBY SETTING UP
7499 ; "ORB" FOR BI-DIRECTIONAL TRANSFERS
7500
7501 027640 012700 120002 MOV #DIRB,R0 ;POINT TO ORB
7502 027644 004737 005046 JSR PC,STREG ;LOAD & TEST IT
7503 027650 103003 BCC 4$ ;IF OK, PROCEED WITH TESTING
7504 027652 ERROR ;ELSE, REPORT THE ERROR
(3) 027652 104460 TRAP C$ERROR
7505 027654 ESCAPE TST ; & QUIT
(3) 027654 104410 TRAP C$ESCAPE
(3) 027656 000216 .WORD L10064 .
7506
7507 ; NOW WE'LL USE "STREG" TO SET & CHECK "ORB"
7508
7509 027660 012700 120000 4$: MOV #ORB,R0 ;POINT TO DIRB
7510 027664 004737 005046 JSR PC,STREG ;LOAD & TEST "ORB"
7511 027670 103003 BCC 5$ ;IF NO ERROR HERE, PROCEED
7512 027672 ERROR ;ELSE, REPORT THE ERROR
(3) 027672 104460 TRAP C$ERROR
7513 027674 ESCAPE TST ; & QUIT
(3) 027674 104410 TRAP C$ESCAPE
(3) 027676 000176 .WORD L10064-.
7514
7515 027700 004737 003774 5$: JSR PC,MSTCLR ;ISSUE THE MASTER CLEAR (STAY IN M LOOP)
7516 027704 103003 BCC 10$ ;IF NO ERROR HERE, PROCEED
7517 027706 ERROR ;ELSE, REPORT IT
```

CVDMACO DMV11 MCTRL DIAG #1
CVDMAC.P11 16-AUG-84 13:59

MACY11 30A(1052) 16-AUG-84 14:51 PAGE 70 1
TEST 20 -- VIA'S ORB/DORB MASTER CLEAR TEST

```

(3) 027706 104460
7518 027710          ESCAPE TST          |      & QUIT          TRAP      C#ERROR
(3) 027710 104410          TRAP      C#ESCAPE
(3) 027712 000162          .WORD    L10064-.
7519
7520 027714 005037 002310      10#: CLR      GDATA          ;FOR TESTING PURPOSES LATER
7521
7522 027720 004537 004076          JSR      R5,READ          ;READ THE "RESET" VALUE OF THE "DORB"
7523 027724 120002          DORB
7524 027726 002312          BDATA
7525 027730 103003          BCC      12#            ;IF NO ERROR READING IT, PROCEED
7526 027732          ERROR                  ;ELSE, REPORT IT
(3) 027732 104460          TRAP      C#ERROR
7527 027734          ESCAPE TST          |      & QUIT          TRAP      C#ESCAPE
(3) 027734 104410          .WORD    L10064-.
(3) 027736 000136          TRAP      C#ESCAPE
7528
7529 027740 123737 002312 002310      12#: CMPB     BDATA,GDATA      ;DID IT GET CLEARE?
7530 027746 001407          BEQ      14#            ;YES, GOOD. NOW CHECK "ORB"
7531 027750 012737 000002 002334          MOV      @DORB<17>,REGNUM ;NO! BUILD REGISTER # POINTER
7532 027756          GEDF     EMS,ERR7       ;REPORT MASTER CLEAR FAILURE
(2)
(6) 027756 104455          ; "DEVICE FATAL" ERROR # 42
(7) 027760 000052          TRAP      C#ERDF
(7) 027762 014527          .WORD    42
(7) 027764 006624          .WORD    EMS
7533
7534 027766 012737 000377 002310      14#: MOV      @377,GDATA      ;SETUP FOR CALL TO STREG
7535 027774 013737 002310 002306          MOV      GDATA,TDATA
7536
7537          ; WE'LL USE "STREG" TO LOAD & CHECK "DORB" WITH 377 THEREBY SETTING UP
7538          ; "ORB" FOR BY-DIRECTIONAL TRANSFERS
7539
7540 030002 012700 120002          MOV      @DORB,R0        ;POINT TO ORB
7541 030006 004737 005046          JSR      PC,STREG        ;LOAD & TEST IT
7542 030012 103003          BCC      16#            ;IF OK, PROCEED WITH TESTING
7543 030014          ERROR                  ;ELSE, REPORT THE ERROR
(3) 030014 104460          TRAP      C#ERROR
7544 030016          ESCAPE TST          |      & QUIT          TRAP      C#ESCAPE
(3) 030016 104410          .WORD    L10064-.
(3) 030020 000054          TRAP      C#ESCAPE
7545
7546 030022 005037 002310      16#: CLR      GDATA          ;SETUP FOR TESTING ORB
7547 030026 004537 004076          JSR      R5,READ          ;NOW READ THE "RESET" VALUE OF "ORB"
7548 030032 120000          ORB
7549 030034 002312          BDATA
7550 030036 103003          BCC      18#            ;IF NO ERROR READING IT, PROCEED
7551 030040          ERROR                  ;ELSE, REPORT IT
(3) 030040 104460          TRAP      C#ERROR
7552 030042          ESCAPE TST          |      & QUIT          TRAP      C#ESCAPE
(3) 030042 104410          .WORD    L10064-.
(3) 030044 000030          TRAP      C#ESCAPE
7553
7554 030046 123737 002310 002312      18#: CMPB     GDATA,BDATA      ;WAS IT PROPERLY RESET?
7555 030054 001407          BEQ      32#            ;YES, THIS TEST IS DONE, EXIT
7556 030056 012737 000000 002334          MOV      @ORB<17>,REGNUM ;NO! BUILD REGISTER # POINTER

```

CVDMACO DMV11 CTRL DIAG #1
CVDMAC.P11 16 AUG 84 13:59

MACY11 30A(1052) 16-AUG-84 14:51 PAGE 70-2
TEST 20 -- VIA'S ORB/DOB MASTER CLEAR TEST

7557 030064
(2)
(6) 030064 104455
(7) 030066 000053
(7) 030070 014527
(7) 030072 006624
7558
7559 030074
(3) 030074
(3) 030074 104401

GEDF EMS,ERR7

321: ENDTST

;REPORT MASTER CLEAR FAILURE
; "DEVICE FATAL" ERROR # 43

TRAP C1ERDF
.WORD 43
.WORD EMS
.WORD ERR7

L10064:
TRAP C1ETST

CVDMACO DMV11 MCTRL DIAG #1
 CVDMAC.P11 16-AUG-84 13:59

MACY11 30A(1052) 16-AUG-84 14:51 PAGE 71
 TEST 21 -- VIA'S DDRB MASTER CLEAR TEST

7573
 (2)
 (2)
 (2)
 (2)
 (2)
 (3)
 (3)
 (3)
 (3)
 (3)
 (3)
 (3)
 (3)
 (2)
 (2)
 (2)
 (2)
 (5)
 7574
 7575
 7576
 7577
 (3)
 7578
 (3)
 (3)
 7579
 7580
 7581
 7582
 7583
 7584
 7585
 7586
 7587
 7588
 (3)
 7589
 (3)
 (3)
 7590
 7591
 7592
 7593
 (3)
 7594
 (3)
 (3)
 7595
 7596
 7597
 7598
 7599
 7600
 7601

030076

030076 004737 003774
 030102 103003
 030104 104460
 030104 104460
 030106 104410
 030110 000114
 030112 012737 000377 002310
 030120 013737 002310 002306
 030126 012700 120002
 030132 004737 005046
 030136 103003
 030140 104460
 030142 104410
 030144 000060
 030146 004737 003774
 030152 103003
 030154 104460
 030156 104410
 030160 000044
 030162 005037 002310
 030166 004537 004076
 030172 120002
 030174 002312
 030176 123737 002310 002312

```

.SBTTL TEST 21 -- VIA'S DDRB MASTER CLEAR TEST
;*****
;*
;* TEST 21 -- VIA'S DDRB MASTER CLEAR TEST
;*
;* DDRB -- "DATA DIRECTION REGISTER B"
;*
;* A 377 BYTE IS WRITTEN INTO DDRB AND THE REGISTER IS READ BACK AND CHECKED
;* FOR 377. THEN, A MASTER CLEAR IS PERFORMED AND DDRB IS READ AND CHECKED FOR
;* 000.
;*
;* NOTE: THIS TESTING IS ALSO DONE IN TEST 23. IT IS INCLUDED HERE ONLY TO
;* PROVIDE TIGHTER LOOPING ON JUST THE DDRB MASTER CLEAR CHECKING.
;*****
;
; BGNTST
;
; T21::
;
; JSR PC,MSTCLR ;INIT DMV & START UP THE MAINT. LOOP
; BCC 10 ;IF AN ERROR OCCURED,
; ERROR ;REPORT IT &
;
; ESCAPE TST ; EXIT
;
; TRAP C#ERROR
;
; TRAP C#ESCAPE
; .WORD L10065-.
;
; 10: MOV #377,GDATA ;SETUP FOR CALL TO STREG
; MOV GDATA,TDATA
; MOV #DDR,B,R0
;
; NOW WE'LL USE "STREG" TO SET & CHECK "DDR"
;
; JSR PC,STREG ;LOAD & TEST "DDR"
; BCC 50 ;IF NO ERROR HERE, PROCEED
; ERROR ;ELSE, REPORT IT
;
; ESCAPE TST ; & QUIT
;
; TRAP C#ERROR
;
; TRAP C#ESCAPE
; .WORD L10065-.
;
; 50: JSR PC,MSTCLR ;ISSUE THE MASTER CLEAR (STAY IN M-LOOP)
; BCC 100 ;IF NO ERROR HERE, PROCEED
; ERROR ;ELSE, REPORT IT
;
; ESCAPE TST ; & QUIT
;
; TRAP C#ERROR
;
; TRAP C#ESCAPE
; .WORD L10065 .
;
; 100: CLR GDATA ;FOR TESTING PURPOSES LATER
; JSR R5,READ ;NOW READ THE "RESET" VALUE OF "DDR"
; DDRB
; BDATA
;
; CMPB GDATA,BDATA ;WAS IT PROPERLY RESET?
    
```

CVDMACO DMV11 MCTRL DIAG #1
CVDMAC.P11 16-AUG-84 13:59

MACY11 30A(1052) 16-AUG-84 14:51 PAGE 71-1
TEST 21 -- VIA'S DDRB MASTER CLEAR TEST

7602 030204 001407
7603 030206 012737 000002 002334
7604 030214
(2)
(6) 030214 104455
(7) 030216 000054
(7) 030220 014527
(7) 030222 006624
7605
7606 030224
(3) 030224
(3) 030224 104401

BEG 324
MOV @DDRBE<17>,REGNUM
GEDF EMS,ERR7

324: ENDTST

;YES, THIS TEST IS DONE, EXIT
;NO! BUILD REGISTER # POINTER
;REPORT MASTER CLEAR FAILURE
;"DEVICE FATAL" ERROR # 44

TRAP C1ERDF
.WORD 44
.WORD EMS
.WORD ERR7

L10065:
TRAP C1ETST

CVDMACO DMV11 MCTRL DIAG #1
 CVDMAC.P11 16-AUG-84 13:59

MACY11 30A(1052) 16-AUG-84 14:51 PAGE 72
 TEST 22 -- VIA'S DDRA MASTER CLEAR TEST

.SBTTL TEST 22 -- VIA'S DDRA MASTER CLEAR TEST

7617
 (2)
 (2)
 (2)
 (2)
 (2)
 (3)
 (3)
 (3)
 (3)
 (3)
 (2)
 (2)
 (2)
 (2)
 (2)
 (5)

```

;*****
;*
;* TEST 22 -- VIA'S DDRA MASTER CLEAR TEST
;*
;* DDRA == "DATA DIRECTION REGISTER A"
;*
;* A 377 BYTE IS WRITTEN INTO DDRA AND THE REGISTER IS READ BACK AND CHECKED
;* FOR 377. THEN, A MASTER CLEAR IS PERFORMED AND DDRA IS READ AND CHECKED FOR
;* 000.
;*****

```

030226
 7618
 7619 030226 004737 003774
 7620 030232 103003
 7621 030234
 (3) 030234 104460
 7622 030236
 (3) 030236 104410
 (3) 030240 000114
 7623
 7624 030242 012737 000377 002310
 7625 030250 013737 002310 002306
 7626 030256 012700 120003
 7627
 7628
 7629
 7630 030262 004737 005046
 7631 030266 103003
 7632 030270
 (3) 030270 104460
 7633 030272
 (3) 030272 104410
 (3) 030274 000060
 7634
 7635 030276 004737 003774
 7636 030302 103003
 7637 030304
 (3) 030304 104460
 7638 030306
 (3) 030306 104410
 (3) 030310 000044
 7639
 7640 030312 005037 002310
 7641 030316 004537 004076
 7642 030322 120003
 7643 030324 002312
 7644
 7645 030326 123737 002310 002312
 7646 030334 001407
 7647 030336 012737 000003 002334
 7648 030344

```

;
; BGNTST
;
; T22::
;
; JSR PC,MSTCLR ;INIT DMV & START UP THE MAINT. LOOP
; BCC 10 ;IF AN ERROR OCCURED,
; ERROR ;REPORT IT &
;
; ESCAPE TST ; EXIT
;
; TRAP C$ERROR
; TRAP C$ESCAPE
; .WORD L10066-.
;
; 10: MOV #377,GDATA ;SETUP FOR CALL TO STREG
; MOV GDATA,TDATA
; MOV #DDRA,R0
;
; NOW WE'LL USE "STREG" TO SET & CHECK "DDRA"
;
; JSR PC,STREG ;LOAD & TEST "DDRA"
; BCC 50 ;IF NO ERROR HERE, PROCEED
; ERROR ;ELSE, REPORT IT
;
; ESCAPE TST ; & QUIT
;
; TRAP C$ERROR
; TRAP C$ESCAPE
; .WORD L10066-.
;
; 50: JSR PC,MSTCLR ;ISSUE THE MASTER CLEAR (STAY IN M-LOOP)
; BCC 100 ;IF NO ERROR HERE, PROCEED
; ERROR ;ELSE, REPORT IT
;
; ESCAPE TST ; & QUIT
;
; TRAP C$ERROR
; TRAP C$ESCAPE
; .WORD L10066-.
;
; 100: CLR GDATA ;FOR TESTING PURPOSES LATER
; JSR R5,READ ;NOW READ THE "RESET" VALUE OF "DDRA"
; DDRA
; BDATA
;
; CMPB GDATA,BDATA ;WAS IT PROPERLY RESET?
; BEQ 320 ;YES, THIS TEST IS DONE. EXIT
; MOV #DDRA<17>,REGNUM ;NO! BUILD REGISTER # POINTER
; GEDF EMS,ERR7 ;REPORT MASTER CLEAR FAILURE

```


CVDMACO DMV11 MCTRL DIAG #1
CVDMAC.P11 16-AUG-84 13:59

MACY11 30A(1052) 16-AUG-84 14:51 PAGE 72-1
TEST 22 -- VIA'S DDRA MASTER CLEAR TEST

(2)
(6) 030344 104455
(7) 030346 000055
(7) 030350 014527
(7) 030352 006624
7649
7650 030354
(3) 030354
(3) 030354 104401

324: ENDTST

"DEVICE FATAL" ERROR # 45

TRAP C\$ERDF
.WORD 45
.WORD EMS
.WORD ERR7

L10066:

TRAP C\$ETST

CVDMACO DMV11 MCTRL DIAG #1
 CVDMAC.P11 16-AUG-84 13:59

MACY:1 30A(1052) 16-AUG-84 14:51 PAGE 73
 TEST 23 -- VIA'S SR MASTER CLEAR TEST

.SBTTL TEST 23 -- VIA'S SR MASTER CLEAR TEST

7661
 (2)
 (2)
 (2)
 (2)
 (2)
 (3)
 (3)
 (3)
 (3)
 (3)
 (2)
 (2)
 (2)
 (2)
 (5)

030356

7662
 7663 030356 004737 003774
 7664 030362 103003
 7665 030364
 (3) 030364 104460
 7666 030366
 (3) 030366 104410
 (3) 030370 000120
 7667
 7668 030372 004537 004334
 7669 030376 120013
 7670 030400 000000
 7671 030402 012737 000123 002310
 7672 030410 013737 002310 002306
 7673 030416 012700 120012
 7674
 7675
 7676
 7677 030422 004737 005046
 7678 030426 103003
 7679 030430
 (3) 030430 104460
 7680 030432
 (3) 030432 104410
 (3) 030434 000054
 7681
 7682 030436 004737 003774
 7683 030442 103003
 7684 030444
 (3) 030444 104460
 7685 030446
 (3) 030446 104410
 (3) 030450 000040
 7686
 7687 030452 004537 004076
 7688 030456 120012
 7689 030460 002312
 7690
 7691 030462 123737 002310 002312
 7692 030470 001407

```

;*****
;*
;* TEST 23 -- VIA'S SR MASTER CLEAR TEST
;*
;* SR == "SHIFT REGISTER"
;*
;* A 123 BYTE IS WRITTEN INTO SR AND THE REGISTER IS READ BACK AND CHECKED
;* FOR 123. THEN, A MASTER CLEAR IS PERFORMED AND SR IS READ AND CHECKED FOR
;* NO CHANGE.
;*****

```

```

;
; BGNTST
;
; T23::
;
; JSR PC,MSTCLR ;INIT DMV & START UP THE MAINT. LOOP
; BCC 1# ;IF AN ERROR OCCURED,
; ERROR ;REPORT IT &
; TRAP C#ERROR
; ESCAPE TST ; EXIT
; TRAP C#ESCAPE
; .WORD L10067-.
;
; 1#: JSR R5,WRITEI ;FORCE SR TO MODE 0
; ACR
; 0
; MOV #123,GDATA ;SETUP FOR CALL TO STREG
; MOV GDATA,TDATA
; MOV #SR,R0
;
; NOW WE'LL USE "STREG" TO SET & CHECK "SR"
;
; JSR PC,STREG ;LOAD & TEST "SR"
; BCC 5# ;IF NO ERROR HERE, PROCEED
; ERROR ;ELSE, REPORT IT
; TRAP C#ERROR
; ESCAPE TST ; & QUIT
; TRAP C#ESCAPE
; .WORD L10067-.
;
; 5#: JSR PC,MSTCLR ;ISSUE THE MASTER CLEAR (STAY IN M-LOOP)
; BCC 10# ;IF NO ERROR HERE, PROCEED
; ERROR ;ELSE, REPORT IT
; TRAP C#ERROR
; ESCAPE TST ; & QUIT
; TRAP C#ESCAPE
; .WORD L10067-.
;
; 10#: JSR R5,READ ;NOW READ THE "RESET" VALUE OF "SR"
; SR ; (IT SHOULDN'T HAVE CHANGED)
; BDATA
;
; CMPB GDATA,BDATA ;WAS IT PROPERLY RESET?
; BEQ 32# ;YES, THIS TEST IS DONE, EXIT

```

CVDMACO DMV11 MCTRL DIAG #1
CVDMAC.P11 16-AUG-84 13:59

MACY11 30A(1052) 16-AUG-84 14:51 PAGE 73-1
TEST 23 -- VIA'S SR MASTER CLEAR TEST

7693	030472	012737	000012	002334	MOV	#SRE<17>,REGNUM	;NO!	BUILD REGISTER # POINTER	
7694	030500				GEDF	EMS,ERR7	;REPORT	MAS'ER CLEAR FAILURE	
	(2)							"DEVICE FATAL" ERROR # 46	
	(t)	030500	104455						TRAP C#ERDF
	(7)	030502	000056						.WORD 46
	(7)	030504	014527						.WORD EMS
	(7)	030506	006624						.WORD ERR7
7695									
7696	030510				324:	ENDTST			
	(3)	030510						L10067:	
	(3)	030510	104401						TRAP C#ETST

CVDMACO DMV11 MCTRL DIAG #1
CVDMAC.P11 16-AUG-84 13:59

MACY11 30A(1052) 16-AUG-84 14:51 PAGE 74
TEST 24 -- VIA'S ACR MASTER CLEAR TEST

7707
(2)
(2)
(2)
(2)
(2)
(3)
(3)
(3)
(3)
(3)
(2)
(2)
(2)
(2)

030512

7708
7709
7710
7711
(3)
7712
(3)
(3)
7713
7714
7715
7716
7717
7718
7719
7720
7721
7722
(3)
7723
(3)
(3)
7724
7725
7726
7727
(3)
7728
(3)
(3)
7729
7730
7731
7732
7733
7734
7735
7736
7737
7738

030512 004737 003774
030516 103003
030520 104460
030522 104410
030524 000114
030526 012737 000252 002310
030534 013737 002310 002306
030542 012700 120013
030546 004737 005046
030552 103003
030554 104460
030556 104410
030560 000060
030562 004737 003774
030566 103003
030570 104460
030572 104410
030574 000044
030576 005037 002310
030602 004537 004076
030606 120013
030610 002312
030612 123737 002310 002312
030620 001407
030622 012737 000013 002334
030630

.SBTTL TEST 24 -- VIA'S ACR MASTER CLEAR TEST

```

;*****
;*
;* TEST 24 -- VIA'S ACR MASTER CLEAR TEST
;*
;* ACR == "AUXILIARY CONTROL REGISTER"
;*
;* A 252 BYTE IS WRITTEN INTO ACR AND THE REGISTER IS READ BACK AND CHECKED
;* FOR 252. THEN, A MASTER CLEAR IS PERFORMED AND ACR IS READ AND CHECKED FOR
;* 000. TO VERIFY THAT IT IS CLEARED BY MASTER CLEAR.
;*****

```

```

;
; BGNTST
;
; T24::
;
; JSR PC,MSTCLR ;INIT DMV & START UP THE MAINT. LOOP
; BCC 1$ ;IF AN ERROR OCCURED,
; ERROR ;REPORT IT &
; TRAP C$ERROR
; ESCAPE TST ; EXIT
; TRAP C$ESCAPE
; .WORD L10070-.
;
; 1$: MOV #252,GDATA ;SETUP FOR CALL TO STREG
; MOV GDATA,TDATA
; MOV #ACR,RO
;
; NOW WE'LL USE "STREG" TO SET & CHECK "ACR"
;
; JSR PC,STREG ;LOAD & TEST "ACR"
; BCC 5$ ;IF NO ERROR HERE, PROCEED
; ERROR ;ELSE, REPORT IT
; TRAP C$ERROR
; ESCAPE TST ; & QUIT
; TRAP C$ESCAPE
; .WORD L10070-.
;
; 5$: JSR PC,MSTCLR ;ISSUE THE MASTER CLEAR (STAY IN M-LOOP)
; BCC 10$ ;IF NO ERROR HERE, PROCEED
; ERROR ;ELSE, REPORT IT
; TRAP C$ERROR
; ESCAPE TST ; & QUIT
; TRAP C$ESCAPE
; .WORD L10070-.
;
; 10$: CLR GDATA ;FOR TESTING PURPOSES LATER
; JSR R5,READ ;NOW READ THE "RESET" VALUE OF "ACR"
; ACR
; BDATA
;
; CMPB GDATA,BDATA ;WAS IT PROPERLY RESET?
; BEQ 32$ ;YES, THIS TEST IS DONE, EXIT
; MOV #ACR<17>,REGNUM ;NO! BUILD REGISTER # POINTER
; GEDF EMS,ERR7 ;REPORT MASTER CLEAR FAILURE

```

CVDMACO DMV11 MCTRL DIAG #1
CVDMAC.P11 16-AUG-84 13:59

MACY11 30A(1052) 16-AUG-84 14:51 PAGE 74-1
TEST 24 -- VIA'S ACR MASTER CLEAR TEST

(2)
(6) 030630 104455
(7) 030632 000057
(7) 030634 014527
(7) 030636 006624

7739
7740 030640
(3) 030640
(3) 030640 104401

324: ENDTST

;"DEVICE FATAL" ERROR # 47

TRAP C\$ERDF
.WORD 47
.WORD EMS
.WORD ERR7

L10070:

TRAP C\$ETST

CVDMACO DMV11 MCTRL DIAG #1
 CVDMAC.P11 16-AUG-84 13:59

MACY11 30A(1052) 16-AUG-84 14:51 PAGE 75
 TEST 25 -- VIA'S PCR MASTER CLEAR TEST

```

7751 .SBTTL TEST 25 -- VIA'S PCR MASTER CLEAR TEST
(2)
(2)
(2)
(2)
(2)
(3)
(3)
(3)
(3)
(3)
(2)
(2)
(2)
(2)
(5) 030642
7752
7753 030642 004737 003774 JSR PC,MSTCLR ;INIT DMV & START UP THE MAINT. LOOP
7754 030646 103003 BCC 10 ;IF AN ERROR OCCURED,
7755 030650 ERROR ;REPORT IT &
(3) 030650 104460 TRAP C#ERROR
7756 030652 ESCAPE TST ; EXIT
(3) 030652 104410 TRAP C#ESCAPE
(3) 030654 000114 .WORD L10071-.
7757
7758 030656 012737 000377 002310 10: MOV #377,GDATA ;SETUP FOR CALL TO STREG
7759 030664 013737 002310 002306 MOV GDATA,TDATA
7760 030672 012700 120014 MOV #PCR,RO
7761
7762 ; NOW WE'LL USE "STREG" TO SET & CHECK "PCR"
7763
7764 030676 004737 005046 JSR PC,STREG ;LOAD & TEST "PCR"
7765 030702 103003 BCC 50 ;IF NO ERROR HERE, PROCEED
7766 030704 ERROR ;ELSE, REPORT IT
(3) 030704 104460 TRAP C#ERROR
7767 030706 ESCAPE TST ; & QUIT
(3) 030706 104410 TRAP C#ESCAPE
(3) 030710 000060 .WORD L10071-.
7768
7769 030712 004737 003774 50: JSR PC,MSTCLR ;ISSUE THE MASTER CLEAR (STAY IN M-LOOP)
7770 030716 103003 BCC 100 ;IF NO ERROR HERE, PROCEED
7771 030720 ERROR ;ELSE, REPORT IT
(3) 030720 104460 TRAP C#ERROR
7772 030722 ESCAPE TST ; & QUIT
(3) 030722 104410 TRAP C#ESCAPE
(3) 030724 000044 .WORD L10071-.
7773
7774 030726 005037 002310 100: CLR GDATA ;FOR TESTING PURPOSES LATER
7775 030732 004537 004076 JSR R5,READ ;NOW READ THE "RESET" VALUE OF "PCR"
7776 030736 120014 PCR
7777 030740 002312 BDATA
7778
7779 030742 123737 002310 002312 CMPB GDATA,BDATA ;WAS IT PROPERLY RESET?
7780 030750 001407 BEQ 320 ;YES, THIS TEST IS DONE, EXIT
7781 030752 012737 000014 002334 MOV #PCR<17>,REGNUM ;NO! BUILD REGISTER # POINTER
7782 030760 GEDF EMS,ERR7 ;REPORT MASTER CLEAR FAILURE
    
```

CVDMACO DMV11 MCTRL DIAG #1
CVDMAC.P11 16-AUG-84 13:59

MACY11 30A(1052) 16-AUG-84 14:51 PAGE 75-1
TEST 25 -- VIA'S PCR MASTER CLEAR TEST

;"DEVICE FATAL" ERROR # 48

(2)
(6) 030760 104455
(7) 030762 000060
(7) 030764 014527
(7) 030766 006624
7783
7784 030770
(3) 030770
(3) 030770 104401

TRAP C#ERDF
.WORD 48
.WORD EMS
.WORD ERR7

324: ENDTST

L10071:

TRAP C#ETST

CVDMACO DMV11 MCTRL DIAG #1
CVDMAC.P11 16-AUG-84 13:59

MACY11 30A(1052) 16-AUG-84 14:51 PAGE 76
TEST 26 -- VIA'S IER MASTER CLEAR TEST

.SBTTL TEST 26 -- VIA'S IER MASTER CLEAR TEST

```

7795
(2)
(2)
(2)
(2)
(2)
(3)
(3)
(3)
(3)
(3)
(2)
(2)
(2)
(2)
(5) 030772
7796
7797 030772 004737 003774      JSR    PC,MSTCLR      ;INIT DMV & START UP THE MAINT LOOP
7798 030776 103003              BCC    1$             ;IF AN ERROR OCCURED,
7799 031000              ERROR                    ;REPORT IT &
(3) 031000 104460              TRAP   C$ERROR
7800 031002              ESCAPE TST            ; EXIT
(3) 031002 104410              TRAP   C$ESCAPE
(3) 031004 000122              .WORD  L10072-.
7801
7802 031006 105077 151340      1$:   CLRB    @BSEI,0  ;MAKE SURE NO Q-BUS INTERRUPTS RESULT FROM
7803                                ; TESTING THE IER REGISTER
7804 031012 012737 000377 002310  MOV    @377,GDATA    ;SETUP FOR CALL TO STREG
7805 031020 013737 002310 002306  MOV    GDATA,TDATA
7806 031026 012700 120016      MOV    @IENR,R0
7807
7808                                ; NOW WE'LL USE "STREG" TO SET & CHECK "IER"
7809
7810 031032 004737 005046      JSR    PC,STREG      ;LOAD & TEST "IER"
7811 031036 103003              BCC    5$             ;IF NO ERROR HERE, PROCEED
7812 031040              ERROR                    ;ELSE, REPORT IT
(3) 031040 104460              TRAP   C$ERROR
7813 031042              ESCAPE TST            ; & QUIT
(3) 031042 104410              TRAP   C$ESCAPE
(3) 031044 000062              .WORD  L10072-.
7814
7815 031046 004737 003774      5$:   JSR    PC,MSTCLR ;ISSUE THE MASTER CLEAR (STAY IN M-LOOP)
7816 031052 103003              BCC    10$            ;IF NO ERROR HERE, PROCEED
7817 031054              ERROR                    ;ELSE, REPORT IT
(3) 031054 104460              TRAP   C$ERROR
7818 031056              ESCAPE TST            ; & QUIT
(3) 031056 104410              TRAP   C$ESCAPE
(3) 031060 000046              .WORD  L10072-.
7819
7820 031062 012737 000200 002310 10$:  MOV    @200,GDATA    ;FOR TESTING PURPOSES LATER
7821 031070 004537 004076      JSR    R5,READ        ;NOW READ THE "RESET" VALUE OF "IER"
7822 031074 120016              IENR
7823 031076 002312              BDATA
7824
7825 031100 123737 002310 002312  CMPB  GDATA,BDATA    ;WAS IT PROPERLY RESET?
7826 031106 001407              BEQ    32$            ;YES, THIS TEST IS DONE, EXIT

```


CVDMACO DMV11 MCTRL DIAG #1
CVDMAC.P11 16-AUG-84 13:59

MACY11 30A(1052) 16-AUG-84 14:51 PAGE 76-1
TEST 26 -- VIA'S IER MASTER CLEAR TEST

7827	031110	012737	000016	002334	MOV	@IENRE<17>,REGNUM	,NO!	BUILD REGISTER	•	POINTER
7828	031116				GEDF	EMS,ERR7	,REPORT	MASTER CLEAR FAILURE		
(2)							,	"DEVICE FATAL ERROR	•	49
(6)	031116	104455						TRAP		C#ERDF
(7)	031120	000061						.WORD		49
(7)	031122	014527						.WORD		EMS
(7)	031124	006624						.WORD		ERR7
7829										
7830	031126				324:	ENDTST				
(3)	031126									
(3)	031126	104401					L10072:	TRAP		C#ETST
7831										

CVDMAC0 DMV11 MCTRL DIAG #1
CVDMAC.P11 16-AUG-84 13:59

MACY11 30A(1052) 16-AUG-84 14:51 PAGE 77-1
TEST 27 -- VIA TIMER # 1 ONE-SHOT MODE

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7880
7881
7882 031132 004737 003774      JSR    PC,MSTCLR      ;INIT DMV & ENTER M-LOOP
7883 031136 103003             BCC    1#             ;IF NO ERROR, PROCEED WITH TESTING
7884 031140             ERROR                      ;ELSE, REPORT ERROR
(3) 031140 104460             ESCAPE TST             ;   & EXIT TEST
7885 031142             TRAP    C#ERROR
(3) 031142 104410             ESCAPE TST             ;   & EXIT TEST
(3) 031144 004742             TRAP    C#ESCAPE
7886 031146 004537 004672      1# : JSR    R5,INITT1    ;INITIALIZE TIMER # 1
7887 031152 000000             O           ;   O ==> LATCHES
7888 031154 000000             C           ;   MODE 0 & "T1" INT. ENABLE FLAG CLEARED
7889 031156 103003             BCC    .+10         ;IF NO ERROR, PROCEED
7890 031160             ERROR                      ;ELSE, REPORT IT
(3) 031160 104460             ESCAPE TST             ;   AND EXIT THIS TEST
7891 031162             TRAP    C#ERROR
(3) 031162 104410             ESCAPE TST             ;   AND EXIT THIS TEST
(3) 031164 004722             TRAP    C#ESCAPE
7892 031166 004737 036142      JSR    PC,GETT1      ;IS "T1" SET?
7893 031172 102002             BVC    .+6          ;IF NO ERROR, PROCEED
7894 031174             ESCAPE SUB           ;ELSE, IT'S ALREADY BEEN REPORTED -- EXIT
(3) 031174 104410             TRAP    C#ESCAPE
(3) 031176 002202             .WORD   L10073-.
7895 031200 103143             BCC    6#           ;NO, GOOD.
7896 031202 004537 004076      JSR    R5,READ      ;GET T1CL FOR ERROR MESSAGE
7897 031206 120004             T1CL
7898 031210 002450             TMP4
7899 031212 103003             BCC    .+10         ;IF NO ERROR, PROCEED
7900 031214             ERROR                      ;ELSE, REPORT IT
(3) 031214 104460             ESCAPE TST             ;   AND EXIT THIS TEST
7901 031216             TRAP    C#ERROR
(3) 031216 104410             ESCAPE TST             ;   AND EXIT THIS TEST
(3) 031220 004666             TRAP    C#ESCAPE
7902 031222 004537 004076      JSR    R5,READ      ;GET T1CH FOR ERROR MESSAGE
7903 031226 120005             T1CH
7904 031230 002452             TMP5
7905 031232 103003             BCC    .+10         ;IF NO ERROR, PROCEED
7906 031234             ERROR                      ;ELSE, REPORT IT
(3) 031234 104460             ESCAPE TST             ;   AND EXIT THIS TEST
7907 031236             TRAP    C#ERROR
(3) 031236 104410             ESCAPE TST             ;   AND EXIT THIS TEST
(3) 031240 004646             TRAP    C#ESCAPE
7908 031242 004537 004076      JSR    R5,READ      ;GET T1LL FOR ERROR MESSAGE
7909 031246 120006             T1LL
7910 031250 002454             TMP6
7911 031252 103003             BCC    .+10         ;IF NO ERROR, PROCEED
7912 031254             ERROR                      ;ELSE, REPORT IT
(3) 031254 104460             ESCAPE TST             ;   AND EXIT THIS TEST
7913 031256             TRAP    C#ERROR
(3) 031256 104410             ESCAPE TST             ;   AND EXIT THIS TEST
(3) 031260 004626             TRAP    C#ESCAPE
7914 031262 004537 004076      JSR    R5,READ      ;GET T1LH FOR ERROR MESSAGE
7915 031266 120007             T1LH
7916 031270 002456             TMP7
7917 031272 103003             BCC    .+10         ;IF NO ERROR, PROCEED
7918 031274             ERROR                      ;ELSE, REPORT IT

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CVDMACO DMV11 MCTRL DIAG #1
CVDMAC.P11 16-AUG-84 13:59

MACY11 30A(1052) 16-AUG-84 14:51 PAGE 77-2
TEST 27 -- VIA TIMER # 1 ONE-SHOT MODE

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(3) 031274 104460
7919 031276          ESCAPE TST          ;          AND EXIT THIS TEST          TRAP   C#EPROR
(3) 031276 104410
(3) 031300 004606          TRAP   C#ESCAPE
7920 031302 004537 004076      JSR    R5,READ          ;GET ACR FOR ERROR MESSAGE          .WORD L10073-.
7921 031306 120013          ACR
7922 031310 002466          TMPB
7923 031312 103003          BCC    .+10           ;IF NO ERROR, PROCEED
7924 031314          ERROR                ;ELSE, REPORT IT
(3) 031314 104460          ESCAPE TST          ;          AND EXIT THIS TEST          TRAP   C#ERROR
7925 031316          TRAP   C#ESCAPE
(3) 031316 104410          .WORD L10073-.
(3) 031320 004566          GEDF    EMS0A,ERR50    ;YES, REPORT IT'S NOT BEING CLEARED @ INIT.
7926 031322          ;          "DEVICE FATAL" ERROR # 50
(2)
(6) 031322 104455          TRAP   C#EROF
(7) 031324 000062          .WORD 50
(7) 031326 016101          .WORD EMS0A
(7) 031330 010774          .WORD ERR50
7927 031332          PRINTX #FMT50M        ; & SAY THE COUNTERS HAVEN'T BEEN LOADED YET!
(7) 031332 012746 013206      MOV    #FMT50M, -(SP)
(6) 031336 012746 000001      MOV    #1, -(SP)
(3) 031342 010600          MOV    SP, R0
(4) 031344 104415          TRAP   C#PNTX
(4) 031346 062706 000004      ADD    #4, SP
7928
7929
7930
-----
7931 031352 112737 000002 002453      MOVB   #2, TMP5+1
7932 031360 004537 004322      JSR    R3,WRITE        ;INIT TIMER # 1 BY WRITING INTO
7933 031364 120005          T1CH          ;T1C-H (ADDR 05)
7934 031366 002453          TMP5+1
7935 031370 103003          BCC    .+10           ;IF NO ERROR, PROCEED
7936 031372          ERROR                ;ELSE, REPORT IT
(3) 031372 104460          FSCAPE TST          ;          AND EXIT THIS TEST          TRAP   C#ERROR
7937 031374          TRAP   C#ESCAPE
(3) 031374 104410          .WORD L10073-.
(3) 031376 004510          JSR    PC,GETT1       ;IS "T1" SET?
7938 031400 004737 036142      BVC    .+6            ;IF NO ERROR, PROCEED
7939 031404 102002          ESCAPE SUB          ;ELSE, IT'S ALREADY BEEN REPORTED -- EXIT
(3) 031406 104410          TRAP   C#ESCAPE
(3) 031410 001770          .WORD L10074-.
7941 031412 103036          BCC    #6            ;NO, GOOD.
7942 031414 004537 004076      JSR    R5,READ        ;GET T1CL FOR ERROR MESSAGE
7943 031420 120004          T1CL
7944 031422 002450          TMP4
7945 031424 103003          BCC    .+10           ;IF NO ERROR, PROCEED
7946 031426          ERROR                ;ELSE, REPORT IT
(3) 031426 104460          ESCAPE TST          ;          AND EXIT THIS TEST          TRAP   C#ERROR
7947 031430          TRAP   C#ESCAPE
(3) 031430 104410          .WORD L10073-.
(3) 031432 004454          JSR    R5,READ        ;GET T1CH FOR ERROR MESSAGE
7948 031434 004537 004076      T1CH
7949 031440 120005          TMP5
7950 031442 002452

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CVDMACO DMV11 MCTRL DIAG #1
CVDMAC.P11 16-AUG-84 13:59

MACY11 30A(1052) 16-AUG-84 14:51 PAGE 77-3
TEST 27 -- VIA TIMER # 1 ONE-SHOT MODE

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7951 031444 103003          BCC      .+10          ;IF NO ERROR, PROCEED
7952 031446                ERROR          ;ELSE, REPORT IT
(3) 031446 104460          ESCAPE  TST          ;          AND EXIT THIS TEST          TRAP  C#ERROR
7953 031450                JSR      R5,READ          ;GET TILH FOR ERROR MESSAGE          TRAP  C#ESCAPE
(3) 031450 104410                TILH          .WORD  L10073-.
(3) 031452 004434          TMP7
7954 031454 004537 004076          JSR      R5,READ          ;GET TILH FOR ERROR MESSAGE
7955 031460 120007          TILH
7956 031462 002456          TMP7
7957 031464 103003          BCC      .+10          ;IF NO ERROR, PROCEED
7958 031466                ERROR          ;ELSE, REPORT IT          TRAP  C#ERROR
(3) 031466 104460          ESCAPE  TST          ;          AND EXIT THIS TEST          TRAP  C#ESCAPE
(3) 031470 104410                JSR      R5,READ          ;GET TILH FOR ERROR MESSAGE          TRAP  C#ESCAPE
(3) 031472 004414                TILH          .WORD  L10073-.
7960 031474                GEDF     EM508,ERR50      ;YES, REPORT IT'S NOT BEING CLEARED @ INIT.
(2)                                ;          "DEVICE FATAL" ERROR # 51
(6) 031474 104455                JSR      R5,READ          ;GET TILH FOR ERROR MESSAGE          TRAP  C#ERDF
(7) 031476 000063                TILH          .WORD  51
(7) 031500 016147                TMP7          .WORD  EM508
(7) 031502 010774                ESCAPE  SUB          ;AND EXIT SUBTEST          .WORD  ERR50
7961 031504                JSR      R5,READ          ;GET TILH FOR ERROR MESSAGE          TRAP  C#ESCAPE
(3) 031504 104410                TILH          .WORD  L10074-.
(3) 031506 001672
7962
7963
7964
7965 031510 004537 004076 68: JSR      R5,READ          ;GET ACQ. FOR LATER ERROR MESSAGES
7966 031514 120013          ACR
7967 031516 002466          TMPB
7968 031520 103003          BCC      .+10          ;IF NO ERROR, PROCEED
7969 031522                ERROR          ;ELSE, REPORT IT          TRAP  C#ERROR
(3) 031522 104460          ESCAPE  TST          ;          AND EXIT THIS TEST          TRAP  C#ESCAPE
(3) 031524 104410                JSR      R5,READ          ;GET TILH FOR ERROR MESSAGE          TRAP  C#ESCAPE
(3) 031526 004360                TILH          .WORD  L10073-.
7971 031530 112737 000377 002445          MOVB     #377,TMP2+1      ;INITIALIZE ORB FOR INPUT/OUTPUT
7972 031536 004537 004322          JSR      R5,WRITE
7973 031542 120002          DORB
7974 031544 002445          TMP2+1
7975 031546 103003          BCC      .+10          ;IF NO ERROR, PROCEED
7976 031550                ERROR          ;ELSE, REPORT IT          TRAP  C#ERROR
(3) 031550 104460          ESCAPE  TST          ;          AND EXIT THIS TEST          TRAP  C#ESCAPE
7977 031552                JSR      R5,WRITE          ;DO IT          TRAP  C#ESCAPE
(3) 031552 104410                TILH          .WORD  L10073-.
(3) 031554 004332
7978 031556 112737 000377 002441          MOVB     #377,TMP0+1      ;SETUP VALUE FOR ORB
7979 031564 004537 004322          JSR      R5,WRITE
7980 031570 120000          ORB
7981 031572 002441          TMP0+1
7982 031574 103003          BCC      .+10          ;IF NO ERROR, PROCEED
7983 031576                ERROR          ;ELSE, REPORT IT          TRAP  C#ERROR
(3) 031576 104460          ESCAPE  TST          ;          AND EXIT THIS TEST          TRAP  C#ESCAPE
7984 031600                JSR      R5,WRITE          ;DO IT          TRAP  C#ESCAPE
(3) 031600 104410                TILH          .WORD  L10073-.
(3) 031602 004304

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CVDMACO DMV11 MCTRL DIAG #1
CVDMAC.P11 16-AUG-84 13:59

MACY11 30A(1052) 16-AUG-84 14:51 PAGE 77-4
TEST 27 -- VIA TIMER # 1 ONE-SHOT MODE

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7985 031604 004537 036110          JSR      R5,LOOT1C          ;LOAD TIMER # 1
7986 031610          252          7# :    .BYTE  252
7987 031611          252          8# :    .BYTE  252
7988
7989
7990
7991 031612 004737 036326          JSR      PC,GETP87          ;GET "P87". IS IT SET?
7992 031616 102002          BVC      .+6                ;IF NO ERROR, PROCEED
7993 031620          ESCAPE  SUB                ;ELSE, IT'S ALREADY BEEN REPORTED -- EXIT
(3) 031620 104410          TRAP     C#ESCAPF
(3) 031622 001556          .WORD   L10074-.
7994 031624 103404          BCS      9#                ;IT IS. (SET BY LOADING DDRB & ORB ABOVE)
7995 031626          GEDF   EM50W,ERR1          ;IF NOT, TIMER 1 CLEARED IT!!!
(2)                                ; "DEVICE FATAL" ERROR # 52
(6) 031626 104455          TRAP     C#ERDF
(7) 031630 000064          .WORD   52
(7) 031632 017317          .WORD   EM50W
(7) 031634 005310          .WORD   ERR1
7996 031636 004737 036200  9# :    JSR      PC,KICKT1          ;IT TAKES SO MUCH TIME TO CHECK FOR (& MAYBE
7997                                ; EVEN REPORT) THIS ERROR THAT WE SHOULD
7998                                ; KICK OFF THE TIMER AGAIN
7999 031642 103003          BCC      .+10              ;IF NO ERROR, PROCEED
8000 031644          ERROR                                ;ELSE, REPORT IT
(3) 031644 104460          TRAP     C#ERROR
8001 031646          ESCAPE  TST                ; AND EXIT THIS TEST
(3) 031646 104410          TRAP     C#ESCAPE
(3) 031650 004236          .WORD   L10073-.
8002 031652 000240          NOP
8003 031654 000240          NOP
8004 031656 000240          NOP
8005 031660 004537 004076          JSR      R5,READ          ;READ THE LOW COUNTER
8006 031664 120004          TICL
8007 031666 002450          TMP4
8008 031670 103003          BCC      .+10              ;IF NO ERROR, PROCEED
8009 031672          ERROR                                ;ELSE, REPORT IT
(3) 031672 104460          TRAP     C#ERROR
8010 031674          ESCAPE  TST                ; AND EXIT THIS TEST
(3) 031674 104410          TRAP     C#ESCAPE
(3) 031676 004210          .WORD   L10073-.
8011 031700 123737 002450 031610          CMPB    TMP4,7#          ;MAKE SURE THE COUNTER IS DECREMENTING
8012 031706 001024          BNE
8013 031710 004537 004076          JSR      R5,READ          ;IT IS, NOW SEE IF THE HIGH COUNTER IS TOO
8014 031714 120005          TICL
8015 031716 002452          TMP5
8016 031720 103003          BCC      .+10              ;IF NO ERROR, PROCEED
8017 031722          ERROR                                ;ELSE, REPORT IT
(3) 031722 104460          TRAP     C#ERROR
8018 031724          ESCAPE  TST                ; AND EXIT THIS TEST
(3) 031724 104410          TRAP     C#ESCAPE
(3) 031726 004160          .WORD   L10073-.
8019 031730 004537 004076          JSR      R5,READ          ;GET TILL FOR ERROR MESSAGE
8020 031734 120006          TILL
8021 031736 002454          TMP6
8022 031740 103003          BCC      .+10              ;IF NO ERROR, PROCEED
8023 031742          ERROR                                ;ELSE, REPORT IT
(3) 031742 104460          TRAP     C#ERROR

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CVDMAC0 DMV11 MCTRL DIAG #1
CVDMAC.P11 16-AUG-84 13:59

MACY11 30A(1052) 16-AUG-84 14:51 PAGE 77-5
TEST 27 -- VIA TIMER # 1 ONE-SHOT MODE

8024	031744			ESCAPE	TST			; AND EXIT THIS TEST		
(3)	031744	104410							TRAP	C#ESCAPE
(3)	031746	004140							.WORD	L10073-
8025	031750			GEDF	EMS00,ERR50			;IT WASN'T -- REPORT THE ERROR		
(2)								; "DEVICE FATAL" ERROR # 53		
(6)	031750	104455							TRAP	C#ERDF
(7)	031752	000065							.WORD	53
(7)	031754	016263							.WORD	EMS00
(7)	031756	010774							.WORD	ERR50
8026	031760	012703	000100			12#:	MOV	#100,R3		;INIT. TIMEOUT VALUE
8027	031764	004537	004076			13#:	JSR	R5,READ		;READ THE HIGH COUNTER
8028	031770	120005					T1CH			
8029	031772	002452					TMP5			
8030	031774	103003					BCC	.+10		;IF NO ERROR, PROCEED
8031	031776						ERROR			;ELSE, REPORT IT
(3)	031776	104460							TRAP	C#ERROR
8032	032000						ESCAPE	TST		; AND EXIT THIS TEST
(3)	032000	104410							TRAP	C#ESCAPE
(3)	032002	004104							.WORD	L10073-
8033	032004	123737	002452		03:611		CMPS	TMP5,R#		;DID IT CHANGE FROM THE LOADED VALUE?
8034	032012	001037					BNE	17#		;YES, PROCEED WITH TESTING
8035	032014	077315					SOB	R3,13#		;NO, IF NO TIMEOUT, TRY AGAIN
8036	032016	004537	004076				JSR	R5,READ		;GET IFR FOR ERROR MESSAGE
8037	032022	120015					IFR			
8038	032024	002472					TMPD			
8039	032026	103003					BCC	.+10		;IF NO ERROR, PROCEED
8040	032030						ERROR			;ELSE, REPORT IT
(3)	032030	104460							TRAP	C#ERROR
8041	032032						ESCAPE	TST		; AND EXIT THIS TEST
(3)	032032	104410							TRAP	C#ESCAPE
(3)	032034	004052							.WORD	L10073-
8042	032036	004537	004076				JSR	R5,READ		;GET T1LL FOR ERROR MESSAGE
8043	032042	120006					T1LL			
8044	032044	002454					TMP6			
8045	032046	103003					BCC	.+10		;IF NO ERROR, PROCEED
8046	032050						ERROR			;ELSE, REPORT IT
(3)	032050	104460							TRAP	C#ERROR
8047	032052						ESCAPE	TST		; AND EXIT THIS TEST
(3)	032052	104410							TRAP	C#ESCAPE
(3)	032054	004032							.WORD	L10073-
8048	032056	004537	004076				JSR	R5,READ		;GET T1LM FOR ERROR MESSAGE
8049	032062	120007					T1LM			
8050	032064	002456					TMP7			
8051	032066	103003					BCC	.+10		;IF NO ERROR, PROCEED
8052	032070						ERROR			;ELSE, REPORT IT
(3)	032070	104460							TRAP	C#ERROR
8053	032072						ESCAPE	TST		; AND EXIT THIS TEST
(3)	032072	104410							TRAP	C#ESCAPE
(3)	032074	004012							.WORD	L10073-
8054	032076						GEDF	EMS0E,ERR50		;ELSE, REPORT THAT HIGH COUNTER ISN'T RUNNING
(2)										; "DEVICE FATAL" ERROR # 54
(6)	032076	104455							TRAP	C#ERDF
(7)	032100	000066							.WORD	54
(7)	032102	016317							.WORD	EMS0E
(7)	032104	010774							.WORD	ERR50
8055	032106						ESCAPE	SUB		;IN THAT CASE, WE CAN'T PROCEED WITH TESTING EITHER

CVDMACO DMV11 MCTRL DIAG #1
CVDMAC.P11 16-AUG-84 13:59

MACY11 30A(1052) 16-AUG-84 14:51 PAGE 77-7
TEST 27 -- VIA TIMER # 1 ONE-SHOT MODE

(7)	032252	000067					.WORD	5E
(7)	032254	016353					.WORD	EM50F
(7)	032256	010774					.WORD	EPR50
8094	032260			ESCAPE	SUB			; AND GET OUT OF SUBTEST
(3)	032260	104410					TRAP	C\$ESCAPE
(3)	032262	001116					.WORD	L10074--
8095	032264	004737	036326	20:	JSR	PC,GETPB7		;GET "PB7". IS IT CLEARED?
8096	032270	102002			BVC	.+6		;IF NO ERROR, PROCEED
8097	032272				ESCAPE	SUB		;ELSE, IT'S ALREADY BEEN REPORTED -- EXIT
(3)	032272	104410					TRAP	C\$ESCAPE
(3)	032274	001104					.WORD	L10074--
8098	032276	103024			BCC	40:		;IF CLEARED, DDRB IS STILL IN CONTROL OF IT
8099	032300	004537	004076		JSR	R5,READ		;GET TILL FOR ERROR MESSAGE
8100	032304	120006			TILL			
8101	032306	002454			TMP6			
8102	032310	103003			BCC	.+10		;IF NO ERROR, PROCEED
8103	032312				ERROR			;ELSE, REPORT IT
(3)	032312	104460					TRAP	C\$ERROR
8104	032314				ESCAPE	TST		; AND EXIT THIS TEST
(3)	032314	104410					TRAP	C\$ESCAPE
(3)	032316	003570					.WORD	L10073--
8105	032320	004537	004076		JSR	R5,READ		;GET TILH FOR ERROR MESSAGE
8106	032324	120007			TILH			
8107	032326	002456			TMP7			
8108	032330	103003			BCC	.+10		;IF NO ERROR, PROCEED
8109	032332				ERROR			;ELSE, REPORT IT
(3)	032332	104460					TRAP	C\$ERROR
8110	032334				ESCAPE	TST		; AND EXIT THIS TEST
(3)	032334	104410					TRAP	C\$ESCAPE
(3)	032336	003550					.WORD	L10073--
8111	032340				GEDF	EM50W,ERR50		;ELSE, IT S BEING SET BY TIMER 1 IN MODE 0!
(2)								; "DEVICE FATAL" ERROR # 56
(6)	032340	104455					TRAP	C\$ERDF
(7)	032342	000070					.WORD	56
(7)	032344	017317					.WORD	EM50W
(7)	032346	010774					.WORD	ERR50
8112	032350	004537	004076	40:	JSR	R5,READ		;READ TIC-H (ADDR 05) TO SEE IF THIS CLEARS "T1"
8113	032354	120005			T1CH			; (THIS VALUE ISN'T CHECKED BECAUSE IT CAN BE
8114	032356	002452			TMP5			; ALMOST ANYTHING)
8115	032360	103003			BCC	.+10		;IF NO ERROR, PROCEED
8116	032362				ERROR			;ELSE, REPORT IT
(3)	032362	104460					TRAP	C\$ERROR
8117	032364				ESCAPE	TST		; AND EXIT THIS TEST
(3)	032364	104410					TRAP	C\$ESCAPE
(3)	032366	003520					.WORD	L10073--
8118	032370	004737	036142		JSR	PC,GETT1		;PUT THE CURRENT "T1" VALUE INTO THE CARRY BIT
8119	032374	102002			BVC	.+6		;IF NO ERROR, PROCEED
8120	032376				ESCAPE	SUB		;ELSE, IT'S ALREADY BEEN REPORTED -- EXIT
(3)	032376	104410					TRAP	C\$ESCAPE
(3)	032400	001000					.WORD	L10074--
8121	032402	103425			BCS	21:		;IF SET, READING T1CH DIDN'T CLEAR IT -- OK!
8122	032404	004537	004076		JSR	R5,READ		;GET TILL FOR ERROR MESSAGE
8123	032410	120006			TILL			
8124	032412	002454			TMP6			
8125	032414	103003			BCC	.+10		;IF NO ERROR, PROCEED
8126	032416				ERROR			;ELSE, REPCRT IT

CVDMACO DMV11 MCTRL DIAG #1
CVDMAC.P11 16-AUG-84 13:59

MACY11 30A(1052) 16-AUG-84 14:51 PAGE 77-8
TEST 27 -- VIA TIMER # 1 ONE-SHOT MODE

(3)	032416	104460							TRAP	C#ERROR
8127	032420			ESCAPE	TST	:	AND EXIT THIS TEST			
(3)	032420	104410							TRAP	C#ESCAPE
(3)	032422	003464							.WORD	L10073-.
8128	032424	004537	004076	JSR	R5,READ	:	GET T1LH FOR ERROR MESSAGE			
8129	032430	120007		T1LH						
8130	032432	002456		TMP7						
8131	032434	103003		BCC	.+10	:	IF NO ERROR, PROCEED			
8132	032436			ERROR		:	ELSE, REPORT IT			
(3)	032436	104460							TRAP	C#ERROR
8133	032440			ESCAPE	TST	:	AND EXIT THIS TEST			
(3)	032440	104410							TRAP	C#ESCAPE
(3)	032442	003444							.WORD	L10073-.
8134	032444			GEDF	EMSOG,ERR50	:	IF CLEARED! BAD VIA CHIP!			
(2)						:	"DEVICE FATAL" ERROR # 57			
(6)	032444	104455							TRAP	C#ERDF
(7)	032446	000071							.WORD	57
(7)	032450	016420							.WORD	EMSOG
(7)	032452	010774							.WORD	ERR50
8135	032454	000507		BR	28#	:	BYPASS THE REST OF THIS SECTION OF TESTING			
8136										
8137	032456	004537	004076	JSR	R5,READ	:	READ T1L-L (ADDR 06)			
8138	032462	120006		T1LL						
8139	032464	002454		TMP6		:	THIS SHOULD RETURN A 001			
8140	032466	103003		BCC	.+10	:	IF NO ERROR, PROCEED			
8141	032470			ERROR		:	ELSE, REPORT IT			
(3)	032470	104460							TRAP	C#ERROR
8142	032472			ESCAPE	TST	:	AND EXIT THIS TEST			
(3)	032472	104410							TRAP	C#ESCAPE
(3)	032474	003412							.WORD	L10073-.
8143	032476	123737	002454 032172	CHPB	TMP6,18#	:	CHECK T1L-L (ADDR 06) AGAINST LJOADED VALUE			
8144	032504	001415		BEQ	23#	:	IF SAME, PROCEED			
8145	032506	004537	004076	JSR	R5,READ	:	GET T1LH FOR ERROR MESSAGE			
8146	032512	120007		T1LH						
8147	032514	002456		TMP7						
8148	032516	103003		BCC	.+10	:	IF NO ERROR, PROCEED			
8149	032520			ERROR		:	ELSE, REPORT IT			
(3)	032520	104460							TRAP	C#ERROR
8150	032522			ESCAPE	TST	:	AND EXIT THIS TEST			
(3)	032522	104410							TRAP	C#ESCAPE
(3)	032524	003362							.WORD	L10073-.
8151	032526			GEDF	EM50H,ERR50	:	ELSE, REPORT BAD LOAD OF T1L-L (ADDR 06)			
(2)						:	"DEVICE FATAL" ERROR # 58			
(6)	032526	104455							TRAP	C#ERDF
(7)	032530	000072							.WORD	58
(7)	032532	016462							.WORD	EM50H
(7)	032534	010774							.WORD	ERR50
8152	032536	000456		BR	28#	:	BYPASS THE REST OF THIS SECTION OF TESTING			
8153										
8154	032540	004737	036142	JSR	PC,GETT1	:	IS "T1" STILL SET?			
8155	032544	102002		BVC	.+6	:	IF NO ERROR, PROCEED			
8156	032546			ESCAPE	SUB	:	ELSE, IT'S ALREADY BEEN REPORTED -- EXIT			
(3)	032546	104410							TRAP	C#ESCAPE
(3)	032550	000630							.WORD	L10074-.
8157	032552	103415		BCS	24#	:	YES, ALL'S OK			
8158	032554	004537	004076	JSR	R5,READ	:	GET T1LH FOR ERROR MESSAGE			

CVDMACO DMV11 MCTRL DIAG #1
CVDMAC.P11 16-AUG-84 13:59

MACY11 30A(1052) 16-AUG-84 14:51 PAGE 77-9
TEST 27 -- VIA TIMER # 1 ONE-SHOT MODE

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8159 032560 120007          T1LH
8160 032562 002456          TMP7
8161 032564 103003          BCC      .+10          ;IF NO ERROR, PROCEED
8162 032566                ERROR          ;ELSE, REPORT IT
      (3) 032566 104460                TRAP      C#ERROR
8163 032570                ESCAPE TST          ;          AND EXIT THIS TEST          TRAP      C#ESCAPE
      (3) 032570 104410                ;          ;          .WORD    L10073-.
      (3) 032572 003314                GEDF     EMSOI,ERR50      ;NO!  BAD VIA CHIP!
8164 032574                ;          "DEVICE FATAL" ERROR # 59
      (2)                                ;          ;          TRAP      C#ERDF
      (6) 032574 104455                ;          ;          .WORD    59
      (7) 032576 000073                ;          ;          .WORD    EMSOI
      (7) 032600 016550                ;          ;          .WORD    ERR50
      (7) 032602 010774                BR       28#             ;BYPASS THE REST OF THIS SECTION OF TESTING
8165 032604 000433                JSR      R5,READ        ;READ T1L-H (ADDR 07)
8166                                T1LH
8167 032606 004537 004076 24#:   ;THIS SHOULD RETURN A 000
8168 032612 120007          TMP7
8169 032614 002456          BCC      .+10          ;IF NO ERROR, PROCEED
8170 032616 103003          ERROR          ;ELSE, REPORT IT
8171 032620                TRAP      C#ERROR
      (3) 032620 104460                ESCAPE TST          ;          AND EXIT THIS TEST          TRAP      C#ESCAPE
8172 032622                ;          ;          .WORD    L10073-.
      (3) 032622 104410                CMPB    TMP7,19#        ;CHECK T1L-H (ADDR 07) AGAINST LOADED VALUE
      (3) 032624 003262                BEQ     26#             ;IF SAME, PROCEED
8173 032626 123737 002456 032173 GEDF     EMSOJ,ERR50      ;ELSE, REPORT BAD LOAD OF T1L-H (ADDR 07)
8174 032634 001405                ;          "DEVICE FATAL" ERROR # 60
8175 032636                TRAP      C#ERDF
      (2)                                ;          ;          .WORD    60
      (6) 032636 104455                ;          ;          .WORD    EMSOJ
      (7) 032640 000074                ;          ;          .WORD    ERR50
      (7) 032642 016612                BR       28#             ;BYPASS THE REST OF THIS SECTION OF TESTING
      (7) 032644 010774                JSR      PC,GETT1       ;IS "T1" STILL SET?
8176 032646 000412                BVC     .+6             ;IF NO ERROR, PROCEED
8177                                ESCAPE SUB          ;ELSE, IT'S ALREADY BEEN REPORTED -- EXIT
8178 032650 004737 036142 26#:   TRAP      C#ESCAPE
8179 032654 102002                ;          ;          .WORD    L10074-.
8180 032656                BCS     28#             ;YES, ALL'S OK
      (3) 032656 104410                GEDF     EMSOK,ERR50    ;NO!  BAD VIA CHIP!
      (3) 032660 000520                ;          "DEVICE FATAL" ERROR # 61
8181 032662 103404                TRAP      C#ERDF
      (2)                                ;          ;          .WORD    61
      (6) 032664 104455                ;          ;          .WORD    EMSOK
      (7) 032666 000075                ;          ;          .WORD    ERR50
      (7) 032670 016700
      (7) 032672 010774
8183
8184
8185
8186 032674 004537 004076 28#:   ;READ T1C-L (ADDR 04)
8187 032700 120004          T1CL          ;(THIS VALUE ISN'T CHECKED BECAUSE IT CAN BE
8188 032702 002450          TMP4          ; ALMOST ANYTHING)
8189 032704 103003          BCC      .+10          ;IF NO ERROR, PROCEED
8190 032706                ERROR          ;ELSE, REPORT IT
      (3) 032706 104460                TRAP      C#ERROR

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CVDMACO DMV11 MCTRL DIAG #1
CVDMAC.P11 16-AUG-84 13:59

MACY11 30A(1052) 16-AUG-84 14:51 PAGE 77-10
TEST 27 - VIA TIMER # 1 ONE-SHOT MODE

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8191 032710          ESCAPE TST          ;          AND EXIT THIS TEST
(3) 032710 104410          TRAP          C#ESCAPE
(3) 032712 003174          .WORD          L10073-.
8192 032714 004737 036142 JSR      PC,GETT1          ;IS "T1" CLEARED NOW
8193 032720 102002          BVC      .+6              ;IF NO ERROR, PROCEED
8194 032722          ESCAPE SUB          ;ELSE, IT'S ALREADY BEEN REPORTED -- EXIT
(3) 032722 104410          TRAP          C#ESCAPE
(3) 032724 000454          .WORD          L10074-.
8195 032726 103024          BCC      29#              ;YES, ALL'S OK
8196 032730 004537 004076 JSR      R5,READ          ;GET TILL FOR ERROR MESSAGE
8197 032734 120006          TILL
8198 032736 002454          TMP6
8199 032740 103003          BCC      .+10            ;IF NO ERROR, PROCEED
8200 032742          ERROR          ;ELSE, REPORT IT
(3) 032742 104460          TRAP          C#ERROR
8201 032744          ESCAPE TST          ;          AND EXIT THIS TEST
(3) 032744 104410          TRAP          C#ESCAPE
(3) 032746 003140          .WORD          L10073-.
8202 032750 004537 004076 JSR      R5,READ          ;GET TILH FOR ERROR MESSAGE
8203 032754 120007          TILH
8204 032756 002456          TMP7
8205 032760 103003          BCC      .+10            ;IF NO ERROR, PROCEED
8206 032762          ERROR          ;ELSE, REPORT IT
(3) 032762 104460          TRAP          C#ERROR
8207 032764          ESCAPE TST          ;          AND EXIT THIS TEST
(3) 032764 104410          TRAP          C#ESCAPE
(3) 032766 003120          .WORD          L10073-.
8208 032770          GEDF      EMSOC,ERR50 ;NO! BAD VIA CHIP!
(2)                                ;          "DEVICE FATAL" ERROR # 62
(6) 032770 104455          TRAP          C#ERDF
(7) 032772 000076          .WORD          62
(7) 032774 016215          .WORD          EMSOC
(7) 032776 010774          .WORD          ERR50
8209
8210          ;-----
8211
8212 033000 004537 004322 29# JSR      R5,WRITE          ;RE-WRITE INTO TIC H (ADDR 05) TO SET T1 AGAIN
8213 033004 120005          TICH
8214 033006 002453          TMP5+1
8215 033010 103003          BCC      .+10            ;IF NO ERROR, PROCEED
8216 033012          ERROR          ;ELSE, REPORT IT
(3) 033012 104460          TRAP          C#ERROR
8217 033014          ESCAPE TST          ;          AND EXIT THIS TEST
(3) 033014 104410          TRAP          C#ESCAPE
(3) 033016 003070          .WORD          L10073-.
8218 033020 004737 036142 JSR      PC,GETT1          ;IS "T1" SET AGAIN
8219 033024 102002          BVC      .+6              ;IF NO ERROR, PROCEED
8220 033026          ESCAPE SUB          ;ELSE, IT'S ALREADY BEEN REPORTED -- EXIT
(3) 033026 104410          TRAP          C#ESCAPE
(3) 033030 000350          .WORD          L10074-.
8221 033032 103426          BCS      32#              ;YES, ALL'S WELL (AGAIN?)
8222 033034 004537 004076 JSR      R5,READ          ;GET TILL FOR ERROR MESSAGE
8223 033040 120006          TILL
8224 033042 002454          TMP6
8225 033044 103003          BCC      .+10            ;IF NO ERROR, PROCEED
8226 033046          ERROR          ;ELSE, REPORT IT

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CVDMACO DMV11 MCTRL DIAG #1
CVDMAC.P11 16-AUG-84 13:59

MACY11 30A(1052) 16-AUG 84 14:51 PAGE 77-11
TEST 27 -- VIA TIMER # 1 ONE-SHOT MODE

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(3) 033046 104460
8227 033050 ESCAPE TST ; AND EXIT THIS TEST TRAP C$ERROR
(3) 033050 104410 TRAP C$ESCAPE
(3) 033052 003034 .WORD L10073-.
8228 033054 004537 004076 JSR R5,READ ;GET T1LH FOR ERROR MESSAGE
8229 033060 120007 T1LH
8230 033062 002456 TMP7
8231 033064 103003 BCC .+10 ;IF NO ERROR, PROCEED
8232 033066 ERROR ;ELSE, REPORT IT
(3) 033066 104460 TRAP C$ERROR
8233 033070 ESCAPE TST ; AND EXIT THIS TEST TRAP C$ESCAPE
(3) 033070 104410 .WORD L10073-.
(3) 033072 003014
8234 033074 GEDF EMSOL,ERR50 ;NO! SOMETHING WENT WRONG! REPORT IT
(2) ; "DEVICE FATAL" ERROR # 63
(6) 033074 104455 TRAP C$ERDF
(7) 033076 000077 .WORD 63
(7) 033100 016742 .WORD EMSOL
(7) 033102 010774 .WORD ERR50
8235 033104 ESCAPE SUB ; AND EXIT FROM THIS SUBTEST TRAP C$ESCAPE
(3) 033104 104410 .WORD L10074-.
(3) 033106 000272
8236
8237 ;-----
8238
8239 033110 112737 000125 002455 32$: MOVB #125,TMP6+1 ;USING A DIFFERENT VALUE -- 55 HEX..
8240 033116 004537 004322 JSR R5,WRITE ;RE-LOAD T1L-L (ADDR 06)
8241 033122 120006 T1L
8242 033124 002455 TMP6+1
8243 033126 103003 BCC .+10 ;IF NO ERROR, PROCEED
8244 033130 ERROR ;ELSE, REPORT IT
(3) 033130 104460 TRAP C$ERROR
8245 033132 ESCAPE TST ; AND EXIT THIS TEST TRAP C$ESCAPE
(3) 033132 104410 .WORD L10073-.
(3) 033134 002752
8246 033136 004737 036142 JSR PC,GETT1 ;IS "T1" STILL SET?
8247 033142 102002 BVC .+6 ;IF NO ERROR, PROCEED
8248 033144 ESCAPE SUB ;ELSE, IT'S ALREADY BEEN REPORTED -- EXIT TRAP C$ESCAPE
(3) 033144 104410 .WORD L10074-.
(3) 033146 000232
8249 033150 103426 BCS 33$ ;YES, ALL'S STILL OK
8250 033152 004537 004076 JSR R5,READ ;GET T1LH FOR ERROR MESSAGE
8251 033156 120006 T1L
8252 033160 002454 TMP6
8253 033162 103003 BCC .+10 ;IF NO ERROR, PROCEED
8254 033164 ERROR ;ELSE, REPORT IT
(3) 033164 104460 TRAP C$ERROR
8255 033166 ESCAPE TST ; AND EXIT THIS TEST TRAP C$ESCAPE
(3) 033166 104410 .WORD L10073-.
(3) 033170 002716
8256 033172 004537 004076 JSR R5,READ ;GET T1LH FOR ERROR MESSAGE
8257 033176 120007 T1LH
8258 033200 002456 TMP7
8259 033202 103003 BCC .+10 ;IF NO ERROR, PROCEED
8260 033204 ERROR ;ELSE, REPORT IT
(3) 033204 104460 TRAP C$ERROR

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CVDMAC0 DMV11 MCTRL DIAG #1
CVDMAC.P11 16-AUG-84 13:59

MACY11 30A(1052) 16-AUG-84 14:51 PAGE 77-12
TEST 27 -- VIA TIMER # 1 ONE-SHOT MODE

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8261 033206          ESCAPE TST          |          AND EXIT THIS TEST          TRAP C:ESCAPE
      (3) 033206 104410                    .WORD L10073-.
      (3) 033210 002676
8262 033212          GEDF  EMS0M,ERR50  |NO!  SOMETHING WENT WRONG!  REPORT IT
      (2)                    |          "DEVICE FATAL" ERROR # 64
      (6) 033212 104455                    TRAP C:EROF
      (7) 033214 000100                    .WORD 64
      (7) 033216 017024                    .WORD EMS0M
      (7) 033220 010774                    .WORD ERR50
8263 033222          ESCAPE SUB          |          AND EXIT FROM THIS SUBTEST   TRAP C:ESCAPE
      (3) 033222 104410                    .WORD L10074-.
      (3) 033224 000154
8264
8265
8266 -----
8267 033226 112737 000125 002453 334:  MOVB  @125,TMP5+1  |AND USING THE SAME VALUE AGAIN (55 HEX),
8268 033234 004537 004322          JSR   R5,WRITE   |NOW LOAD TIC-M (ADDR 05)
8269 033240 120005          T1CH
8270 033242 002453          TMP5+1
8271 033244 103003          BCC   .+10      |IF NO ERROR, PROCEED
8272 033246          ERROR                    |ELSE, REPORT IT
      (3) 033246 104460                    TRAP C:ERROR
8273 033250          ESCAPE TST          |          AND EXIT THIS TEST          TRAP C:ESCAPE
      (3) 033250 104410                    .WORD L10073-.
      (3) 033252 002634
8274 033254 004737 036142          JSR   PC,GETT1  |"T1" SHOULD NOW BE CLEARED
8275 033260 102002          BVC   .+6      |IF NO ERROR, PROCEED
8276 033262          ESCAPE SUB          |ELSE, IT'S ALREADY BEEN REPORTED -- EXIT
      (3) 033262 104410                    TRAP C:ESCAPE
      (3) 033264 000114                    .WORD L10074-.
8277 033266 103044          BCC   344
8278 033270 004537 004076          JSR   R5,READ   |IT WAS, ALL'S WELL THAT END'S WELL (I THINK!?)
8279 033274 120004          T1CL          |GET T1CL FOR ERROR MESSAGE
8280 033276 002450          TMP4
8281 033300 103003          BCC   .+10      |IF NO ERROR, PROCEED
8282 033302          ERROR                    |ELSE, REPORT IT
      (3) 033302 104460                    TRAP C:ERROR
8283 033304          ESCAPE TST          |          AND EXIT THIS TEST          TRAP C:ESCAPE
      (3) 033304 104410                    .WORD L10073-.
      (3) 033306 002600
8284 033310 004537 004076          JSR   R5,READ   |GET T1CH FOR ERROR MESSAGE
8285 033314 120005          T1CH
8286 033316 002452          TMP5
8287 033320 103003          BCC   .+10      |IF NO ERROR, PROCEED
8288 033322          ERROR                    |ELSE, REPORT IT
      (3) 033322 104460                    TRAP C:ERROR
8289 033324          ESCAPE TST          |          AND EXIT THIS TEST          TRAP C:ESCAPE
      (3) 033324 104410                    .WORD L10073 .
      (3) 033326 002560
8290 033330 004537 004076          JSR   R5,READ   |GET T1LL FOR ERROR MESSAGE
8291 033334 120006          T1LL
8292 033336 002454          TMP6
8293 033340 103003          BCC   .+10      |IF NO ERROR, PROCEED
8294 033342          ERROR                    |ELSE, REPORT IT
      (3) 033342 104460                    TRAP C:ERROR
8295 033344          ESCAPE TST          |          AND EXIT THIS TEST

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CVDMACO DMV11 MCTRL DIAG #1
CVDMAC.P11 16-AUG-84 13:59

MACY11 30A(1052) 16-AUG-84 14:51 PAGE 77-13
TEST 27 -- VIA TIMER # 1 ONE-SHOT MODE

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(3) 033344 104410 TRAP C:ESCAPE
(3) 033346 002540 .WORD L10073-.
8296 033350 004537 004076 JSR R5,READ ;GET T1LM FOR ERROR MESSAGE
8297 033354 120007 T1LM
8298 033356 002456 TMP7
8299 033360 103003 BCC .+10 ;IF NO ERROR, PROCEED
8300 033362 ERROR ;ELSE, REPORT IT
(3) 033362 104460 TRAP C:ERROR
8301 033364 ESCAPE TST ; AND EXIT THIS TEST
(3) 033364 104410 TRAP C:ESCAPE
(3) 033366 002520 .WORD L10073-.
8302 033370 GEDF EMSON,ERR50 ;IT WASN'T! SOMETHING WENT WRONG! REPORT IT
(2) ; "DEVICE FATAL" ERROR # 65
(6) 033370 104455 TRAP C:ERDF
(7) 033372 000101 .WORD 65
(7) 033374 017066 .WORD EMSON
(7) 033376 010774 .WORD ERR50
8303
8304 033400 344: ENDSUB
(3) 033400 L10074:
(3) 033400 104403 TRAP C:ESUB
8305 ;.....
8306
8307 ; TEST TIMER # 1 USING ONE-SHOT MODE WITH OUTPUT ON PB7 ENABLED.
8308
8309 033402 BGNSUB
(3) 033402 T27.2:
(3) 033402 104402 TRAP C:BSUB
8310 033404 004737 003774 JSR PC,MSTCLR ;INIT DMV & ENTER M-LOOP
8311 033410 103003 BCC 14 ;IF NO ERROR, PROCEED WITH TESTING
8312 033412 ERROR ;ELSE, REPORT ERROR
(3) 033412 104460 TRAP C:ERROR
8313 033414 ESCAPE TST ; & EXIT TEST
(3) 033414 104410 TRAP C:ESCAPE
(3) 033416 002470 .WORD L10073-.
8314 033420 004537 004672 14: JSR R5,INITT1 ;INITIALIZE TIMER # 1
8315 033424 000000 ; 0 ==> LATCHES
8316 033426 000200 ; MODE 2 & "T1" INT. ENABLE FLAG CLEARED
8317 033430 103003 BCC .+10 ;IF NO ERROR, PROCEED
8318 033432 ERROR ;ELSE, REPORT IT
(3) 033432 104460 TRAP C:ERROR
8319 033434 ESCAPE TST ; AND EXIT THIS TEST
(3) 033434 104410 TRAP C:ESCAPE
(3) 033436 002450 .WORD L10073-.
8320 ; MODE 2 IS ONE-SHOT MODE WITH OUTPUT ON PB7 CONTROLLED BY TIMER 1
8321
8322
8323 033440 004737 036142 JSR PC,GETT1 ;IS "T1" SET?
8324 033444 102002 BVC .+6 ;IF NO ERROR, PROCEED
8325 033446 ESCAPE SUB ;ELSE, IT'S ALREADY BEEN REPORTED -- EXIT
(3) 033446 104410 TRAP C:ESCAPE
(3) 033450 002434 .WORD L10075-.
8326 033452 103123 BCC 64 ;NO, GOOD.
8327 ;YES, REPORT IT'S NOT BEING CLEARED @ INIT.
8328 033454 004537 004076 JSR R5,READ ;GET ACR FOR ERROR MESSAGE
8329 033460 120013 ACR

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CVDMACO DMV11 MCTRL DIAG #1
CVDMAC.P11 16-AUG-84 13:59

MACY11 30A(1052) 16-AUG-84 14:51 PAGE 77-14
TEST 27 -- VIA TIMER # 1 ONE-SHOT MODE

8330	033462	002466			TMP8				
8331	033464	103003			BCC	. .10		;IF NO ERROR, PROCEED	
8332	033466				ERROR			;ELSE, REPORT IT	
(3)	033466	104460							TRAP C#ERROR
8333	033470				ESCAPE	TST		; AND EXIT THIS TEST	TRAP C#ESCAPE
(3)	033470	104410							.WORD L10073-
(3)	033472	002414							
8334	033474	004537	004076		JSR	R5,READ		;GET T1CL FOR ERROR MESSAGE	
8335	033500	120004			T1CL				
8336	033502	002450			TMP4				
8337	033504	103003			BCC	. .10		;IF NO ERROR, PROCEED	
8338	033506				ERROR			;ELSE, REPORT IT	
(3)	033506	104460							TRAP C#ERROR
8339	033510				ESCAPE	TST		; AND EXIT THIS TEST	TRAP C#ESCAPE
(3)	033510	104410							.WORD L10073-
(3)	033512	002374							
8340	033514	004537	004076		JSR	R5,READ		;GET T1CH FOR ERROR MESSAGE	
8341	033520	120005			T1CH				
8342	033522	002452			TMP5				
8343	033524	103003			BCC	. .10		;IF NO ERROR, PROCEED	
8344	033526				ERROR			;ELSE, REPORT IT	
(3)	033526	104460							TRAP C#ERROR
8345	033530				ESCAPE	TST		; AND EXIT THIS TEST	TRAP C#ESCAPE
(3)	033530	104410							.WORD L10073-
(3)	033532	002354							
8346	033534	004537	004076		JSR	R5,READ		;GET T1LL FOR ERROR MESSAGE	
8347	033540	120006			T1LL				
8348	033542	002454			TMP6				
8349	033544	103003			BCC	. .10		;IF NO ERROR, PROCEED	
8350	033546				ERROR			;ELSE, REPORT IT	
(3)	033546	104460							TRAP C#ERROR
8351	033550				ESCAPE	TST		; AND EXIT THIS TEST	TRAP C#ESCAPE
(3)	033550	104410							.WORD L10073-
(3)	033552	002334							
8352	033554	004537	004076		JSR	R5,READ		;GET T1LH FOR ERROR MESSAGE	
8353	033560	120007			T1LH				
8354	033562	002456			TMP7				
8355	033564	103003			BCC	. .10		;IF NO ERROR, PROCEED	
8356	033566				ERROR			;ELSE, REPORT IT	
(3)	033566	104460							TRAP C#ERROR
8357	033570				ESCAPE	TST		; AND EXIT THIS TEST	TRAP C#ESCAPE
(3)	033570	104410							.WORD L10073-
(3)	033572	002314							
8358	033574				GEDF	EM50A,ERR50		;REPORT "T1" NOT CLEARED @ INIT.	
(2)								; "DEVICE FATAL" ERROR # 66	
(6)	033574	104455							TRAP C#ERDF
(7)	033576	000102							.WORD 66
(7)	033600	016101							.WORD EM50A
(7)	033602	010774							.WORD ERR50
8359									
8360									
8361									
8362	033604	112737	000002	002453	MOVB	#2,TMP5.1			
8363	033612	004537	004322		JSR	R5,WRITE		;INIT TIMER # 1 BY WRITING INTO	
8364	033616	120005			T1CH			;T1C-H (ADDR 05)	
8365	033620	002453			TMP5.1				

CVDMACO DMV11 MCTRL DIAG #1
CVDMAC.P11 16-AUG-84 13:59

MACY11 30A(1052) 16-AUG-84 14:51 PAGE 77-15
TEST 27 -- VIA TIMER # 1 ONE-SHOT MODE

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8366 033622 103003          BCC      .+10          ;IF NO ERROR, PROCEED
8367 033624                ERROR                    ;ELSE, REPORT IT
      (3) 033624 104460
8368 033626                ESCAPE  TST          ;      AND EXIT THIS TEST          TRAP   C#ERROR
      (3) 033626 104410                .WORD   L10073-.
      (3) 033630 002256
8369 033632 004737 036142    JSR      PC,GETT1        ;IS "T1" SET?
8370 033636 102002          BVC      .+6          ;IF NO ERROR, PROCEED
8371 033640                ESCAPE  SUB          ;ELSE, IT'S ALREADY BEEN REPORTED -- EXIT
      (3) 033640 104410                TRAP   C#ESCAPE
      (3) 033642 002242                .WORD   L10075-.
8372 033644 103026          BCC      64          ;NO, GOOD.
8373                                ;YES, REPORT IT'S NOT BEING CLEARED @ INIT.
8374 033646 004537 004076    JSR      R5,READ        ;GET T1CH FOR ERROR MESSAGE
8375 033652 120005          T1CH
8376 033654 002452          TMP5
8377 033656 103003          BCC      .+10          ;IF NO ERROR, PROCEED
8378 033660                ERROR                    ;ELSE, REPORT IT
      (3) 033660 104460
8379 033662                ESCAPE  TST          ;      AND EXIT THIS TEST          TRAP   C#ERROR
      (3) 033662 104410                TRAP   C#ESCAPE
      (3) 033664 002222                .WORD   L10073-.
8380 033666 004537 004076    JSR      R5,READ        ;GET T1LM FOR ERROR MESSAGE
8381 033672 120007          T1LM
8382 033674 002456          TMP7
8383 033676 103003          BCC      .+10          ;IF NO ERROR, PROCEED
8384 033700                ERROR                    ;ELSE, REPORT IT
      (3) 033700 104460
8385 033702                ESCAPE  TST          ;      AND EXIT THIS TEST          TRAP   C#ERROR
      (3) 033702 104410                TRAP   C#ESCAPE
      (3) 033704 002202                .WORD   L10073-.
8386 033706                GEDF   EM50B,ERR50    ;REPORT "T1" NOT CLEARED @ INIT.
      (2)                                ;      "DEVICE FATAL" ERROR # 67
      (6) 033706 104455                TRAP   C#ERDF
      (7) 033710 000103                .WORD   67
      (7) 033712 016147                .WORD   EM50B
      (7) 033714 010774                .WORD   ERR50
8387 033716                ESCAPE  SUB          ;AND EXIT SUBTEST
      (3) 033716 104410                TRAP   C#ESCAPE
      (3) 033720 002164                .WORD   L10075-.
8388
8389
8390
-----
8391 033722 004737 003774    64:   JSR      PC,MSTCLR        ;INIT DMV & ENTER M-LOOP AGAIN
8392 033726 112737 000377 002445    MOVB   #377,TMP2+1    ;INITIAL VALUE FOR DDRB
8393 033734 004537 004322    JSR      R5,WRITE      ;LOAD IT
8394 033740 120002          DDRB
8395 033742 002445          TMP2+1
8396 033744 103003          BCC      .+10          ;IF NO ERROR, PROCEED
8397 033746                ERROR                    ;ELSE, REPORT IT
      (3) 033746 104460                TRAP   C#ERROR
8398 033750                ESCAPE  TST          ;      AND EXIT THIS TEST          TRAP   C#ESCAPE
      (3) 033750 104410                .WORD   L10073-.
      (3) 033752 002134
8399 033754 004537 004672    JSR      R5,INITT1    ;RE-INITIALIZE THE TIMER
8400 033760 000000          0          ;      FOR MAXIMUM TIMEOUT

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CVDMACO DMV11 MCTRL DIAG #1
CVDMAC.P11 16-AUG-84 13:59

MACY11 30A(1052) 16-AUG-84 14:51 PAGE 77-16
TEST 27 -- VIA TIMER # 1 ONE SHOT MODE

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8401 033762 000200          BIT7          ; MODE 2 & CLEARED "T1" INT. FLAG
8402 033764 103003          BCC          .+10      ;IF NO ERROR, PROCEED
8403 033766          ERROR          ;ELSE, REPORT IT
      (3) 033766 104460          ESCAPE TST          ; AND EXIT THIS TEST          TRAP C#ERROR
8404 033770          ESCAPE TST          ; AND EXIT THIS TEST          TRAP C#ESCAPE
      (3) 033770 104410          .WORD          L10073-.
      (3) 033772 002114
8405 033774 004537 004076    JSR          R5,READ    ;GET ACR FOR FUTURE ERROR MESSAGES
8406 034000 120013          ACR
8407 034002 002466          TMPB
8408 034004 103003          BCC          .+10      ;IF NO ERROR, PROCEED
8409 034006          ERROR          ;ELSE, REPORT IT
      (3) 034006 104460          ESCAPE TST          ; AND EXIT THIS TEST          TRAP C#ERROR
8410 034010          ESCAPE TST          ; AND EXIT THIS TEST          TRAP C#ESCAPE
      (3) 034010 104410          .WORD          L10073-.
      (3) 034012 002074
8411 034014 004537 036110    JSR          R5,LODT1C ;LOAD TIMER # 1
8412 034020          252          74: .BYTE 252
8413 034021          252          84: .BYTE 252
8414
8415
8416
-----
8417 034022 004737 036326    JSR          PC,GETPB7 ;GET "PB7". IS IT CLEARED?
8418 034026 102002          BVC          .+6      ;IF NO ERROR, PROCEED
8419 034030          ESCAPE SUB          ;ELSE, IT'S ALREADY BEEN REPORTED -- EXIT
      (3) 034030 104410          .WORD          L10075-.
      (3) 034032 002052
8420 034034 103070          BCC          9#
8421 034036 004537 004076    JSR          R5,READ    ;GET IFR FOR ERROR MESSAGE
8422 034042 120015          IFR
8423 034044 002472          TMPD
8424 034046 103003          BCC          .+10      ;IF NO ERROR, PROCEED
8425 034050          ERROR          ;ELSE, REPORT IT
      (3) 034050 104460          ESCAPE TST          ; AND EXIT THIS TEST          TRAP C#ERROR
8426 034052          ESCAPE TST          ; AND EXIT THIS TEST          TRAP C#ESCAPE
      (3) 034052 104410          .WORD          L10073-.
      (3) 034054 002032
8427 034056 004537 004076    JSR          R5,READ    ;GET T1CL FOR ERROR MESSAGE
8428 034062 120004          T1CL
8429 034064 002450          TMP4
8430 034066 103003          BCC          .+10      ;IF NO ERROR, PROCEED
8431 034070          ERROR          ;ELSE, REPORT IT
      (3) 034070 104460          ESCAPE TST          ; AND EXIT THIS TEST          TRAP C#ERROR
8432 034072          ESCAPE TST          ; AND EXIT THIS TEST          TRAP C#ESCAPE
      (3) 034072 104410          .WORD          L10073-.
      (3) 034074 002012
8433 034076 004537 004076    JSR          R5,READ    ;GET T1CH FOR ERROR MESSAGE
8434 034102 120005          T1CH
8435 034104 002452          TMP5
8436 034106 103003          BCC          .+10      ;IF NO ERROR, PROCEED
8437 034110          ERROR          ;ELSE, REPORT IT
      (3) 034110 104460          ESCAPE TST          ; AND EXIT THIS TEST          TRAP C#ERROR
8438 034112          ESCAPE TST          ; AND EXIT THIS TEST          TRAP C#ESCAPE
      (3) 034112 104410          .WORD          L10073-.
      (3) 034114 001772
8439 034116 004537 004076    JSR          R5,READ    ;GET T1LL FOR ERROR MESSAGE

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CVDMACO DMV11 MCTRL DIAG #1
CVDMAC.P11 16-AUG-84 13:59

MACY11 30A(1052) 16-AUG-84 14:51 PAGE 77-17
TEST 27 -- VIA TIMER # 1 ONE-SHOT MODE

8440	034122	120006		TILL			
8441	034124	002454		TMP6			
8442	034126	103003		BCC	.*10	;IF NO ERROR, PROCEED	
8443	034130			ERROR		;ELSE, REPORT IT	
(3)	034130	104460					TRAP C#ERROR
8444	034132			ESCAPE	TST	; AND EXIT THIS TEST	
(3)	034132	104410					TRAP C#ESCAPE
(3)	034134	001752					.WORD L10073--.
8445	034136	004537	004076	JSR	R5,READ	;GET TILH FOR ERROR MESSAGE	
8446	034142	120007		TILH			
8447	034144	002456		TMP7			
8448	034146	103003		BCC	.*10	;IF NO ERROR PROCEED	
8449	034150			ERROR		;ELSE, REPORT IT	
(3)	034150	104460					TRAP C#ERROR
8450	034152			ESCAPE	TST	; AND EXIT THIS TEST	
(3)	034152	104410					TRAP C#ESCAPE
(3)	034154	001732					.WORD L10073--.
8451	034156			GEDF	EM50V,ERR50	;NO, STILL(?) SET!	
(2)						; "DEVICE FATAL" ERROR # 68	
(6)	034156	104455					TRAP C#ERDF
(7)	034160	000104					.WORD 68
(7)	034162	017252					.WORD EM50V
(7)	034164	010774					.WORD ERR50
8452	034166	004737	036200	JSR	PC,KICKT1	;BECAUSE THE ERROR MESSAGE TAKES SO LONG TO	
8453	034172	103003		BCC	.*10	;IF NO ERROR, PROCEED	
8454	034174			ERROR		;ELSE, REPORT IT	
(3)	034174	104460					TRAP C#ERROR
8455	034176			ESCAPE	TST	; AND EXIT THIS TEST	
(3)	034176	104410					TRAP C#ESCAPE
(3)	034200	001706					.WORD L10073--.
8456	034202	004737	005044	JSR	PC,STALL	; PROCESS & PRINT, RE-START THE TIMER AND THEN	
8457	034206	004737	005044	JSR	PC,STALL	; DELAY FOR A LITTLE WHILE SO IT CAN DECREMENT	
8458	034212	012703	000100	MOV	#100,R3	;# INIT. "REPEAT" VALUE	
8459	034216	004537	004076	JSR	R5,READ	;READ THE LOW COUNTER	
8460	034222	120004		TICL			
8461	034224	002450		TMP4			
8462	034226	103003		BCC	.*10	;IF NO ERROR, PROCEED	
8463	034230			ERROR		;ELSE, REPORT IT	
(3)	034230	104460					TRAP C#ERROR
8464	034232			ESCAPE	TST	; AND EXIT THIS TEST	
(3)	034232	104410					TRAP C#ESCAPE
(3)	034234	001652					.WORD L10073--.
8465	034236	123737	002450 034020	CMPS	TMP4,7#	;MAKE SURE THE COUNTER IS DECREMENTING	
8466	034244	001013		BNE	12#	;IT IS, NOW SEE IF THE HIGH COUNTER IS TOO	
8467	034246	077315		SOB	R3,9#	;# NO: IF NOT 64. ATTEMPTS, TRY AGAIN	
8468	034250			GEDF	EM50D,ERR50	;IT WASN'T -- REPORT THE ERROR	
(2)						; "DEVICE FATAL" ERROR # 69	
(6)	034250	104455					TRAP C#ERDF
(7)	034252	000105					.WORD 69
(7)	034254	016263					.WORD EM50D
(7)	034256	010774					.WORD ERR50
8469	034260	004737	036200	JSR	PC,KICKT1	;RESTART TIMER AGAIN IF ERROR MESSAGE PRINTED	
8470	034264	103003		BCC	12#	;IF NO ERROR, PROCEED	
8471	034266			ERROR		;ELSE, REPORT IT	
(3)	034266	104460					TRAP C#ERROR
8472	034270			ESCAPE	TST	; AND EXIT THIS TEST	

CVDMACO DMV11 MCTRL DIAG #1
CVDMAC.P11 16-AUG-84 13:59

MACY11 30A(1052) 16-AUG-84 14:51 PAGE 77-18
TEST 27 -- VIA TIMER # 1 ONE-SHOT MODE

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(3) 034270 104410 TRAP C#ESCAPE
(3) 034272 001614 .WORD L10073-.
8473 034274 012703 000100 12: MOV #100,R3 ;INIT. TIMEOUT VALUE
8474 034300 004537 004076 13: JSR R5,READ ;READ THE HIGH COUNTER
8475 034304 120005 T1CH
8476 034306 002452 TMP5
8477 034310 103003 BCC .+10 ;IF NO ERROR, PROCEED
8478 034312 ERROR ;ELSE, REPORT IT
(3) 034312 104460 TRAP C#ERROR
8479 034314 ESCAPE TST ; AND EXIT THIS TEST
(3) 034314 104410 TRAP C#ESCAPE
(3) 034316 001570 .WORD L10073-.
8480 034320 123737 002452 034021 CMPB TMP5,R4 ;DID IT CHANGE FROM THE LOADED VALUE?
8481 034326 001027 BNE 17: ;YES, PROCEED WITH TESTING
8482 034330 077315 SOB R3,13: ;NO, IF NO TIMEOUT, TRY AGAIN
8483 034332 004537 004076 JSR R5,READ ;GET TILL FOR ERROR MESSAGE
8484 034336 120006 TILL
8485 034340 002454 TMP6
8486 034342 103003 BCC .+10 ;IF NO ERROR, PROCEED
8487 034344 ERROR ;ELSE, REPORT IT
(3) 034344 104460 TRAP C#ERROR
8488 034346 ESCAPE TST ; AND EXIT THIS TEST
(3) 034346 104410 TRAP C#ESCAPE
(3) 034350 001536 .WORD L10073-.
8489 034352 004537 004076 JSR R5,READ ;GET TILH FOR ERROR MESSAGE
8490 034356 120007 TILH
8491 034360 002456 TMP7
8492 034362 103003 BCC .+10 ;IF NO ERROR, PROCEED
8493 034364 ERROR ;ELSE, REPORT IT
(3) 034364 104460 TRAP C#ERROR
8494 034366 ESCAPE TST ; AND EXIT THIS TEST
(3) 034366 104410 TRAP C#ESCAPE
(3) 034370 001516 .WORD L10073-.
8495 034372 GEDF EMS0E,ERR50 ;ELSE, REPORT THAT HIGH COUNTER ISN'T RUMPLING
(2) ; "DEVICE FATAL" ERROR # 70
(6) 034372 104455 TRAP C#ERDF
(7) 034374 000106 .WORD 70
(7) 034376 016317 .WORD EMS0E
(7) 034400 010774 .WORD ERR50
8496 034402 ESCAPE SUB ;IN THAT CASE, WE CAN'T PROCEED WITH TESTING EITHER
(3) 034402 104410 TRAP C#ESCAPE
(3) 034404 001500 .WORD L10075-.
-----
8497
8498
8499 034406 112737 000377 002445 17: MOVB #377,TMP2+1 ;SETUP DDRB FOR DESIRED DIRECTION OF ORB
8500 034414 004537 004322 JSR R5,WRITE
8501 034420 120002 DDRB
8502 034422 002445 TMP2+1
8503 034424 103003 BCC .+10 ;IF NO ERROR, PROCEED
8504 034426 ERROR ;ELSE, REPORT IT
(3) 034426 104460 TRAP C#ERROR
8505 034430 ESCAPE TST ; AND EXIT THIS TEST
(3) 034430 104410 TRAP C#ESCAPE
(3) 034432 001454 .WORD L10073-.
8506 034434 004537 036110 JSR R5,LODT1C ;RE-LOAD TIMER # 1 WITH A VALUE WHICH WILL
8507 034440 001 18: .BYTE 1 ; CAUSE AN ALMOST IMMEDIATE TIMEOUT

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CVDMACO DMV11 MCTRL DIAG #1
CVDMAC.P11 16-AUG-84 13:59

MACY11 30A(1052) 16-AUG-84 14:51 PAGE 77-19
TEST 27 -- VIA TIMER # 1 ONE-SHOT MODE

```

198: .BYTE 0 ; (ADDRESS OF HIGH BYTE FOR T1C-H (ADDR 05))
-----
8508 034441 000
8509
8510
8511 034442 004737 036142 JSR PC,GETT1 ;WAS "T1" SET BY THE ABOVE OPERATION?
8512 034446 102002 BVC .+6 ;IF NO ERROR, PROCEED
8513 034450 ESCAPE SUB ;ELSE, IT'S ALREADY BEEN REPORTED -- EXIT
(3) 034450 104410 TRAP C$ESCAPE
(3) 034452 001432 .WORD L10075-.
8514 034454 103446 BCS 20+ ;YES, OK -- CONTINUE ERROR CHECKING
8515 034456 004537 004076 JSR R5,READ ;GET T1CL FOR ERROR MESSAGE
8516 034462 120004 T1CL
8517 034464 002450 TMP4
8518 034466 103003 BCC .+10 ;IF NO ERROR, PROCEED
8519 034470 ERROR ;ELSE, REPORT IT
(3) 034470 104460 TRAP C$ERROR
8520 034472 ESCAPE TST ; AND EXIT THIS TEST
(3) 034472 104410 TRAP C$ESCAPE
(3) 034474 001412 .WORD L10073-.
8521 034476 004537 004076 JSR R5,READ ;GET T1CH FOR ERROR MESSAGE
8522 034502 120005 T1CH
8523 034504 002452 TMP5
8524 034506 103003 BCC .+10 ;IF NO ERROR, PROCEED
8525 034510 ERROR ;ELSE, REPORT IT
(3) 034510 104460 TRAP C$ERROR
8526 034512 ESCAPE TST ; AND EXIT THIS TEST
(3) 034512 104410 TRAP C$ESCAPE
(3) 034514 001372 .WORD L10073-.
8527 034516 004537 004076 JSR R5,READ ;GET T1LL FOR ERROR MESSAGE
8528 034522 120006 T1LL
8529 034524 002454 TMP6
8530 034526 103003 BCC .+10 ;IF NO ERROR, PROCEED
8531 034530 ERROR ;ELSE, REPORT IT
(3) 034530 104460 TRAP C$ERROR
8532 034532 ESCAPE TST ; AND EXIT THIS TEST
(3) 034532 104410 TRAP C$ESCAPE
(3) 034534 001352 .WORD L10073-.
8533 034536 004537 004076 JSR R5,READ ;GET T1LH FOR ERROR MESSAGE
8534 034542 120007 T1LH
8535 034544 002456 TMP7
8536 034546 103003 BCC .+10 ;IF NO ERROR, PROCEED
8537 034550 ERROR ;ELSE, REPORT IT
(3) 034550 104460 TRAP C$ERROR
8538 034552 ESCAPE TST ; AND EXIT THIS TEST
(3) 034552 104410 TRAP C$ESCAPE
(3) 034554 001332 .WORD L10073-.
8539 034556 GEDF EM50F,ERR50 ;NO. BAD NEWS! REPORT THE FAILURE
(2) ; "DEVICE FATAL" ERROR # 71
(6) 034556 104155 TRAP C$ERDF
(7) 034560 000107 .WORD 71
(7) 034562 016353 .WORD EM50F
(7) 034564 010774 .WORD ERR50
8540 034566 ESCAPE SUB ; AND GET OUT OF SUBTEST
(3) 034566 104410 TRAP C$ESCAPE
(3) 034570 001314 .WORD L10075-.
8541 034572 004737 036326 201: JSR PC,GETPB7 ;GET "PB7". IS IT SET?
8542 034576 102002 BVC .+6 ;IF NO ERROR, PROCEED

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CVDMACO DMV11 MCTRL DIAG #1
CVDMAC.P11 16-AUG-84 13:59

MACY11 30A(1052) 16-AUG-84 14:51 PAGE 77-21
TEST 27 -- VIA TIMER # 1 ONE-SHOT MODE

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8577 034740 004737 036142          JSR    PC,GETT1      ;PUT THE CURRENT "T1" VALUE INTO THE CARRY BIT
8578 034744 102002          BVC    11#          ;IF NO ERROR, PROCEED
8579 034746          ESCAPE  SUB          ;ELSE, IT'S ALREADY BEEN REPORTED - EXIT
      (3) 034746 104410          TRAP   C#ESCAPE
      (3) 034750 001134          .WORD L10075-.
8580 034752 103435          11# :   BCS    21#          ;IF SET, ALL'S OK
8581          ;IF CLEARED! BAD VIA CHIP!
8582 034754 004537 004076          JSR    R5,READ      ;GET T1CL FOR ERROR MESSAGE
8583 034760 120004          T1CL
8584 034762 002450          TMP4
8585 034764 103003          BCC    .+10        ;IF NO ERROR, PROCEED
8586 034766          ERROR             ;ELSE, REPORT IT
      (3) 034766 104460          TRAP   C#ERROR
8587 034770          ESCAPE  TST          ;      AND EXIT THIS TEST
      (3) 034770 104410          TRAP   C#ESCAPE
      (3) 034772 001114          .WORD L10073-.
8588 034774 004537 004076          JSR    R5,READ      ;GET T1LL FOR ERROR MESSAGE
8589 035000 120006          T1LL
8590 035002 002454          TMP6
8591 035004 103003          BCC    .+10        ;IF NO ERROR, PROCEED
8592 035006          ERROR             ;ELSE, REPORT IT
      (3) 035006 104460          TRAP   C#ERROR
8593 035010          ESCAPE  TST          ;      AND EXIT THIS TEST
      (3) 035010 104410          TRAP   C#ESCAPE
      (3) 035012 001074          .WORD L10073-.
8594 035014 004537 004076          JSR    R5,READ      ;GET T1LH FOR ERROR MESSAGE
8595 035020 120007          T1LH
8596 035022 002456          TMP7
8597 035024 103003          BCC    .+10        ;IF NO ERROR, PROCEED
8598 035026          ERROR             ;ELSE, REPORT IT
      (3) 035026 104460          TRAP   C#ERROR
8599 035030          ESCAPE  TST          ;      AND EXIT THIS TEST
      (3) 035030 104410          TRAP   C#ESCAPE
      (3) 035032 001054          .WORD L10073-.
8600 035034          GEDF    EMSOG,ERR50 ;REPORT BAD VIA CHIP!
      (2)          ;      "DEVICE FATAL" ERROR # 73
      (6) 035034 104455          TRAP   C#ERDF
      (7) 035036 000111          .WORD 73
      (7) 035040 016420          .WORD EMSOG
      (7) 035042 010774          .WORD ERR50
8601 035044 000507          BR     28#          ;BYPASS THE REST OF THIS SECTION OF TESTING
8602
8603 035046 004537 004076          21# :   JSR    R5,READ      ;READ T1L-L (ADDR 06)
8604 035052 120006          T1LL
8605 035054 002454          TMP6
8606 035056 103003          BCC    .+10        ;THIS SHOULD RETURN A 001
8607 035060          ERROR             ;IF NO ERROR, PROCEED
      (3) 035060 104460          TRAP   C#ERROR
8608 035062          ESCAPE  TST          ;      AND EXIT THIS TEST
      (3) 035062 104410          TRAP   C#ESCAPE
      (3) 035064 001022          .WORD L10073-.
8609 035066 123737 002454 034440          CMPB  TMP6,18#      ;CHECK T1L-L (ADDR 06) AGAINST LOADED VALUE
8610 035074 001415          BEQ    23#          ;IF SAME, PROCEED
8611          ;ELSE, REPORT BAD LOAD OF T1L-L (ADDR 06)
8612 035076 004537 004076          JSR    R5,READ      ;GET T1LH FOR ERROR MESSAGE
8613 035102 120007          ;ILH

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CVDMACO DMV11 MCTRL DIAG #1
CVDMAC.P11 16-AUG-84 13:59

MACY11 30A(1052) 16-AUG-84 14:51 PAGE 77-22
TEST 27 -- VIA TIMER # 1 ONE SHOT MODE

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8614 035104 002456                TMP7
8615 035106 103003                BCC      .+10          ;IF NO ERROR, PROCEED
8616 035110                        ERROR          ;ELSE, REPORT IT
      (3) 035110 104460
8617 035112                        ESCAPE TST          ;          AND EXIT THIS TEST
      (3) 035112 104410
      (3) 035114 000772
8618 035116                        GEDF      EMS0H,ERR50 ;ELSE, REPORT BAD LOAD OF T1L-L (ADDR 06)
      (2)
      (6) 035116 104455
      (7) 035120 000112
      (7) 035122 016462
      (7) 035124 010774
8619 035126 000456                BR        28#          ;BYPASS THE REST OF THIS SECTION OF TESTING
8620
8621 035130 004737 036142          23#:     JSR      PC,GETT1 ;IS "T1" STILL SET?
8622 035134 102002                BVC      .+6          ;IF NO ERROR, PROCEED
8623 035136                        ESCAPE SUB          ;ELSE, IT'S ALREADY BEEN REPORTED -- EXIT
      (3) 035136 104410
      (3) 035140 000744
8624 035142 103415                BCS      24#          ;YES, ALL'S OK
8625
8626 035144 004537 004076          JSR      R5,READ      ;NO! BAD VIA CHIP!
8627 035150 120007                T1LH
8628 035152 002456                TMP7
8629 035154 103003                BCC      .+10          ;IF NO ERROR, PROCEED
8630 035156                        ERROR          ;ELSE, REPORT IT
      (3) 035156 104460
8631 035160                        ESCAPE TST          ;          AND EXIT THIS TEST
      (3) 035160 104410
      (3) 035162 000724
8632 035164                        GEDF      EMS0I,ERR50 ;REPORT BAD VIA CHIP!
      (2)
      (6) 035164 104455
      (7) 035166 000113
      (7) 035170 016550
      (7) 035172 010774
8633 035174 000433                BR        28#          ;BYPASS THE REST OF THIS SECTION OF TESTING
8634
8635 035176 004537 004076          24#:     JSR      R5,READ      ;READ T1L-H (ADDR 07)
8636 035202 120007                T1LH
8637 035204 002456                TMP7
8638 035206 103003                BCC      .+10          ;THIS SHOULD RETURN A 000
8639 035210                        ERROR          ;IF NO ERROR, PROCEED
      (3) 035210 104460
      (3) 035212 104410
      (3) 035214 000672
8641 035216 123737 002456 034441    CMPB     TMP7,19#     ;CHECK T1L-H (ADDR 07) AGAINST LOADED VALUE
8642 035224 001405                BEQ      26#          ;IF SAME, PROCEED
8643 035226                        GEDF      EMS0J,ERR50 ;ELSE, REPORT BAD LOAD OF T1L-H (ADDR 07)
      (2)
      (6) 035226 104455
      (7) 035230 000114
      (7) 035232 016612
      (7) 035234 010774

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CVDMACO DMV11 MCTRL DIAG #1
CVDMAC.P11 16-AUG-84 13:59

MACY11 30A(1052) 16-AUG-84 14:51 PAGE 77-23
TEST 27 -- VIA TIMER # 1 ONE-SHOT MODE

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8644 035236 000412          BR      28#          ;BYPASS THE REST OF THIS SECTION OF TESTING
8645
8646 035240 004737 036142 26# : JSR      PC,GETT1      ;IS "T1" STILL SET?
8647 035244 102002          BVC      .+6          ;IF NO ERROR, PROCEED
8648 035246          ESCAPE  SUB          ;ELSE, IT'S ALREADY BEEN REPORTED -- EXIT
(3) 035246 104410          TRAP    C#ESCAPE
(3) 035250 000634          .WORD  L10075-.
8649 035252 103404          BCS      28#          ;YES, ALL'S OK
8650 035254          GEDF    EMSOK,ERR50 ;NO! BAD VIA CHIP!
(2)          ;          "DEVICE FATAL" ERROR # 77
(6) 035254 104455          TRAP    C#ERDF
(7) 035256 000115          .WORD  77
(7) 035260 016700          .WORD  EMSOK
(7) 035262 010774          .WORD  ERR50
8651
8652          ;-----
8653
8654 035264 004537 004076 28# : JSR      R5,READ      ;READ T1C-L (ADDR 04) TO CLEAR "T1"
8655 035270 120004          T1CL          ;(THIS VALUE ISN'T CHECKED BECAUSE IT CAN BE
8656 035272 002450          TMP4          ; ALMOST ANYTHING)
8657 035274 103003          BCC      .+10        ;IF NO ERROR, PROCEED
8658 035276          ERROR          ;ELSE, REPORT IT
(3) 035276 104460          TRAP    C#ERROR
8659 035300          ESCAPE  TST          ;          AND EXIT THIS TEST
(3) 035300 104410          TRAP    C#ESCAPE
(3) 035302 000604          .WORD  L10073-.
8660 035304 004737 036142          JSR      PC,GETT1      ;IS "T1" CLEARED NOW
8661 035310 102002          BVC      16#          ;IF NO ERROR, PROCEED
8662 035312          ESCAPE  SUB          ;ELSE, IT'S ALREADY BEEN REPORTED -- EXIT
(3) 035312 104410          TRAP    C#ESCAPE
(3) 035314 000570          .WORD  L10075-.
8663 035316 103004          16# : BCC      29#          ;YES, ALL'S OK
8664 035320          GEDF    EMSOC,ERR50 ;NO! BAD VIA CHIP!
(2)          ;          "DEVICE FATAL" ERROR # 78
(6) 035320 104455          TRAP    C#ERDF
(7) 035322 000116          .WORD  78
(7) 035324 016215          .WORD  EMSOC
(7) 035326 010774          .WORD  ERR50
8665
8666          ;-----
8667
8668 035330 105037 002445 29# : CLRB    TMP2+1      ;CHANGE THE DIRECTION OF ORB -- IT SHOULDN'T
8669 035334 004537 004322          JSR      R5,WRITE      ;          HAVE ANY EFFECT ON "PB7"
8670 035340 120002          DORB          ;
8671 035342 002445          TMP2+1          ;
8672 035344 103003          BCC      .+10        ;IF NO ERROR, PROCEED
8673 035346          ERROR          ;ELSE, REPORT IT
(3) 035346 104460          TRAP    C#ERROR
8674 035350          ESCAPE  TST          ;          AND EXIT THIS TEST
(3) 035350 104410          TRAP    C#ESCAPE
(3) 035352 000534          .WORD  L10073-.
8675 035354 004537 004322          JSR      R5,WRITE      ;RE-WRITE INTO T1C-H (ADDR 05) TO SET T1 AGAIN
8676 035360 120005          T1CH          ;
8677 035362 002453          TMP5+1          ;
8678 035364 103003          BCC      .+10        ;IF NO ERROR, PROCEED
8679 035366          ERROR          ;ELSE, REPORT IT

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CVDMACO DMV11 MCTRL DIAG #1
CVDMAC.P11 16-AUG-84 13:59

MACY11 30A(1052) 16-AUG-84 14:51 PAGE 77 24
TEST 27 -- VIA TIMER # 1 ONE-SHOT MODE

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(3) 035366 104460
8680 035370 ESCAPE TST ; AND EXIT THIS TEST TRAP C$ERROR
(3) 035370 104410 ; TRAP C$ESCAPE
(3) 035372 000514 ;.WORD L10073-.
8681 035374 004737 036142 JSR PC,GETT1 ;IS "T1" SET ACAIN
8682 035400 102002 BVC .+6 ;IF NO ERROR, PROCEED
8683 035402 ESCAPE SUB ;ELSE, IT'S ALREADY BEEN REPORTED -- EXIT
(3) 035402 104410 ; TRAP C$ESCAPE
(3) 035404 000500 ;.WORD L10075-.
8684 035406 103426 BCS 32$ ;YES, ALL'S WELL (AGAIN?)
8685 035410 004537 004076 JSR R5,READ ;GET T1CH FOR ERROR MESSAGE
8686 035414 120005 T1CH
8687 035416 002452 TMP5
8688 035420 103003 BCC .+10 ;IF NO ERROR, PROCEED
8689 035422 ERROR ;ELSE, REPORT IT
(3) 035422 104460 ESCAPE TST ; AND EXIT THIS TEST TRAP C$ERROR
8690 035424 ; TRAP C$ESCAPE
(3) 035424 104410 ;.WORD L10073-.
(3) 035426 000460
8691 035430 004537 004076 JSR R5,READ ;GET T1LH FOR ERROR MESSAGE
8692 035434 120007 T1LH
8693 035436 002456 TMP7
8694 035440 103003 BCC .+10 ;IF NO ERROR, PROCEED
8695 035442 ERROR ;ELSE, REPORT IT
(3) 035442 104460 ESCAPE TST ; AND EXIT THIS TEST TRAP C$ERROR
8696 035444 ; TRAP C$ESCAPE
(3) 035444 104410 ;.WORD L10073-.
(3) 035446 000440
8697 035450 GEDF EMSOL,ERR50 ;NO! SOMETHING WENT WRONG! REPORT IT
(2) ; "DEVICE FATAL" ERROR # 79
(6) 035450 104455 ; TRAP C$ERDF
(7) 035452 000117 ;.WORD 79
(7) 035454 016742 ;.WORD EMSOL
(7) 035456 010774 ;.WORD ERR50
8698 035460 ESCAPE SUB ; AND EXIT FROM THIS SUBTEST TRAP C$ESCAPE
(3) 035460 104410 ;.WORD L10075-.
(3) 035462 000422
8699
8700 ;-----
8701
8702 035464 004737 036326 32$: JSR PC,GETPB7 ;GET "PB7". IS IT SET?
8703 035470 102002 BVC .+6 ;IF NO ERROR, PROCEED
8704 035472 ESCAPE SUB ;ELSE, IT'S ALREADY BEEN REPORTED -- EXIT
(3) 035472 104410 ; TRAP C$ESCAPE
(3) 035474 000410 ;.WORD L10075-.
8705 035476 103404 BCS 44$ ;YES, GOOD.
8706 035500 GEDF EMSOU,ERR50 ;NO, BAD! REPORT IT: NOT SET AFTER TIMEOUT
(2) ; "DEVICE FATAL" ERROR # 80
(6) 035500 104455 ; TRAP C$ERDF
(7) 035502 000120 ;.WORD 80
(7) 035504 017206 ;.WORD EMSOU
(7) 035506 010774 ;.WORD ERR50
8707 035510 112737 000125 002455 44$: MOVB #125,TMP6+1 ;USING A DIFFERENT VALUE -- 55 HEX..
8708 035516 004537 004322 JSR R5,WRITE ;RE-LOAD T1L-L (ADDR 06)
8709 035522 120006 T1LL
8710 035524 002455 TMP6+1

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CVDMACO DMV11 MCTRL DIAG #1
CVDMAC.P11 16-AUG-84 13:59

MACY11 30A(1052) 16-AUG-84 14:51 PAGE 77 25
TEST 27 -- VIA TIMER # 1 ONE-SHOT MODE

8711	035526	103003			BCC .10		;IF NO ERROR, PROCEED		
8712	035530				ERROR		;ELSE, REPORT IT		
(3)	035530	104460						TRAP	CERROR
8713	035532				ESCAPE TST		; AND EXIT THIS TEST		
(3)	035532	104410						TRAP	CESCAPE
(3)	035534	000352						.WORD	L10073--
8714	035536	004737	036142		JSR PC,GETT1		;IS "T1" STILL SET?		
8715	035542	102002			BVC .6		;IF NO ERROR, PROCEED		
8716	035544				ESCAPE SUB		;ELSE, IT'S ALREADY BEEN REPORTED -- EXIT		
(3)	035544	104410						TRAP	CESCAPE
(3)	035546	000336						.WORD	L10075--
8717	035550	103416			BCS 334		;YES, ALL'S STILL OK		
8718	035552	004537	004076		JSR R5,READ		;GET TILL FOR ERROR MESSAGE		
8719	035556	120006			TILL				
8720	035560	002454			TMP6				
8721	035562	103003			BCC .10		;IF NO ERROR, PROCEED		
8722	035564				ERROR		;ELSE, REPORT IT		
(3)	035564	104460						TRAP	CERROR
8723	035566				ESCAPE TST		; AND EXIT THIS TEST		
(3)	035566	104410						TRAP	CESCAPE
(3)	035570	000316						.WORD	L10073--
8724	035572				GEDF EM50M,ERR50		;NO! SOMETHING WENT WRONG! REPORT IT		
(2)							; "DEVICE FATAL" ERROR # 81		
(6)	035572	104455						TRAP	CERROR
(7)	035574	000121						.WORD	81
(7)	035576	017024						.WORD	EM50M
(7)	035600	010774						.WORD	ERR50
8725	035602				ESCAPE SUB		; AND EXIT FROM THIS SUBTEST		
(3)	035602	104410						TRAP	CESCAPE
(3)	035604	000300						.WORD	L10075--
8726									
8727									
8728									
8729	035606	112737	000125	002453	334:	MOVB #125,TMP5+1	;AND USING THE SAME VALUE AGAIN (55 HEX).		
8730	035614	004537	004322			R5,WRITE	;NOW LOAD TIC-H (ADDR 05)		
8731	035620	120005			TICH				
8732	035622	002453			TMP5+1				
8733	035624	103003			BCC .10		;IF NO ERROR, PROCEED		
8734	035626				ERROR		;ELSE, REPORT IT		
(3)	035626	104460						TRAP	CERROR
8735	035630				ESCAPE TST		; AND EXIT THIS TEST		
(3)	035630	104410						TRAP	CESCAPE
(3)	035632	000254						.WORD	L10073 .
8736	035634	004737	036142		JSR PC,GETT1		; "T1" SHOULD NOW BE CLEARED		
8737	035640	102002			BVC .6		;IF NO ERROR, PROCEED		
8738	035642				ESCAPE SUB		;ELSE, IT'S ALREADY BEEN REPORTED -- EXIT		
(3)	035642	104410						TRAP	CESCAPE
(3)	035644	000240						.WORD	L10075--
8739	035646	103024			BCC 344		;IT WAS, ALL'S WELL THAT END'S WELL (I THINK!?)		
8740	035650	004537	004076		JSR R5,READ		;GET TILL FOR ERROR MESSAGE		
8741	035654	120006			TILL				
8742	035656	002454			TMP6				
8743	035660	103003			BCC .10		;IF NO ERROR, PROCEED		
8744	035662				ERROR		;ELSE, REPORT IT		
(3)	035662	104460						TRAP	CERROR
8745	035664				ESCAPE TST		; AND EXIT THIS TEST		

CVDMACO DMV11 CTRL DIAG #1
CVDMAC.P11 16-AUG-84 13:59

MACY11 30A(1052) 16-AUG-84 14:51 PAGE 77-26
TEST 27 -- VIA TIMER # 1 ONE SHOT MODE

(3)	035664	104410						TRAP	C#ESCAPE
(3)	035666	000220						.WORD	L10073--
8746	035670	004537	004076	JSR	R5,READ		;GET T1LM FOR ERROR MESSAGE		
8747	035674	120007		T1LM					
8748	035676	002456		TMP7					
8749	035700	103003		BCC	.+10		;IF NO ERROR, PROCEED		
8750	035702	104460		ERROR			;ELSE, REPORT IT		
(3)	035702	104460						TRAP	C#ERROR
8751	035704	104410		ESCAPE	TST		; AND EXIT THIS TEST		
(3)	035704	104410						TRAP	C#ESCAPE
(3)	035706	000200						.WORD	L10073--
8752	035710			GEDF	EMSON,ERR50		;IT WASN'T! SOMETHING WENT WRONG! REPORT IT		
(2)							; "DEVICE FATAL" ERROR # 82		
(6)	035710	104455						TRAP	C#ERDF
(7)	035712	000122						.WORD	82
(7)	035714	017066						.WORD	EMSON
(7)	035716	010774						.WORD	ERR50
8753									
8754	035720	004537	004322	344:	JSR	R5,WRITE	;RE-LOAD TIC-M (ADDR 5) TO START IT AGAIN		
8755	035724	120005		T1CM					
8756	035726	002453		TMP5.1					
8757	035730	103003		BCC	.+10		;IF NO ERROR, PROCEED		
8758	035732	104460		ERROR			;ELSE, REPORT IT		
(3)	035732	104460						TRAP	C#ERROR
8759	035734	104410		ESCAPE	TST		; AND EXIT THIS TEST		
(3)	035734	104410						TRAP	C#ESCAPE
(3)	035736	000150						.WORD	L10073--
8760	035740	004737	036326	JSR	PC,GETPB7		;GET "PB7". IS IT CLEARED?		
8761	035744	102002		BVC	.+6		;IF NO ERROR, PROCEED		
8762	035746	104410		ESCAPE	SUB		;ELSE, IT'S ALREADY BEEN REPORTED -- EXIT		
(3)	035746	104410						TRAP	C#ESCAPE
(3)	035750	000134						.WORD	L10075--
8763	035752	103054		BCC	484		;YES, GOOD.		
8764	035754	004537	004076	JSR	R5,READ		;GET IFR FOR ERROR MESSAGE		
8765	035760	120015		IFR					
8766	035762	002472		TMPD					
8767	035764	103003		BCC	.+10		;IF NO ERROR, PROCEED		
8768	035766	104460		ERROR			;ELSE, REPORT IT		
(3)	035766	104460						TRAP	C#ERROR
8769	035770	104410		ESCAPE	TST		; AND EXIT THIS TEST		
(3)	035770	104410						TRAP	C#ESCAPE
(3)	035772	000114						.WORD	L10073 .
8770	035774	004537	004076	JSR	R5,READ		;GET T1CL FOR ERROR MESSAGE		
8771	036000	120004		T1CL					
8772	036002	002450		TMP4					
8773	036004	103003		BCC	.+10		;IF NO ERROR, PROCEED		
8774	036006	104460		ERROR			;ELSE, REPORT IT		
(3)	036006	104460						TRAP	C#ERROR
8775	036010	104410		ESCAPE	TST		; AND EXIT THIS TEST		
(3)	036010	104410						TRAP	C#ESCAPE
(3)	036012	000074						.WORD	L10073--
8776	036014	004537	004076	JSR	R5,READ		;GET T1CM FOR ERROR MESSAGE		
8777	036020	120005		T1CM					
8778	036022	002452		TMP5					
8779	036024	103003		BCC	.+10		;IF NO ERROR, PROCEED		
8780	036026			ERROR			;ELSE, REPORT IT		

CVDMACO DMV11 MCTRL DIAG #1
CVDMAC.P11 16-AUG-84 13:59

MACY11 30A(1052) 16-AUG-84 14:51 PAGE 77-27
TEST 27 -- VIA TIMER # 1 ONE-SHOT MODE

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(3) 036026 104460
8781 036030          ESCAPE TST          ;          AND EXIT THIS TEST          TRAP  C#ERROR
(3) 036030 104410
(3) 036032 000054
8782 036034 004537 004076      JSR      R5,READ          ;GET TILL FOR ERROR MESSAGE          TRAP  C#ESCAPE
8783 036040 120006
8784 036042 002454
8785 036044 103003          BCC      .+10            ;IF NO ERROR, PROCEED
8786 036046          ERROR          ;ELSE, REPORT IT          .WORD L10073 .
(3) 036046 104460
8787 036050          ESCAPE TST          ;          AND EXIT THIS TEST          TRAP  C#ERROR
(3) 036050 104410
(3) 036052 000034
8788 036054 004537 004076      JSR      R5,READ          ;GET TILM FOR ERROR MESSAGE          TRAP  C#ESCAPE
8789 036060 120007
8790 036062 002456
8791 036064 103003          BCC      .+10            ;IF NO ERROR, PROCEED
8792 036066          ERROR          ;ELSE, REPORT IT          .WORD L10073-.
(3) 036066 104460
8793 036070          ESCAPE TST          ;          AND EXIT THIS TEST          TRAP  C#ERROR
(3) 036070 104410
(3) 036072 000014
8794 036074          GEDF     EMSOV,ERR50      ;NO, BAD! RPT. PB7 NOT DRIVEN LOW
(2)
(6) 036074 104455          ;          "DEVICE FATAL" ERROR # 83
(7) 036076 000123          TRAP  C#ERDF
(7) 036100 017252          .WORD 83
(7) 036102 010774          .WORD EMSOV
8795 036104          488:  ENDSUB          .WORD ERR50
(3) 036104
(3) 036104 104403          L10075:
8796 036106          ENDTST          TRAP  C#ESUB
(3) 036106
(3) 036106 104401          L10073:
8797
8798
8799
8800
8801
8802
8803
8804
8805
8806
8807
8808
8809
8810 036110 112537 002451      ;-----
8811 036114 112537 002453      ; L0DT1C -- LOAD TIMER ONE AT ADDRESSES 04 & 05
8812 036120 004537 004322      ; CALLING SEQUENCE:
8813 036124 120004
8814 036126 002451
8815 036130 004537 004322      ;
8816 036134 120005
8817 036136 002453
8818 036140 000205
;
;          JSR      R5,L0DT1C
;          .BYTE   <VALUE FOR T1L-L (ADDRESS 04)>
;          .BYTE   <VALUE FOR T1C-H (ADDRESS 05)>
;          <NEXT SEQUENTIAL INSTRUCTION>
;-----
L0DT1C: MOVB     (R5)+,TMP4+1      ;SETUP TO LOAD T1CL
        MOVB     (R5)+,TMP5+1      ; AND T1CH
        JSR      R5,WRITE          ;LOAD T1C-L (ADDR 04) WITH PASSED PARAMETER
        T1CL
        TMP4+1
        JSR      R5,WRITE          ;LOAD T1C-H (ADDR 05) WITH PASSED PARAMETER
        T1CH                      ; (THIS WILL ALSO RESET "T1" & THE COUNTER)
        TMP5+1
        RTS      R5

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CVDMACO DMV11 MCTRL DIAG #1
CVDMAC.P11 16-AUG-84 13:59

MACY11 30A(1052) 16-AUG-84 14:51 PAGE 77-29
TEST 27 -- VIA TIMER # 1 ONE-SHOT MODE

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8869
8870 036322 012603      101:  MOV    (SP)+,R3      ;RESTORE REGISTER
8871 036324 000207      RTS     PC                ;IMMEDIATE RETURN
8872
8873
8874 ; GETPB7 -- PUT THE CURRENT SETTING OF "PB7" (BIT 7 OF ORB W/IN THE VIA CHIP)
8875 ; INTO THE CARRY BIT SO IT CAN BE TESTED UPON RETURN.
8876 ;
8877 ; CALLING SEQUENCE:
8878 ;
8879 ; JSR    PC,GETPB7
8880 ; <TEST FOR PB7 SET OR CLEARED WITH "BCS" OR "BCC" INSTR'S>
8881 ;
8882 ;-----
8883
8884 036326 004537 004076  GETPB7: JSR    R5,READ      ;GET THE REGISTER THAT CONTAINS "PB7"
8885 036332 120000      ORB
8886 036334 002440      TMO    TMO0
8887 036336 103003      BCC    11              ;IF NO ERROR, PROCEED
8888 036340      ERROR      ;ELSE, REPORT IT
8889 (3) 036340 104460      SEV
8890 036342 000262      RTS     PC              ;FLAG AN ERROR TO MAINLINE ROUTINE TRAP C:ERROR
8891 036344 000207      ; AND TAKE AN ABNORMAL RETURN
8892 036346 010046      11:  MOV    R0,-(SP)      ;PRESERVE THIS REGISTER FOR THE CALLER
8893 036350 113700 002440  MOVB   TMO0,R0        ;PUT ITS CONTENTS HERE SO WE CAN MANIPULATE IT
8894 036354 106100      ROLB   R0              ;PUT "PB7" INTO THE CARRY BIT
8895 036356 012600      MOV    (SP)+,R0      ;RESTORE R0 FOR THE CALLER
8896 036360 000207      RTS     PC              ;RETURN WITH "PB7" IN THE CARRY BIT
8897

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CVDMACO DMV11 MCTRL DIAG #1
CVDMAC.P11 16-AUG-84 13:59

MACY11 30A(1052) 16-AUG 84 14:51 PAGE 78-1
TEST 28 -- VIA TIMER 1 FREE-RUNNING MODE TEST

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8946 036372          ERROR          ;ELSE, REPORT ERROR
(3) 036372 104460          ESCAPE TST          ; & EXIT TEST
8947 036374          ESCAPE TST          ; & EXIT TEST
(3) 036374 104410          TRAP          C#ERROR
(3) 036376 001514          .WORD          L10076-.
8948 036400 004537 004672 1#: JSR      R5,INITT1      ;INITIALIZE TIMER # 1
8949 036404 000000          0          ; 0 ==> LATCHES
8950 036406 000100          BIT6          ; MODE 1 / "T1" INT. ENABLE FLAG CLEARED
8951 036410 103003          BCC      .+10      ;IF NO ERROR, PROCEED
8952 036412          ERROR          ;ELSE, REPORT IT
(3) 036412 104460          ESCAPE TST          ; AND EXIT THIS TEST
8953 036414          ESCAPE TST          ; AND EXIT THIS TEST
(3) 036414 104410          TRAP          C#ESCAPE
(3) 036416 001474          .WORD          L10076-.
8954 036420 004737 036142 JSR      PC,GETT1      ;IS "T1" SET?
8955 036424 102002          BVC      .+6          ;IF NO ERROR, PROCEED
8956 036426          ESCAPE SUB          ;ELSE, IT'S ALREADY BEEN REPORTED - EXIT
(3) 036426 104410          TRAP          C#ESCAPE
(3) 036430 000414          .WORD          L10077-.
8957 036432 103006          BCC      2#          ;NO, GOOD.
8958 036434          GEDF     EM50A,ERR50 ;YES, REPORT IT'S NOT BEING CLEARED @ INIT.
(2)                                ; "DEVICE FATAL" ERROR # 85
(6) 036434 104455          TRAP          C#ERDF
(7) 036436 000125          .WORD          85
(7) 036440 016101          .WORD          EM50A
(7) 036442 010774          .WORD          ERR50
8959 036444          ESCAPE SUB          ; & EXIT TEST
(3) 036444 104410          TRAP          C#ESCAPE
(3) 036446 000376          .WORD          L10077-.
8960
8961
8962
8963 036450 004537 036110 2#: JSR      R5,LODT1C      ;RELOAD TIMER 1'S COUNTERS WITH NEW VALUES:
8964 036454          .BYTE     125,125
8965
8966
8967
8968 036456 005003          CLR      R3          ;INITIALIZE TIMEOUT COUNTER
8969 036460 004737 036142 3#: JSR      PC,GETT1      ;"T1" SHOULD BE SET. IS IT?
8970 036464 102002          BVC      .+6          ;IF NO ERROR, PROCEED
8971 036466          ESCAPE SUB          ;ELSE, IT'S ALREADY BEEN REPORTED - EXIT
(3) 036466 104410          TRAP          C#ESCAPE
(3) 036470 000354          .WORD          L10077 .
8972 036472 103407          BCS      4#          ;YES, GOOD.
8973 036474 077307          SOB      R3,3#       ;NO, IF NO TIMEOUT, LOOK AGAIN
8974 036476          GEDF     EM50F,ERR50 ;ELSE, SAY IT WASN'T SET BY T1 TIMEOUT
(2)                                ; "DEVICE FATAL" ERROR # 86
(6) 036476 104455          TRAP          C#ERDF
(7) 036500 000126          .WORD          86
(7) 036502 016353          .WORD          EM50F
(7) 036504 010774          .WORD          ERR50
8975 036506          ESCAPE SUB          ;IF ERROR, THE REST OF THIS TEST IS UN-DOABLE!
(3) 036506 104410          TRAP          C#ESCAPE
(3) 036510 000334          .WORD          L10077-.
8976
8977 036512 004537 004076 4#: JSR      R5,READ      ;READING T1CH SHOULDN'T CLEAR "T1"

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CVDMAC0 DMV11 MCTRL DIAG #1
CVDMAC.P11 16-AUG-84 13:59

MACY11 30A(1052) 16-AUG-84 14:51 PAGE 78-2
TEST 28 -- VIA TIMER 1 FREE-RUNNING MODE TEST

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8978 036516 120005          T1CH
8979 036520 002452          TMP5          ; (WE DON'T CARE WHAT THIS IS)
8980 036522 103003          BCC          .+10       ;IF NO ERROR, PROCEED
8981 036524          ERROR          ;ELSE, REPORT IT
      (3) 036524 104460
8982 036526          ESCAPE TST          ;          AND EXIT THIS TEST          TRAP      C$ERROR
      (3) 036526 104410          .WORD      C$ESCAPE
      (3) 036530 001362          .WORD      L10076-.
8983 036532 004737 036142          JSR      PC,GETT1       ;CHECK "T1" -- IT SHOULD STILL BE SET
8984 036536 102002          BVC          .+6         ;IF NO ERROR, PROCEED
8985 036540          ESCAPE SUB          ;ELSE, IT'S ALREADY BEEN REPORTED -- EXIT
      (3) 036540 104410          .WORD      C$ESCAPE
      (3) 036542 000302          .WORD      L10077-.
8986 036544 103404          BCS          6$         ;IT IS, GOOD.
8987 036546          GEDF      EMS0G,ERR50 ;CLEARED BY READING T1CH!!
      (2)
      (6) 036546 104455          ;          "DEVICE FATAL" ERROR # 87
      (7) 036550 000127          .WORD      TRAP      C$ERDF
      (7) 036552 016420          .WORD      87
      (7) 036554 010774          .WORD      EMS0G
8988 036556 004737 036200          6$: JSR      PC,KICKT1       ;KICK IT OFF AGAIN SO WE CAN PRESERVE T1. NG
8989 036562 103003          BCC          .+10       ;IF NO ERROR, PROCEED
8990 036564          ERROR          ;ELSE, REPORT IT
      (3) 036564 104460          .WORD      TRAP      C$ERROR
8991 036566          ESCAPE TST          ;          AND EXIT THIS TEST          TRAP      C$ESCAPE
      (3) 036566 104410          .WORD      L10076-.
      (3) 036570 001322
8992
8993
8994 036572 005003          ;WAIT FOR IT TO FINISH:
8995 036574 004737 036142          7$: CLR      R3          ;INITIALIZE TIMEOUT COUNTER
8996 036600 102002          JSR      PC,GETT1       ;"T1" SHOULD BE SET. IS IT?
8997 036602          BVC          .+6         ;IF NO ERROR, PROCEED
      (3) 036602 104410          ESCAPE SUB          ;ELSE, IT'S ALREADY BEEN REPORTED -- EXIT
      (3) 036604 000240          .WORD      TRAP      C$ESCAPE
8998 036606 103402          .WORD      L10077-.
8999 036610 077307          BCS          8$         ;YES, GOOD.
9000 036612 000422          SOB          R3,7$      ;NO, IF NO TIMEOUT, LOOK AGAIN
9001 036614 004537 004076          8$: BR       10$         ;IF TIMEOUT, BYPASS NEXT CHECK (THIS DONE ABOVE)
9002 036620 120004          JSR      R5,READ       ;READING T1CL SHOULD CLEAR "T1"
9003 036622 002450          T1CL
9004 036624 103003          TMP4
9005 036626          BCC          .+10       ; (WE DON'T CARE WHAT THIS IS EITHER)
      (3) 036626 104460          ERROR          ;IF NO ERROR, PROCEED
      (3) 036630 104410          ESCAPE TST          ;ELSE, REPORT IT
      (3) 036632 001260          .WORD      TRAP      C$ERROR
9007 036634 004737 036142          JSR      PC,GETT1       ;          AND EXIT THIS TEST          TRAP      C$ESCAPE
9008 036640 102002          BVC          .+6         .WORD      L10076-.
9009 036642          ESCAPE SUB          ;CHECK "T1" -- IT SHOULD BE CLEARED NOW
      (3) 036642 104410          ;IF NO ERROR, PROCEED
      (3) 036644 000200          ;ELSE, IT'S ALREADY BEEN REPORTED -- EXIT
9010 036646 103004          BCC          10$        TRAP      C$ESCAPE
9011 036650          GEDF      EMS0C,ERR50 ;IT IS, GOOD.
      (2)          ;NOT CLEARED! REPORT IT.
      (6) 036650 104455          ;          "DEVICE FATAL" ERROR # 88
          .WORD      TRAP      C$ERDF

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CVDMACO DMV11 MCTRL DIAG #1
CVDMAC.P11 16-AUG-84 13:59

MACY11 30A(1052) 16-AUG-84 14:51 PAGE 78-3
TEST 28 -- VIA TIMER 1 FREE-RUNNING MODE TEST

(7)	036652	000130							.WORD	88
(7)	036654	016215							.WORD	EM50C
(7)	036656	010774							.WORD	ERR50
9012	036660	005003		10#:	CLR	R3				
9013	036662	004737	036142	12#:	JSR	PC,GETT1				
9014	036666	102002			BVC	.+6				
9015	036670				ESCAPE	SUB				
(3)	036670	104410							TRAP	C#ESCAPE
(3)	036672	000152							.WORD	L10077-.
9016	036674	103407			BCS	14#				
9017	036676	077307			SOB	R3,12#				
9018	036700				GEDF	EM50X,ERR50				
(2)										
(6)	036700	104455							TRAP	C#ERDF
(7)	036702	000131							.WORD	89
(7)	036704	017366							.WORD	EM50X
(7)	036706	010774							.WORD	ERR50
9019	036710				ESCAPE	SUB				
(3)	036710	104410							TRAP	C#ESCAPE
(3)	036712	000132							.WORD	L10077-.
9020	036714	112737	000252	002455	14#:	MOVB	#252,TMP6+1			
9021	036722	004537	004322		JSR	R5,WRITE				
9022	036726	120006			TILL					
9023	036730	002455			TMP6+1					
9024	036732	103003			BCC	.+10				
9025	036734				ERROR					
(3)	036734	104460							TRAP	C#ERROR
9026	036736				ESCAPE	TST				
(3)	036736	104410							TRAP	C#ESCAPE
(3)	036740	001152							.WORD	L10076-.
9027	036742	004737	036142		JSR	PC,GETT1				
9028	036746	102002			BVC	.+6				
9029	036750				ESCAPE	SUB				
(3)	036750	104410							TRAP	C#ESCAPE
(3)	036752	000072							.WORD	L10077-.
9030	036754	103406			BCS	16#				
9031	036756				GEDF	EM50M,ERR50				
(2)										
(6)	036756	104455							TRAP	C#ERDF
(7)	036760	000132							.WORD	90
(7)	036762	017024							.WORD	EM50M
(7)	036764	010774							.WORD	ERR50
9032	036766				ESCAPE	SUB				
(3)	036766	104410							TRAP	C#ESCAPE
(3)	036770	000054							.WORD	L10077-.
9033	036772	112737	000252	002457	16#:	MOVB	#252,TMP7+1			
9034	037000	004537	004322		JSR	R5,WRITE				
9035	037004	120007			TILH					
9036	037006	002457			TMP7+1					
9037	037010	103003			BCC	.+10				
9038	037012				ERROR					
(3)	037012	104460							TRAP	C#ERROR
9039	037014				ESCAPE	TST				
(3)	037014	104410							TRAP	C#ESCAPE
(3)	037016	001074							.WORD	L10076-.
9040	037020	004737	036142		JSR	PC,GETT1				

CVDMACO DMV11 MCTRL DIAG #1
CVDMAC.P11 16-AUG-84 13:59

MACY11 30A(1052) 16-AUG-84 14:51 PAGE 78-4
TEST 28 -- VIA TIMER 1 FREE-RUNNING MODE TEST

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9041 037024 102002          BVC      .+6          ;IF NO ERROR, PROCEED
9042 037026                ESCAPE  SUB          ;ELSE, IT'S ALREADY BEEN REPORTED -- EXIT
(3) 037026 104410                TRAP    C#ESCAPE
(3) 037030 000014                .WORD  L10077-.
9043 037032 103004          BCC      18#          ;IT DID -- GOOD.
9044 037034                GEDF   EMS0A,ERR50  ;NOP! REPORT: "T1" NOT CLEARED BY LOADING T1LH
(2)                                ; "DEVICE FATAL" ERROR # 91
(6) 037034 104455                TRAP    C#ERDF
(7) 037036 000133                .WORD  91
(7) 037040 016101                .WORD  EMS0A
(7) 037042 010774                .WORD  ERR50
9045 037044                18#: ;THAT'S ALL FOLKS!
9046 037044                ENDSUB
(3) 037044                L10077: TRAP    C#ESUB
(3) 037044 104403                ;-----
9047                                BGNSUB
9048 037046                T28.2: TRAP    C#BSUB
(3) 037046                (3) 037046 104402
9049 037050 004737 003774          JSR     PC,MSTCLR    ;INIT DMV & ENTER M-LOOP
9050 037054 103003          BCC     1#          ;IF NO ERROR, PROCEED WITH TESTING
9051 037056                ERROR          ;ELSE, REPORT ERROR
(3) 037056 104460                ESCAPE  TST          ; & EXIT TEST
9052 037060                TRAP    C#ERROR
(3) 037060 104410                .WORD  L10076-.
(3) 037062 001030                L10076:
9053 037064 112737 000377 002445 1#: MOVB   #377,TMP2+1  ;SETUP DDRB SUCH THAT ORB IS AN INPUT/OUTPUT REG
9054 037072 004537 004322          'R      R5,WRITE
9055 037076 120002          L10076:
9056 037100 002445          L10076:
9057 037102 103003          BCC     .+10        ;IF NO ERROR, PROCEED
9058 037104                ERROR          ;ELSE, REPORT IT
(3) 037104 104460                ESCAPE  TST          ; AND EXIT THIS TEST
9059 037106                TRAP    C#ERROR
(3) 037106 104410                .WORD  L10076-.
(3) 037110 001002          L10076:
9060 037112 112737 000030 002441  MOVB   #30,TMP0+1  ;CLEAR ALL BITS IN ORB EXCEPT DTR L & RTS L
9061 037120 004537 004322          JSR     R5,WRITE    ; BY DOING THIS, WE SHOULD EXPECT PB7 TO BE
9062 037124 120000          ORB          ; CLEARED IF MODE 3 DOESN'T WORK PROPERLY.
9063 037126 002441          TMP0+1
9064 037130 103003          BCC     .+10        ;IF NO ERROR, PROCEED
9065 037132                ERROR          ;ELSE, REPORT IT
(3) 037132 104460                ESCAPE  TST          ; AND EXIT THIS TEST
9066 037134                TRAP    C#ERROR
(3) 037134 104410                .WORD  L10076-.
(3) 037136 000754          L10076:
9067 037140 004537 004672          JSR     R5,INITT1   ;INITIALIZE TIMER # 1
9068 037144 000000          0          ; 0 ==> LATCHES
9069 037146 000300          BIT7+BIT6      ; MODE 3 & "T1" INT. ENABLE FLAG CLEARED
9070 037150 103003          BCC     .+10        ;IF NO ERROR, PROCEED
9071 037152                ERROR          ;ELSE, REPORT IT
(3) 037152 104460                ESCAPE  TST          ; AND EXIT THIS TEST
9072 037154                TRAP    C#ERROR
(3) 037154 104410                .WORD  L10076-.
(3) 037156 000734          L10076:
9073 037160 004737 036142          JSR     PC,GETT1    ;IS "T1" SET?

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CVDMACO DMV11 MCTRL DIAG #1
CVDMAC.P11 16-AUG-84 13:59

MACY11 30A(1052) 16-AUG-84 14:51 PAGE 78-5
TEST 28 -- VIA TIMER 1 FREE-RUNNING MODE TEST

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9074 037164 102002          BVC      .+6          ;IF NO ERROR, PROCEED
9075 037166                ESCAPE  SUB          ;ELSE, IT'S ALREADY BEEN REPORTED -- EXIT
(3) 037166 104410                                TRAP   C#ESCAPE
(3) 037170 000720                                .WORD L10100-.
9076 037172 103006          BCC      2#          ;NO, GOOD.
9077 037174                GEDF    EM50A,ERR50 ;YES, REPORT IT'S NOT BEING CLEARED @ INIT.
(2)                                ; "DEVICE FATAL" ERROR # 92
(6) 037174 104455                                TRAP   C#ERDF
(7) 037176 000134                                .WORD 92
(7) 037200 016101                                .WORD EM50A
(7) 037202 010774                                .WORD ERR50
9078 037204                ESCAPE  SUB          ; & EXIT TEST
(3) 037204 104410                                TRAP   C#ESCAPE
(3) 037206 000702                                .WORD L10100-.
9079
9080 ;-----
9081
9082 037210 004537 036110 2#:   JSR      R5,LOOT1C      ;RELOAD TIMER 1'S COUNTERS WITH NEW VALUES:
9083 037214      125      125      .BYTE    125,125
9084
9085 ;-----
9086
9087 037216 005003                CLR      R3          ;INITIALIZE TIMEOUT COUNTER
9088 037220 004737 036142 4#:   JSR      PC,GETT1      ;"T1" SHOULD BE SET. IS IT?
9089 037224 102002                BVC      .+6          ;IF NO ERROR, PROCEED
9090 037226                ESCAPE  SUB          ;ELSE, IT'S ALREADY BEEN REPORTED -- EXIT
(3) 037226 104410                                TRAP   C#ESCAPE
(3) 037230 000660                                .WORD L10100-.
9091 037232 103407                BCS      5#          ;YES, GOOD.
9092 037234 077307                SOB      R3,4#        ;NO, IF NO TIMEOUT, LOOK AGAIN
9093 037236                GEDF    EM50F,ERR50 ;ELSE, SAY IT WASN'T SET BY T1 TIMEOUT
(2)                                ; "DEVICE FATAL" ERROR # 93
(6) 037236 104455                                TRAP   C#ERDF
(7) 037240 000135                                .WORD 93
(7) 037242 016353                                .WORD EM50F
(7) 037244 010774                                .WORD ERR50
9094 037246                ESCAPE  SUB          ;IF ERROR, THE REST OF THIS TEST IS UN-DOABLE!
(3) 037246 104410                                TRAP   C#ESCAPE
(3) 037250 000640                                .WORD L10100-.
9095
9096 ;-----
9097
9098 037252                5#:   JSR      PC,GETPB7      ;GET "PB7". IS IT SET?
9099 037252 004737 036326                BVC      .+6          ;IF NO ERROR, PROCEED
9100 037256 102002                ESCAPE  SUB          ;ELSE, IT'S ALREADY BEEN REPORTED - EXIT
(3) 037260 104410                                TRAP   C#ESCAPE
(3) 037262 000626                                .WORD L10100-.
9102 037264 103406                BCS      36#         ;YES, GOOD.
9103 037266                GEDF    EM50U,ERR50 ;NO, REPORT IT NOT SET.
(2)                                ; "DEVICE FATAL" ERROR # 94
(6) 037266 104455                                TRAP   C#ERDF
(7) 037270 000136                                .WORD 94
(7) 037272 017206                                .WORD EM50U
(7) 037274 010774                                .WORD ERR50
9104 037276                ESCAPE  SUB          ; & ALLOW RESTART OF THIS SUBTEST

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CVDMACO DMV11 MCTRL DIAG #1
CVDMAC.P11 16-AUG-84 13:59

MACY11 30A(1052) 16-AUG-84 14:51 PAGE 78-6
TEST 28 -- VIA TIMER 1 FREE-RUNNING MODE TEST

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(3) 037276 104410                                TRAP  C#ESCAPE
(3) 037300 000610                                .WORD L10100-.
9105
9106 ;-----;
9107
9108 037302 004537 004076 36$: JSR    R5,READ      ;READING T1CH SHOULDN'T CLEAR "T1"
9109 037306 120005                                T1CH
9110 037310 002452                                TMP5      ; (WE DON'T CARE WHAT THIS IS)
9111 037312 103003                                BCC     .+10      ;IF NO ERROR, PROCEED
9112 037314                                ERROR      ;ELSE, REPORT IT
(3) 037314 104460                                TRAP  C#ERROR
9113 037316                                ESCAPE TST      ;      AND EXIT THIS TEST
(3) 037316 104410                                TRAP  C#ESCAPE
(3) 037320 000572                                .WORD L10076-.
9114 037322 004737 036142 JSR    PC,GETT1  ;CHECK "T1" -- IT SHOULD STILL BE SET
9115 037326 102002                                BVC     .+6      ;IF NO ERROR, PROCEED
9116 037330                                ESCAPE SUB      ;ELSE, IT'S ALREADY BEEN REPORTED -- EXIT
(3) 037330 104410                                TRAP  C#ESCAPE
(3) 037332 000556                                .WORD L10100-.
9117 037334 103406                                BCS     37$      ;IT IS, GOOD.
9118 037336                                GEDF    EMSOG,ERR50 ;CLEARED BY READING T1CH!!
(2) ;      "DEVICE FATAL" ERROR # 95
(6) 037336 104455                                TRAP  C#ERDF
(7) 037340 000137                                .WORD 95
(7) 037342 016420                                .WORD EMSOG
(7) 037344 010774                                .WORD ERR50
9119 037346                                ESCAPE SUB      ;      ALLOW RESTART OF THIS SUBTEST
(3) 037346 104410                                TRAP  C#ESCAPE
(3) 037350 000540                                .WORD L10100-.
9120
9121 ;-----;
9122
9123 037352 005003 036142 37$: CLR    R3      ;INITIALIZE TIMEOUT COUNTER AGAIN
9124 037354 004737 036142 38$: JSR    PC,GETT1  ;WAIT FOR "T1" TO BE SET AGAIN
9125 037360 102002                                BVC     .+6      ;IF NO ERROR, PROCEED
9126 037362                                ESCAPE SUB      ;ELSE, IT'S ALREADY BEEN REPORTED -- EXIT
(3) 037362 104410                                TRAP  C#ESCAPE
(3) 037364 000524                                .WORD L10100-.
9127 037366 103407                                BCS     39$      ;GOT IT -- NO CHECK PB7
9128 037370 077307                                SOB     R3,38$   ;NOT YET. IF NO TIMEOUT, LOOK AGAIN.
9129 037372                                GEDF    EMSOL,ERR50 ;ELSE, TIMER NOT REALLY WORKING RIGHT!
(2) ;      "DEVICE FATAL" ERROR # 96
(6) 037372 104455                                TRAP  C#ERDF
(7) 037374 000140                                .WORD 96
(7) 037376 016742                                .WORD EMSOL
(7) 037400 010774                                .WORD ERR50
9130 037402                                ESCAPE SUB
(3) 037402 104410                                TRAP  C#ESCAPE
(3) 037404 000504                                .WORD L10100-.
9131
9132 ;-----;
9133
9134 037406 036326 39$: JSR    PC,GETPB7  ;GET "PB7". IS IT SET?
9135 037406 004737 036326 BVC     .+6      ;IF NO ERROR, PROCEED
9136 037412 102002                                ESCAPE SUB      ;ELSE, IT'S ALREADY BEEN REPORTED -- EXIT
9137 037414

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CVDMALO DMV11 MCTRL DIAG #1
CVDMAC.P11 16-AUG-84 13:59

MACY11 30A(1052) 16-AUG-84 14:51 PAGE 78-7
TEST 28 -- VIA TIMER 1 FREE-RUNNING MODE TEST

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(3) 037414 104410 TRAP C$ESCAPE
(3) 037416 000472 .WORD L10100-.
9138 037420 103404 BCS 6$ ;YES, GOOD.
9139 037422 GEDF EM50Z,ERR50 ;NO, REPORT "PB7" NOT SET AFTER SECOND CYCLE
; "DEVICE FATAL" ERROR # 97
(2)
(6) 037422 104455 TRAP C$ERDF
(7) 037424 000141 .WORD 97
(7) 037426 017503 .WORD EM50Z
(7) 037430 010774 .WORD ERR50
9140
9141 ;-----
9142
9143 037432 004737 036200 6$: JSR PC,KICKT1 ;KICK IT OFF AGAIN SO WE CAN PRESERVE TIMING
9144 037436 103003 BCC .+10 ;IF NO ERROR, PROCEED
9145 037440 ERROR ;ELSE, REPORT IT
(3) 037440 104460 TRAP C$ERROR
9146 037442 ESCAPE TST ; AND EXIT THIS TEST
(3) 037442 104410 TRAP C$ESCAPE
(3) 037444 000446 .WORD L10076-.
9147
9148 ;WAIT FOR IT TO FINISH:
9149 037446 005003 CLR R3 ;INITIALIZE TIMEOUT COUNTER
9150 037450 004737 036142 7$: JSR PL GETT1 ;"T1" SHOULD BE SET. IS IT?
9151 037454 102002 BVC .+ ;IF NO ERROR, PROCEED
9152 037456 ESCAPE SUB ;ELSE, IT'S ALREADY BEEN REPORTED -- EXIT
(3) 037456 104410 TRAP C$ESCAPE
(3) 037460 000430 .WORD L10100-.
9153 037462 103402 BCS 8$ ;YES, GOOD.
9154 037464 077307 SOB R3,7$ ;NO, IF NO TIMEOUT, LOOK AGAIN
9155 037466 000442 BR 14$ ;IF TIMEOUT, BYPASS NEXT CHECK (THIS DONE ABOVE)
9156 037470 004537 004076 8$: JSR R5,PEAD ;READING T1CL SHOULD CLEAR "T1"
9157 037474 120004 T1CL
9158 037476 002450 TMP4 ; (WE DON'T CARE WHAT THIS IS EITHER)
9159 037500 103003 BCC .+10 ;IF NO ERROR, PROCEED
9160 037502 ERROR ;ELSE, REPORT IT
(3) 037502 104460 TRAP C$ERROR
9161 037504 ESCAPE TST ; AND EXIT THIS TEST
(3) 037504 104410 TRAP C$ESCAPE
(3) 037506 000404 .WORD L10076-.
9162 037510 004737 036142 JSR PC,GETT1 ;CHECK "T1" -- IT SHOULD BE CLEARED NOW
9163 037514 102002 BVC .+6 ;IF NO ERROR, PROCEED
9164 037516 ESCAPE SUB ;ELSE, IT'S ALREADY BEEN REPORTED -- EXIT
(3) 037516 104410 TRAP C$ESCAPE
(3) 037520 000370 .WORD L10100-.
9165 037522 103006 BCC 9$ ;IT IS, GOOD.
9166 037524 GEDF EM50C,ERR50 ;NOT CLEARED! REPORT IT.
; "DEVICE FATAL" ERROR # 98
(2)
(6) 037524 104455 TRAP C$ERDF
(7) 037526 000142 .WORD 98
(7) 037530 016215 .WORD EM50C
(7) 037532 010774 .WORD ERR50
9167 037534 ESCAPE SUB ;IF THIS ERROR OCCURED, EXIT SUBTEST
(3) 037534 104410 TRAP C$ESCAPE
(3) 037536 000352 .WORD L10100-.
9168 037540 005003 9$: CLR R3 ;RE-INITIALIZE THE TIMEOUT COUNTER
9169 037542 004737 036142 12$: JSR PC,GETT1 ;WAIT FOR "T1" TO GET SET AGAIN

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CVDMACO DMV11 MCTRL DIAG #1
CVDMAC.P11 16-AUG-84 13:59

MACY11 30A(1052) 16 AUG 84 14:51 PAGE 78 9
TEST 28 - VIA TIMER 1 FREE-RUNNING MODE TEST

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9200 037712 120004      TICL
9201 037714 002450      TMP4
9202 037716 103003      BCC      . .10      ;IF NO ERROR, PROCEED
9203 037720              ERROR      ;ELSE, REPORT IT
      (3) 037720 104460              ESCAPE TST      ;      AND EXIT THIS TEST      TRAP      C#ERROR
9204 037722              ESCAPE TST      ;      AND EXIT THIS TEST      TRAP      C#ESCAPE
      (3) 037722 104410              ;      AND EXIT THIS TEST      .WORD      L10076-.
      (3) 037724 000166              JSR      R5,READ      ;GET T1CM FOR ERROR MESSAGE
9205 037726 004537 004076      T1CM
9206 037732 120005      TMP5
9207 037734 002452      BCC      . .10      ;IF NO ERROR, PROCEED
9208 037736 103003      ERROR      ;ELSE, REPORT IT
9209 037740              ESCAPE TST      ;      AND EXIT THIS TEST      TRAP      C#ERROR
      (3) 037740 104460              ESCAPE TST      ;      AND EXIT THIS TEST      TRAP      C#ESCAPE
9210 037742              ;      AND EXIT THIS TEST      .WORD      L10076-.
      (3) 037742 104410              JSR      R5,READ      ;GET T1LL FOR ERROR MESSAGE
      (3) 037744 000146              T1LL
9211 037746 004537 004076      TMP6
9212 037752 120006      BCC      . .10      ;IF NO ERROR, PROCEED
9213 037754 002454      ERROR      ;ELSE, REPORT IT
9214 037756 103003      ESCAPE TST      ;      AND EXIT THIS TEST      TRAP      C#ERROR
9215 037760              ESCAPE TST      ;      AND EXIT THIS TEST      TRAP      C#ESCAPE
      (3) 037760 104460              ;      AND EXIT THIS TEST      .WORD      L10076-.
      (3) 037762 104410              JSR      R5,READ      ;GET T1LM FOR ERROR MESSAGE
      (3) 037764 000126              T1LM
9217 037766 004537 004076      TMP7
9218 037772 120007      BCC      . .10      ;IF NO ERROR, PROCEED
9219 037774 002456      ERROR      ;ELSE, REPORT IT
9220 037776 103003      ESCAPE TST      ;      AND EXIT THIS TEST      TRAP      C#ERROR
9221 040000              ESCAPE TST      ;      AND EXIT THIS TEST      TRAP      C#ESCAPE
      (3) 040000 104460              ;      AND EXIT THIS TEST      .WORD      L10076-.
9222 040002              GEDF      EMS0Y,ERR50      ;IT WAS! REPORT IT BEING RESET BY WRITTING T1LL
      (3) 040002 104410              ;      "DEVICE FATAL" ERROR # 101      TRAP      C#ERDF
      (3) 040004 000106              ;      "DEVICE FATAL" ERROR # 101      .WORD      101
9223 040006              ;      "DEVICE FATAL" ERROR # 101      .WORD      EMS0Y
      (2)              ;      "DEVICE FATAL" ERROR # 101      .WORD      ERR50
      (6) 040006 104455
      (7) 040010 000145
      (7) 040012 017431
      (7) 040014 010774
9224
9225      ; AT THE ABOVE "PB7" TEST, IT SHOULD BE LOW. NOT BECAUSE OF ANY READ/WRITE
9226      ; OPERATION, BUT BECAUSE OF WHERE WE ARE IN THE CYCLING OF TIMER # 1. "PB7"
9227      ; SHOULD BE LOW HERE UNTIL T1 TIMES OUT.
9228
9229 040016 112737 000252 002457 176:  MOVB      #252,TMP7.1      ;SETUP FOR AND
9230 040024 004537 004322      JSR      R5,WRITE      ; LOAD T1LM (ADDR 7)
9231 040030 120007      T1LM
9232 040032 002457      TMP7.1
9233 040034 103003      BCC      . .10      ; WITH 252 OCTAL
9234 040036              ERROR      ;IF NO ERROR, PROCEED
      (3) 040036 104460              ;ELSE, REPORT IT      TRAP      C#ERROR
9235 040040              ESCAPE TST      ;      AND EXIT THIS TEST      TRAP      C#ESCAPE
      (3) 040040 104410              ;      AND EXIT THIS TEST      .WORD      L10076-.
      (3) 040042 000050

```

CVDMACO DMV11 MCTRL DIAG #1
CVDMAC.P11 16-AUG-84 13:59

MACY11 30A(1052) 16-AUG-84 14:51 PAGE 78-10
TEST 28 -- VIA TIMER 1 FREE RUNNING MODE TEST

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9236 040044 004737 036142      JSR    PC,GETT1      ;THIS SHOULD CLEAR "T1"
9237 040050 102002              BVC    .+6           ;IF NO ERROR, PROCEED
9238 040052                      ESCAPE  SUB           ;ELSE, IT'S ALREADY BEEN REPORTED      EXIT
(3) 040052 104410              TRAP   C#ESCAPE
(3) 040054 000034              .WORD L10100
9239 040056 103006              BCC    18#           ;IT DID -- GOOD.
9240 040060                      GEDF   EM50A,ERR50  ;NOP! REPORT: "T1" NOT CLEARED BY LOADING T1LM
;                               "DEVICE FATAL" ERROR # 102
(2)                                TRAP   C#ERDF
(6) 040060 104455              .WORD 102
(7) 040062 000146              .WORD EM50A
(7) 040064 016101              .WORD ERR50
(7) 040066 010774
9241 040070                      ESCAPE  SUB
(3) 040070 104410              TRAP   C#ESCAPE
(3) 040072 000016              .WORD L10100
9242 040074 004537 004672      18#:  JSR    R5,INIT1  ;RE-INITIALIZE IT TO STOP ITS FUNCTIONING
9243 040100 000001              1
9244 040102 000000              0
9245 040104 103001              BCC    .+4           ;IF NO ERROR, EXIT
9246 040106                      ERROR   .+4           ;ELSE, REPORT IT
(3) 040106 104460              TRAP   C#ERROR
9247                                ;THAT'S ALL FOLKS!
9248 040110                      ENDSUB
(3) 040110              L10100: TRAP   C#ESUB
(3) 040110 104403
9249 040112                      ENDTST
(3) 040112              L10076: TRAP   C#ETST
(3) 040112 104401
9250
9251
9252

```

CVDMACO DMV11 MCTRL DIAG #1
CVDMAC.P11 16-AUG-84 13:59

MACY11 30A(1052) 16-AUG-84 14:51 PAGE 79
HARDWARE PARAMETER CODING SECTION

.SBTTL HARDWARE PARAMETER CODING SECTION

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9267
9268
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9279

040114
(3) 040114 000015
(3) 040116
040116
(4) 040116 000031
(4) 040120 040150
(4) 040122 160020
(4) 040124 177776
040126
(4) 040126 001031
(4) 040130 040176
(4) 040132 000000
(4) 040134 000674
040136
(4) 040136 002032
(4) 040140 040227
(4) 040142 007000
(4) 040144 000000
(4) 040146 000007
040150
(2)
(3) 040150

;/ ;
;/ 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.
;/ ;

BGNHRU

.WORD L10101-L#HARD/2
L#HARD::

GPRMA ADDRES,0,0,160020,177776,YES

.WORD T#CODE
.WORD ADDRES
.WORD T#LOLIM
.WORD T#MILIM

GPRMA VECTOR,2,0,0,674,YES

.WORD T#CODE
.WORD VECTOR
.WORD T#LOLIM
.WORD T#MILIM

GPRMD PRIRTY,4,0,7000,0,7,YES

.WORD T#CODE
.WORD PRIRTY
.WORD 7000
.WORD T#LOLIM
.WORD T#MILIM

ENDHRD

.EVEN
L10101:

.NLIST BEX
ADDRES: .ASCIZ /DEVICE CSR ADDRESS : /
VECTOR: .ASCIZ /DEVICE VECTOR ADDRESS : /
PRIRTY: .ASCIZ /DEVICE PRIORITY LEVEL : /
.LIST BEX
.EVEN

CVDMAC0 DMV11 MCTRL DIAG #1
CVDMAC.P11 16 AUG-84 13:59

MACY11 30A(1052) 16-AUG 84 14:51 PAGE 80
SOFTWARE PARAMETER CODING SECTION

.SBTTL SOFTWARE PARAMETER CODING SECTION

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9289
9290
9291
9292
9293
9294
9295
9296
9297
9298
9299
9300

040260
(3) 040260 000000
(3) 040262
040262
(2)
(3) 040262

```
;/;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;/
;/ THE SOFTWARE 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 COMMUNICATION
;/ WITH THE OPERATOR.
;/;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;/
```

BGNSFT

.WORD L10102-L#SOFT/2
L#SOFT::

ENDSFT

.EVEN
L10102:

CVDMACO DMV11 MCTRL DIAG #1
CVDMAC.P11 16-AUG-84 13:59

MACY11 30A(1052) 16-AUG-84 14:51 PAGE 81
PATCH AREA FOR DEBUG

9297
9298 040262
9299 040362 040362
9300 040362 000240
9301 040364 000240
9302 040366 000240
9303
9304
9305
9306
9307 040370
9308 040370
(2)
(4) 040370 000000
(4) 040372 000000
(3) 040374
9309 000001

.SBTTL PATCH AREA FOR DEBUG
PATCH:

..+100
NOP
NOP
NOP

.SBTTL "ENDMOD" & "LASTAD"
ENDMOD
LASTAD

L\$LAST::
.END

.EVEN
.WORD 0
.WORD 0

CVDMACO DMV11 MCTRL DIAG #1
CVDMAC.P11 16-AUG-84 13:59

MACY11 30A(1052) 16-AUG-84 14:51 PAGE 82-1
CROSS REFERENCE TABLE -- USER SYMBOLS

BSEL4	002362	4083#	4483	4690															
BSEL5	002364	4085#	4691																
BSEL6	002366	4086#	4479	4568	4692														
BSEL7	002370	4088#	4693																
BSLT0	= 000020	3673#																	
BSLT1	= 000021	3674#																	
BSLT2	= 000022	3676#																	
BSLT3	= 000023	3677#																	
BSLT4	= 000024	367#																	
BSLT5	= 000025	3680#																	
BSLT6	= 000026	3682#																	
BSLT7	= 000027	3683#																	
BSR0	002246	3985#	4686*	5212															
BSR1	002250	3987#	4687*	5212															
BSR10	002266	4000#	4694*	5216															
BSR11	002270	4001#	4695*	5216															
BSR12	002272	4002#	4696*	5216															
BSR13	002274	4003#	4697*	5216															
BSR14	002276	4004#	4698*	5218															
BSR15	002300	4005#	4699*	5218															
BSR16	002302	4006#	4700*	5218															
BSR17	002304	4007#	4701*	5218															
BSR2	002252	3989#	4688*	5212															
BSR3	002254	3991#	4689*	5212															
BSR4	002256	3993#	4690*	5214															
BSR5	002260	3995#	4691*	5214															
BSR6	002262	3997#	4692*	5214															
BSR7	002264	3999#	4693*	5214															
BT1	= 003122	4396#	4974	4985	6767	6783													
BT2	= 003206	4397#	4977	4988	6784														
BUFARE	003122	4373#	4379	4396	4397														
CONSOL	002346	4030#	5428*	5493*															
CONTIN	020106	5422	5478#																
CONTST	020206	5429	5493#																
CSREGS=	000020	3566#	5730	5740	5762	5847													
C#AU	= 000052	3454#	5572																
C#AUTO=	000061	3454#	5535																
C#BRK	= 000022	3454#	6230	6243	6547														
C#BSEG=	000004	3454#	7093	7223	7278														
C#BSUB=	000002	3454#	5986	6029	6900	6938	6984	7085	7208	7263	7340	7378	7416	7460					
		7879	8309	8943	9048														
C#CEFG=	000045	3454#																	
C#CLOCK=	000062	3454#																	
C#CLEA=	000012	3454#	5549																
C#CLOS=	000035	3454#																	
C#CLP1=	000006	3454#																	
C#CVEC=	000036	3454#	5431	5530	5547	5548	5610												
C#DCLN=	000044	3454#																	
C#DODU=	000051	3454#	5533																
C#DRPT=	000024	3454#																	
C#DU	= 000053	3454#	5561																
C#EDIT=	000003	3454#	3491																
C#ERDF=	000055	3454#	4864	4891	5615	5687	5780	5840	5894	5952	5960	6026	6039	6082					
		6119	6171	6181	6190	6565	6599	6799	6826	6839	6862	6875	7110	7126					
		7144	7165	7177	7195	7239	7250	7294	7305	7532	7557	7604	7648	7694					
		7738	7782	7828	7926	7960	7995	8025	8054	8093	8111	8134	8151	8164					

CVDMACO DMV11 MCTRL DIAG 01
CVDMAC.P11 16-AUG-84 13:59

MACY11 30A(1052) 16-AUG-84 14:51 PAGE 82-6
CROSS REFERENCE TABLE -- USER SYMBOLS

7800	7813	7818	7830	7878	7879	7885	7891	7894	7901	7907	7913	7919
7925	7937	7940	7947	7953	7959	7961	7970	7977	7984	7993	8001	8010
8018	8024	8032	8041	8047	8053	8055	8064	8071	8079	8086	8092	8094
8097	8104	8110	8117	8120	8127	8133	8142	8150	8156	8163	8172	8180
8191	8194	8201	8207	8217	8220	8227	8233	8235	8245	8248	8255	8261
8263	8273	8276	8283	8289	8295	8301	8304	8309	8313	8319	8325	8333
8339	8345	8351	8357	8368	8371	8379	8385	8387	8398	8404	8410	8419
8426	8432	8438	8444	8450	8455	8464	8472	8479	8488	8494	8496	8505
8513	8520	8526	8532	8538	8540	8543	8550	8556	8562	8568	8576	8579
8587	8593	8599	8608	8617	8623	8631	8640	8648	8659	8662	8674	8680
8683	8690	8696	8698	8704	8713	8716	8723	8725	8735	8738	8745	8751
8759	8762	8769	8775	8781	8787	8793	8795	8796	8942	8943	8947	8953
8956	8959	8971	8975	8982	8985	8991	8997	9006	9009	9015	9019	9026
9029	9032	9039	9042	9046	9048	9052	9059	9066	9072	9075	9078	9090
9094	9101	9104	9113	9116	9119	9126	9130	9137	9146	9152	9161	9164
9167	9171	9175	9182	9185	9188	9191	9198	9204	9210	9216	9222	9235
9238	9241	9248	9249	9266	9294	9307						
34540	5546	5549										
34540	5558	5561										
34540	3456	4872	4899	4915	4925	4932	4954	4963	4993	5004	5033	5096
5183	5487	5535	5549	5561	5572	5590	5616	5632	5658	5688	5700	5781
5795	5851	5859	5896	5905	5963	5985	5986	6027	6029	6040	6083	6084
6099	6120	6172	6182	6191	6195	6210	6214	6226	6255	6485	6489	6513
6529	6554	6578	6588	6698	6726	6800	6827	6840	6863	6876	6878	6890
6894	6900	6908	6910	6915	6928	6932	6938	6946	6948	6953	6967	6971
6978	6984	6992	6994	6999	7060	7067	7077	7085	7199	7205	7208	7254
7260	7263	7309	7315	7317	7330	7334	7340	7348	7350	7355	7368	7372
7378	7386	7388	7393	7406	7410	7416	7424	7426	7430	7449	7453	7460
7468	7470	7475	7488	7493	7505	7513	7518	7527	7544	7552	7559	7573
7578	7589	7594	7606	7617	7622	7633	7638	7650	7661	7666	7680	7685
7696	7707	7712	7723	7728	7740	7751	7756	7767	7772	7784	7795	7800
7813	7818	7830	7878	7879	7885	7891	7894	7901	7907	7913	7919	7925
7937	7940	7947	7953	7959	7961	7970	7977	7984	7993	8001	8010	8018
8024	8032	8041	8047	8053	8055	8064	8071	8079	8086	8092	8094	8097
8104	8110	8117	8120	8127	8133	8142	8150	8156	8163	8172	8180	8191
8194	8201	8207	8217	8220	8227	8233	8235	8245	8248	8255	8261	8263
8273	8276	8283	8289	8295	8301	8304	8309	8313	8319	8325	8333	8339
8345	8351	8357	8368	8371	8379	8385	8387	8398	8404	8410	8419	8426
8432	8438	8444	8450	8455	8464	8472	8479	8488	8494	8496	8505	8513
8520	8526	8532	8538	8540	8543	8550	8556	8562	8568	8576	8579	8587
8593	8599	8608	8617	8623	8631	8640	8648	8659	8662	8674	8680	8683
8690	8696	8698	8704	8713	8716	8723	8725	8735	8738	8745	8751	8759
8762	8769	8775	8781	8787	8793	8795	8796	8942	8943	8947	8953	8956
8959	8971	8975	8982	8985	8991	8997	9006	9009	9015	9019	9026	9027
9032	9039	9042	9046	9048	9052	9059	9066	9072	9075	9078	9090	9094
9101	9104	9113	9116	9119	9126	9130	9137	9146	9152	9161	9164	9167
9171	9175	9182	9185	9188	9191	9198	9204	9210	9216	9222	9235	9238
9241	9248	9249	9272	9295	9307							
34540	9266	9272										
34540	3524	3543										
34540	5405	5487										
34540	3456	9307										
34540	4913	4915	4919	4925	4929	4932	4936	4954	4958	4963	4967	4993
4997	5004	5008	5033	5074	5096	5156	5183	5627	5632			
34540	5392	5396										

F\$CLEA= 000007
F\$DU = 000016
F\$END = 000041

F\$HARD= 000004
F\$HW = 000013
F\$INIT= 000006
F\$JMP = 000050
F\$MOD = 000000
F\$MSG = 000011
F\$PROT= 000021

CVDMACO DMV11 MCTRL DIAG 01
 CVDMAC.P11 16 AUG 84 13:59

MACY11 30A(1052) 16-AUG-84 14:51 PAGE 82 7
 CROSS REFERENCE TABLE USER SYMBOLS

F1PWR = 000017	34540												
F1RPT = 000012	34540												
F1SEG = 000003	34540	7093	7199	7223	7254	7278	7309						
F1SOFT = 000005	34540	9294	9295										
F1SRV = 000010	34540	4859	4872	4886	4899								
F1SUB = 000002	34540	5986	6027	6029	6083	6900	6910	6938	6948	6984	6994	7085	7205
	7208	7260	7263	7315	7340	7350	7378	7388	7416	7426	7460	7470	7879
	8304	8309	8795	8943	9046	9048	9248						
F1SM = 000014	34540	3552	3553										
F1TEST = 000001	34540	5590	5616	5658	5688	5700	5781	5795	5851	5859	5896	5905	5963
	5985	6084	6099	6195	6210	6255	6485	6698	6726	6878	6915	6928	
	6953	6967	6999	7060	7317	7330	7355	7368	7393	7406	7430	7449	7475
	7488	7559	7573	7606	7617	7650	7661	7696	7707	7740	7751	7784	7795
	7830	7878	8796	8942	9249								
GDATA 002310	40130	45260	45620	46010	46610	4839	4922	4938	4950	4961	5002	5199	56840
	57750	58170	58290	5831	5832	58890	59500	59580	59990	60060	60130	60200	60370
	60500	60590	60680	60750	61170	61680	61690	61780	61790	61880	62240	62290	62360
	68600	68730	69030	69410	69870	70910	7107	7117	7122	71310	7141	71490	71620
	7175	71820	7192	72140	7236	72480	72690	7291	73030	73430	73810	74190	74630
	74950	7496	75200	7529	75340	7535	75460	7554	75800	7581	75960	7601	76240
	7625	76400	7645	76710	7672	7691	77140	7715	77300	7735	77580	7759	77740
	7779	78040	7805	78200	7825								
GETBSR 004446	4487	46860	4863	4890	5683	5777	5839	5891	5948	5956	6036	6167	6177
	6187												
GETPB7 036326	7991	8095	8417	8541	8702	8760	88840	9099	9135	9189			
GETPRM 017776	5420	54450	5450										
GETT1 036142	7892	7938	8077	8118	8154	8178	8192	8218	8246	8274	8323	8369	8511
	8577	8621	8646	8660	8681	8714	8736	88260	8954	8969	8983	8995	9007
	9013	9027	9040	9073	9088	9114	9124	9150	9162	9169	9183	9236	
GETWSR 004610	4525	4561	4600	4660	47070	6045							
G1CNT0 = 000200	34540												
G1DELM = 000372	34540												
G1DISP = 000003	34540												
G1EXCP = 000400	34540												
G1HILI = 000002	34540												
G1LOLI = 000001	34540												
G1ND = 000000	34540												
G1OFFS = 000400	34540	9268	9269	9270									
G1OFFSI = 000376	34540	9268	9269	9270									
G1PRMA = 000001	34540	9268	9269										
G1PRMD = 000002	34540	9270											
G1PRML = 000000	34540												
G1RADA = 000140	34540												
G1RADB = 000000	34540												
G1RADD = 000040	34540												
G1RADL = 000120	34540												
G1RADO = 000020	34540	9268	9269	9270									
G1XFER = 000004	34540												
G1YES = 000010	34540	9268	9269	9270									
HELP = 000000	34420	3474	3493	3509	4420								
MOE = 100000 G	35630												
IBE = 010000 G	35630												
IDU = 000040 G	35630												
IENBA = 000001	36340												
IENBB = 000020	36350												
IENR = 120016	37030	4766	7464	7806	7822	7827							

CVDMACO DMV11 MCTRL DIAG #1
 CVDMAC.P11 16-AUG-84 13:59

MACY11 30A(1052) 16 AUG-84 14:51 PAGE 82-8
 CROSS REFERENCE TABLE - USER SYMBOLS

IER = 020000 G	32630														
IFR = 120015	37020	8037	8422	8765	8827	9194									
IFRCA1 = 000002	37140														
IFRCA2 = 000001	37150														
IFRCB1 = 000020	37110														
IFRCB2 = 000010	37120														
IFRIHQ = 000200	37080														
IFRSR = 000004	37130														
IFRT1 = 000100	37090	8861													
IFRT2 = 000040	37100														
IHILNK 005234	4868	4870	48740	54810											
IHOLNK 005306	4895	4897	49010	54830											
INITT1 004672	47450	7072	7886	8314	8399	8948	9067	9242							
INTFLG 002326	40200	48670	48940												
INTWCH 002330	40220	4861	4888	54840											
IRQA = 000004	36080														
IRQB = 000002	36090														
IRQREG = 123005	36070														
ISR = 000100 G	35630														
IXE = 004000 G	35630														
I\$AU = 000041	34540	55710	55720												
I\$AUTO = 000041	34540	55130	55350												
I\$CLN = 000041	34540	55460	55490												
I\$DU = 000041	34540	55580	55610												
I\$HRD = 000041	92660	92720													
I\$INTT = 000041	34540	54050	54870												
I\$MOD = 000041	34540	34560	93070												
I\$MSG = 000041	34540	49130	49150	49190	49250	49290	49320	49360	49540	49580	49630	49670	49930		
	49970	50040	50080	50330	50740	50960	51560	51830	56270	56320					
I\$PROT = 000040	34540	53920													
I\$PTAB = 000041	34540														
I\$PWR = 000041	34540														
I\$RPT = 000041	34540														
I\$SEG = 000041	34540	5590	5658	5700	5795	5859	5905	5985	5986	6029	6099	6210	6485		
	6726	6890	6900	6928	6938	6967	6984	7060	7085	70930	71990	7208	72230		
	72540	7263	72780	73090	7330	7340	7368	7378	7406	7416	7449	7460	7488		
	7573	7617	7661	7707	7751	7795	7878	7879	8309	8942	8943	9048			
I\$SETU = 000041	34540														
I\$SFT = 000041	92940	92950													
I\$SRV = 000041	34540	48500	48720	48860	48990										
I\$SUB = 000041	34540	5590	5658	5700	5795	5859	5905	5985	59860	60270	60290	60830	6099		
	6210	6485	6726	6890	69000	69100	6928	69380	69480	6967	69840	69940	7060		
	70850	72050	72080	72600	72630	73150	7330	73400	73500	7368	73780	73880	7406		
	74160	74260	7449	74600	74700	7488	7573	7617	7661	7707	7751	7795	7878		
	78790	7894	7940	7961	7993	8055	8079	8094	8097	8120	8156	8180	8194		
	8220	8235	8248	8263	8276	83040	83090	8325	8371	8387	8419	8496	8513		
	8540	8543	8579	8623	8648	8662	8683	8698	8704	8716	8725	8738	8762		
	87950	8942	89430	8956	8959	8971	8975	8985	8997	9009	9015	9019	9029		
	9032	9042	90460	90480	9075	9078	9090	9094	9101	9104	9116	9119	9126		
	9130	9137	9152	9164	9167	9171	9175	9185	9188	9191	9238	9241	92480		
I\$TST = 000041	34540	55900	56160	56580	56880	57000	57810	57950	58510	58590	58960	59050	59630		
	59850	5986	6029	6040	60840	60990	6120	6172	6182	6191	61950	62100	6214		
	6226	62550	64850	6489	6513	6529	6554	6578	6588	66980	67260	6800	6827		
	6840	6863	6876	68780	68900	6894	6900	6908	69150	69280	6932	6938	6946		
	69530	69670	6971	6978	6984	6992	69990	70600	7067	7077	7085	7208	7263		
	73170	73300	7334	7340	7348	73550	73680	7372	7378	7386	73930	74060	7410		

CVDMACO DMV11 MCTRL DIAG #1
CVDMAC.P11 16-AUG-84 13:59

MACY11: 30A(1052) 16-AUG-84 14:51 PAGE 82-11
CROSS REFERENCE TABLE -- USER SYMBOLS

L10045	026116	6948#												
L10046	026224	6971	6978	6992	6999#									
L10047	026220	6994#												
L10050	027270	7067	7077	7317#										
L10051	026732	7205#												
L10052	027110	7260#												
L10053	027266	7315#												
L10054	027352	7334	7348	7355#										
L10055	027346	7350#												
L10056	027434	7372	7386	7393#										
L10057	027430	7388#												
L10060	027520	7410	7424	7430#										
L10061	027514	7426#												
L10062	027606	7453	7468	7475#										
L10063	027602	7470#												
L10064	030074	7493	7505	7513	7518	7527	7544	7552	7559#					
L10065	030224	7578	7589	7594	7606#									
L10066	030354	7622	7633	7638	7650#									
L10067	030510	7666	7680	7685	7696#									
L10070	030640	7712	7723	7728	7740#									
L10071	030770	7756	7767	7772	7784#									
L10072	031126	7800	7813	7818	7830#									
L10073	036106	7885	7891	7901	7907	7913	7919	7925	7937	7947	7953	7959	7970	7977
		7984	8001	8010	8018	8024	8032	8041	8047	8053	8064	8071	8086	8092
		8104	8110	8117	8127	8133	8142	8150	8163	8172	8191	8201	8207	8217
		8227	8233	8245	8255	8261	8273	8283	8289	8295	8301	8313	8319	8333
		8339	8345	8351	8357	8368	8379	8385	8398	8404	8410	8426	8432	8438
		8444	8450	8455	8464	8472	8479	8488	8494	8505	8520	8526	8532	8538
		8550	8556	8562	8568	8576	8587	8593	8599	8608	8617	8631	8640	8659
		8674	8680	8690	8696	8713	8723	8735	8745	8751	8759	8769	8775	8781
		8787	8793	8796#										
L10074	033400	7894	7940	7961	7993	8055	8079	8094	8097	8120	8156	8180	8194	8220
		8235	8248	8263	8276	8304#								
L10075	036104	8325	8371	8387	8419	8496	8513	8540	8543	8579	8623	8648	8662	8683
		8678	8704	8716	8725	8738	8762	8795#						
L10076	040112	8947	8953	8982	8991	9006	9026	9037	9052	9059	9066	9072	9113	9146
		9161	9182	9198	9204	9210	9216	9222	9235	9249#				
L10077	037044	8956	8959	8971	8975	8985	8997	9009	9015	9019	9029	9032	9042	9046#
L10100	040110	9075	9078	9090	9094	9101	9104	9116	9119	9126	9130	9137	9152	9164
		9167	9171	9175	9185	9188	9191	9238	9241	9248#				
L10101	040150	9266	9272#											
L10102	040262	9294	9295#											
MASCLR	003614	4458#	5662	5863	5878	5912								
MCLR	000100	3644#	4460	4516	4526	5329								
MLMRI	004344	4629	4651#											
MPCSR	002352	4075#	5459	5628										
MPIHAN	005164	4859#	5480											
MPIVEC	002412	4102#	5467#	5480	5547									
MPOHAN	005236	4886#	5482											
MPOVEC	002414	4103#	5469#	5482	5548									
MPRIOR	002416	4104#	5476#	5480	5482									
MRDY	000200	3659#	4523	4558	4597	4658	6136	6158	6169	6179	8864			
MREQ	000001	3645#	4516	4526										
MSTCLR	003774	4516#	5796	5987	6100	6211	6486	6727	6891	6929	6968	7064	7331	7369
		7407	7450	7490	7515	7575	7591	7619	7635	7663	7682	7709	7725	7753
		7769	7797	7815	7882	8310	8391	8944	9049					

CVDMACO DMV11 MCTRL DIAG #1
CVDMAC.P11 16-AUG-84 13:59

MACY11 30A(1052) 16-AUG-84 14:51 PAGE 82-14
CROSS REFERENCE TABLE -- USER SYMBOLS

SVCGBL = 000000

3454# 3456 3464# 3491 3507 3524 3552 3979 4410 4417 4859 4886 4913
4919 4929 4936 4958 4967 4997 5008 5074 5156 5392 5405 5513 5546
5558 5571 5627 9266 9294 9308#

SVCINS = 000001

3454# 3461# 3491 3507 3524 3552 4410 4417 4488 4527 4563 4602 4662
4845 4864 4872 4891 4899 4915 4920 4922 4925 4932 4941 4950 4954
4959 4961 4963 4971 4972 4973 4975 4976 4978 4979 4982 4983 4984
4986 4987 4989 4990 4993 5000 5002 5004 5018 5021 5024 5027 5030
5033 5047 5050 5077 5080 5083 5087 5090 5093 5096 5119 5130 5133
5168 5171 5174 5175 5178 5179 5183 5211 5212 5213 5214 5215 5216
5217 5218 5226 5227 5228 5229 5236 3409 5410 5412 5413 5415 5416
5418 5419 5429 5431 5447 5448 5480 5482 5487 5514 5530 5533 5535
5547 5548 5549 5560 5561 5572 5594 5610 5615 5616 5628 5629 5630
5631 5632 5664 5687 5688 5780 5781 5801 5840 5851 5867 5882 5894
5896 5916 5923 5952 5960 5963 5986 5989 6026 6027 6029 6039 6040
6082 6083 6084 6103 6112 6119 6120 6171 6172 6181 6182 6190 6191
6195 6213 6214 6225 6226 6230 6239 6243 6254 6255 6298 6335 6488
6489 6512 6513 6528 6529 6547 6553 6554 6565 6577 6578 6587 6588
6599 6697 6698 6729 6736 6742 6759 6773 6799 6800 6808 6824 6820
6826 6827 6834 6839 6840 6846 6852 6862 6863 6869 6875 6876 6878
6893 6894 6900 6907 6908 6910 6915 6931 6932 6938 6945 6946 6948
6953 6970 6971 6977 6978 6984 6991 6992 6994 6999 7066 7067 7076
7077 7085 7093 7110 7126 7144 7165 7177 7195 7199 7205 7208 7223
7239 7250 7254 7260 7263 7278 7294 7305 7309 7315 7317 7333 7334
7340 7347 7348 7350 7355 7371 7372 7378 7385 7386 7388 7393 7409
7410 7416 7423 7424 7426 7430 7452 7453 7460 7467 7468 7470 7475
7492 7493 7504 7505 7512 7513 7517 7518 7526 7527 7532 7543 7544
7551 7552 7557 7559 7577 7578 7588 7589 7593 7594 7604 7606 7621
7622 7632 7633 7637 7638 7648 7650 7665 7666 7679 7680 7684 7685
7694 7696 7711 7712 7722 7723 7727 7728 7738 7740 7755 7756 7766
7767 7771 7772 7782 7784 7799 7800 7812 7813 7817 7818 7828 7830
7879 7884 7885 7890 7891 7894 7900 7901 7906 7907 7912 7913 7918
7919 7924 7925 7926 7927 7936 7937 7940 7946 7947 7952 7953 7958
7959 7960 7961 7969 7970 7976 7977 7983 7984 7993 7995 8000 8001
8009 8010 8017 8018 8023 8024 8025 8031 8032 8040 8041 8046 8047
8052 8053 8054 8055 8063 8064 8070 8071 8079 8085 8086 8091 8092
8093 8094 8097 8103 8104 8109 8110 8111 8116 8117 8120 8126 8127
8132 8133 8134 8141 8142 8149 8150 8151 8156 8162 8163 8164 8171
8172 8175 8180 8182 8190 8191 8194 8200 8201 8206 8207 8208 8216
8217 8220 8226 8227 8232 8233 8234 8235 8244 8245 8248 8254 8255
8260 8261 8262 8273 8272 8273 8276 8282 8283 8288 8289 8294 8295
8300 8301 8302 8304 8309 8312 8313 8318 8319 8325 8332 8333 8338
8339 8344 8345 8350 8351 8356 8357 8358 8367 8368 8371 8378 8379
8384 8385 8386 8387 8397 8398 8403 8404 8409 8410 8419 8425 8426
8431 8432 8437 8438 8443 8444 8449 8450 8451 8454 8455 8463 8464
8468 8471 8472 8478 8479 8487 8488 8493 8494 8495 8496 8504 8505
8513 8519 8520 8525 8526 8531 8532 8537 8538 8539 8540 8543 8549
8550 8555 8556 8561 8562 8567 8568 8569 8575 8576 8579 8586 8587
8592 8593 8598 8599 8600 8607 8608 8616 8617 8618 8623 8630 8631
8632 8639 8640 8643 8648 8650 8658 8659 8662 8664 8673 8674 8679
8680 8683 8689 8690 8695 8696 8697 8698 8704 8706 8712 8713 8716
8722 8723 8724 8725 8734 8735 8738 8744 8745 8750 8751 8752 8758
8759 8762 8768 8769 8774 8775 8780 8781 8786 8787 8792 8793 8794
8795 8796 8830 8867 8888 8943 8946 8947 8952 8953 8956 8958 8959
8971 8974 8975 8981 8982 8985 8987 8990 8991 8997 9005 9006 9009
9011 9015 9018 9019 9025 9026 9029 9031 9032 9038 9039 9042 9044
9046 9048 9051 9052 9058 9059 9065 9066 9071 9072 9075 9077 9078

CVDMACO DMV11 MCTRL DIAG #1
CVDMAC.P11 16 AUG 84 13:59

MACY11 30A(1052) 16-AUG-84 14:51 PAGE 82-15
CROSS REFERENCE TABLE -- USER SYMBOLS

		9090	9093	9094	9101	9103	9104	9112	9113	9116	9118	9119	9126	9129
		9130	9137	9139	9145	9146	9152	9160	9161	9164	9166	9167	9171	9174
		9175	9181	9182	9185	9187	9188	9191	9197	9198	9203	9204	9209	9210
		9215	9216	9221	9222	9223	9234	9235	9238	9240	9241	9246	9248	9249
		9266	9268	9269	9270	9272	9294	9295	9308					
SVCSUB=	000001	3454*	3463*	5986	6029	6900	6938	6984	7085	7208	7263	7340	7378	7416
		7460	7879	8309	8943	9048								
SVCTAG=	000001	3454*	3465*	3543	3553	4872	4899	4915	4925	4932	4954	4963	4993	5004
		5033	5096	5183	5487	5535	5549	5561	5572	5616	5632	5688	5781	5851
		5896	5963	6027	6083	6084	6195	6255	6698	6878	6910	6915	6948	6953
		6994	6999	7199	7205	7254	7260	7309	7315	7317	7350	7355	7388	7393
		7426	7430	7470	7475	7559	7606	7650	7696	7740	7784	7830	8304	8795
		8796	9046	9248	9249	9272	9295							
SVCTST=	000001	3454*	3462*	5590	5658	5700	5795	5859	5905	5985	6099	6210	6485	6726
		6890	6928	6967	7060	7330	7368	7406	7449	7488	7573	7617	7661	7707
		7751	7795	7878	8942									
SMPBOT=	121000	3623*												
SMPDDC=	12140C	3624*												
S&LSYM=	010000	3454*	3543*	3553*	4872*	4899*	4915*	4925*	4932*	4954*	4963*	4993*	5004*	5033*
		5096*	5183*	5487*	5535*	5549*	5561*	5572*	5616*	5632*	5688*	5781*	5851*	5896*
		5963*	6027*	6083*	6084*	6195*	6255*	6698*	6878*	6910*	6915*	6948*	6953*	6994*
		6999*	7093*	7205*	7223*	7260*	7278*	7315*	7317*	7350*	7355*	7388*	7393*	7426*
		7430*	7470*	7475*	7559*	7606*	7650*	7696*	7740*	7784*	7830*	8304*	8795*	8796*
		9046*	9248*	9249*	9272*	9295*								
TDATA	002306	4012*	4831	6902*	6940*	6986*	7090*	7091	7099	7130*	7134	7148*	7155	7173
		7181*	7185	7213*	7214	7229	7268*	7269	7284	7342*	7380*	7418*	7462*	7496*
		7535*	7581*	7625*	7672*	7715*	7759*	7805*						
TMPA	002464	4130*	5047	5119	6227*	6228	6240*	6241	6260*	6270	6313	6404	6540*	6548
		6572	6582	6615	6617*	6622	6624	6635*	6654	6656*	6661	6663	6678*	6678*
TMPB	002466	4131*	4748*	4749*	4772	4775	4777*	4781	5130	5158	5175	5179	6537*	6632
		6634*	6645*	6671	6673*	6686*	7922	7967	8330	8407				
TMPC	002470	4132*	5123	6499*	6637	6646*	6675	6684*						
TMPD	002472	4133*	5125	5179	6536*	6608	6648*	8038	8423	8766	8828	8835	9195	
TMPE	002474	4134*	4763*	4767	5175	6216*	6228	6241	6496*	6520	6615	6678		
TMPF	002476	4135*	5109	6261*	6295	6297*	6332	6334*	6498*	6562	6564*	6567*	6596	6598*
		6602*												
TMP0	002440	4120*	5515*	5531	5536*	6495*	6519	6521	6624	6663	7978*	7981	8065	8886
		8893	9060*	9063										
TMP1	002442	4121*												
TMP2	002444	4122*	5011	6215*	6247*	6248	6275	6318	6373	6376	7971*	7974	8058*	8061
		8392*	8395	8499*	8502	8668*	8671	9053*	9056					
TMP3	002446	4123*	6259*	6277*	6320*	6379	6390	6397	6407	6410*				
TMP4	002450	4124*	5044	5112	5116	5174	5178	6218*	6285	6293	6330	6384*	6387*	6392*
		6394*	6399*	6401*	6404*	6407*	6532*	6541*	6560	6575	6594	6636*	6639*	6674*
		6677*	7898	7944	8007	8011	8188	8280	8336	8429	8461	8465	8517	8547
		8584	8656	8772	8810*	8814	9003	9158	9201					
TMP5	002452	4125*	5045	5047	5117	5119	5174	5178	6219*	6290	6293	6327	6330	6551
		6560	6585	6594	7904	7931*	7934	7950	8015	8029	8033	8114	8214	8267*
		8270	8286	8342	8362*	8365	8376	8435	8476	8480	8523	8553	8573	8677
		8687	8729*	8732	8756	8778	8811*	8817	8860*	8979	9110	9207		
TMP6	002454	4126*	4746*	4786	5174	5178	7910	8021	8044	8083	8101	8124	8139	8143
		8198	8224	8239*	8242	8252	8292	8348	8441	8485	8529	8559	8590	8605
		8609	8707*	8710	8720	8742	8784	9020*	9023	9176*	9179	9213		
TMP7	002456	4127*	4747*	4791	5174	5178	7916	7956	8050	8089	8107	8130	8147	8160
		8169	8173	8204	8230	8258	8298	8354	8382	8447	8491	8535	8565	8596
		8614	8628	8637	8641	8693	8748	8790	8855	8859	8860	9033*	9036	9219

CVDMACO DMV11 MCTRL DIAG #1
CVDMAC.P11 16-AUG-84 13:59

MACY11 30A(1052) 16-AUG-84 14:51 PAGE 82-16
CROSS REFERENCE TABLE -- USER SYMBOLS

		9229*	9232	
TMP8	002460	4128#		
TMP9	002462	4129#	5130	6497*
TXTMLT	017544	4950	5377#	
TXTML0	014117	5291#	5377	
TXTML1	014123	5292#	5377	
TXTML2	014137	5293#	5377	
TXTML3	014154	5294#	5377	
TXTML4	014176	5295#	5377	
TXTML5	014217	5296#	5377	
TXTML6	014247	5067	5297#	5377
TXTML7	014261	5298#	5377	
TXTVR	014341	5000	5300#	5579
TXTVRA	014437	5311#	5381	
TXTVRB	014442	5312#	5381	
TXTVRC	014446	5313#	5381	
TXTVRD	014452	5314#	5381	
TXTVRE	014456	5315#	5381	
TXTVRF	014462	5316#	5381	
TXTVRT	017566	5000	5380#	
TXTVR0	014357	5301#	5380	
TXTVR1	014363	5302#	5380	
TXTVR2	014367	5303#	5380	
TXTVR3	014374	5304#	5380	
TXTVR4	014401	5305#	5380	
TXTVR5	014406	5306#	5380	
TXTVR6	014413	5307#	5380	
TXTVR7	014420	5308#	5380	
TXTVR8	014425	5309#	5381	
TXTVR9	014432	5310#	5381	
TXT1	013265	5211	5274#	
TXT2	013323	5213	5275#	
TXT2A	013365	5215	5276#	
TXT2B	013424	5217	5277#	
TXT3	013466	5211	5278#	
TXT4	013516	5226	5279#	
TXT4A	013556	5228	5280#	
TXT47C	007454	5059#	5067	
TXT47D	007465	5060#	5067	
TXT47E	007500	5061#	5067	
TXT47F	007522	5062#	5067	
TXT47G	007545	5063#	5067	
TXT47H	007570	5064#	5067	
TXT47P	007626	5017	5067#	
TXT48A	010750	5111	5145#	
TXT48B	010755	5115	5146#	
TXT48C	010762	5127	5147#	
TXT48D	010767	5129	5148#	
TXT5	013617	4920	4959	5281#
TXT6	013621	5226	5282#	
TXT7	013644	4971	5283#	
TXT7A	013731	4982	5284#	
TXT8A	014016	4972	4983	5285#
TXT8B	014033	4975	4986	5286#
TXT8C	014050	4978	4989	5287#
TXT8D	014065	5174	5288#	

CVDMACO DMV11 MCTRL DIAG #1
CVDMAC.P11 16-AUG-84 13:59

MACY11 30A(1052) 16-AUG-84 14:51 PAGE 82-17
CROSS REFERENCE TABLE -- USER SYMBOLS

TXTBE 014102	5178	52890												
T\$ARGC= 000001	34910	49200	49220	49410	49500	49590	49610	49710	49720	49730	49750	49760	49780	
	49790	49820	49830	49840	49860	49870	49890	49900	50000	50020	50180	50210	50240	
	50270	50300	50470	50500	50770	50800	50830	50870	50900	50930	51190	51300	51330	
	51680	51710	51740	51750	51780	51790	52110	52120	52130	52140	52150	52160	52170	
	52180	52260	52270	52280	52290	52360	56280	56290	56300	56310	79270			
T\$CODE= 002032	92680	92690	92700											
T\$ERRN= 000146	34540	48640	48910	56150	56870	57800	58400	58940	59520	59600	60260	60390	60820	
	61190	61710	61810	61900	65650	65990	67990	68260	68390	68620	68750	71100	71260	
	71440	71650	71770	71950	72390	72500	72940	73050	73320	75570	76040	76480	76940	
	77380	77820	78280	79260	79600	79950	80250	80540	80930	81110	81340	81510	81640	
	81750	81820	82080	82340	82620	83020	83580	83860	84510	84680	84950	85390	85690	
	86000	86180	86320	86430	86500	86640	86970	87060	87240	87520	87940	89580	89740	
	89870	90110	90180	90310	90440	90770	90930	91030	91180	91290	91390	91660	91740	
	91870	92230	92400											
T\$EXCP= 000000	92680	92690	92700											
T\$FLAG= 000040	60400	61200	61720	61820	61910	62140	62260	64890	65130	65290	65540	65780	65880	
	68000	68270	68400	68630	68760	68940	69080	69320	69460	69710	69780	69920	70670	
	70770	73340	73480	73720	73860	74100	74240	74530	74680	74930	75050	75130	75180	
	75270	75440	75520	75780	75890	75940	76220	76330	76380	76660	76800	76850	77120	
	77230	77280	77560	77670	77720	78000	78130	78180	78850	78910	78940	79010	79070	
	79130	79190	79250	79370	79400	79470	79530	79590	79610	79700	79770	79840	79930	
	80010	80100	80180	80240	80320	80410	80470	80530	80550	80640	80710	80790	80860	
	80920	80940	80970	81040	81100	81170	81200	81270	81330	81420	81500	81560	81630	
	81720	81800	81910	81940	82010	82070	82170	82200	82270	82330	82350	82450	82480	
	82550	82610	82630	82730	82760	82830	82890	82950	83010	83130	83190	83250	83330	
	83390	83450	83510	83570	83680	83710	83790	83850	83870	83980	84040	84100	84190	
	84260	84320	84380	84440	84500	84550	84640	84720	84790	84880	84940	84960	85050	
	85130	85200	85260	85320	85380	85400	85430	85500	85560	85620	85680	85760	85790	
	85870	85930	85990	86080	86170	86230	86310	86400	86480	86590	86620	86740	86800	
	86830	86900	86960	86980	87040	87130	87160	87230	87250	87350	87380	87450	87510	
	87590	87620	87690	87750	87810	87870	87930	89470	89530	89560	89590	89710	89750	
	89820	89850	89910	89970	90060	90090	90150	90190	90260	90290	90320	90390	90420	
	90520	90590	90660	90720	90750	90780	90900	90940	91010	91040	91130	91160	91190	
	91260	91300	91370	91460	91520	91610	91640	91670	91710	91750	91820	91850	91880	
	91910	91980	92040	92100	92160	92220	92350	92380	92410					
T\$GMAN= 000000	34540													
T\$MILI= 000007	92680	92690	92700											
T\$LAST= 000001	34540	93080												
T\$LOLI= 000000	92680	92690	92700											
T\$LSYM= 010000	34540	3543	3553	4872	4899	4915	4925	4932	4954	4963	4993	5004	5033	
	5096	5183	5487	5535	5549	5561	5572	5616	5632	5688	5781	5851	5896	
	5963	6027	6083	6084	6195	6255	6698	6878	6910	6915	6948	6953	6994	
	6999	7205	7260	7315	7317	7350	7355	7388	7393	7426	7430	7470	7475	
	7559	7606	7650	7696	7740	7784	7830	8304	8795	8796	9046	9248	9249	
	9272	9295												
T\$LTNO= 000034	93080													
T\$NEST= 177777	34540	34560	35240	35430	35520	35530	48590	48720	48860	48990	49130	49150	49190	
	49250	49290	49320	49360	49540	49580	49630	49670	49930	49970	50040	50080	50330	
	50740	50960	51560	51830	53920	53960	54050	54870	55130	55350	55460	55490	55580	
	55610	55710	55720	55900	56160	56270	56320	56580	56880	57000	57810	57950	58510	
	58590	58960	59050	59630	59850	59860	60270	60290	60830	60840	60990	61950	62100	
	62550	64850	66980	67260	68780	68900	69000	69100	69150	69280	69380	69480	69530	
	69670	69840	69940	69990	70600	70850	70930	71990	72050	72080	72230	72540	72600	
	72630	72780	73090	73150	73170	73300	73400	73500	73550	73680	73780	73880	73930	
	74060	74160	74260	74300	74490	74600	74700	74750	74880	75590	75730	76060	76170	

CVDMACO DMV11 MCTRL DIAG #1
CVDMAC.P11 16-AUG-84 13:59

MACY11 30A(1052) 16-AUG-84 14:51 PAGE 82-18
CROSS REFERENCE TABLE -- USER SYMBOLS

	7650#	7661#	7696#	7707#	7740#	7751#	7784#	7795#	7830#	7878#	7879#	8304#	8309#
	8795#	8796#	8942#	8943#	9046#	9048#	9248#	9249#	9266#	9272#	9294#	9295#	9307#
T\$NS0 = 000000	3456#	9307											
T\$NS1 = 000005	3524#	3543	3552#	3553	4859#	4872	4886#	4899	4913#	4915	4919#	4925	4929#
	4932	4936#	4954	4958#	4963	4967#	4993	4997#	5004	5008#	5033	5074#	5096
	5156#	5183	5392#	5396	5405#	5487	5513#	5535	5546#	5549	5558#	5561	5571#
	5572	5590#	5616	5627#	5632	5658#	5688	5700#	5781	5795#	5851	5859#	5896
	5905#	5963	5985#	6084	6099#	6195	6210#	6255	6485#	6698	6726#	6878	6890#
	6915	6928#	6953	6967#	6999	7060#	7317	7330#	7355	7368#	7393	7406#	7430
	7449#	7475	7488#	7559	7573#	7606	7617#	7650	7661#	7696	7707#	7740	7751#
	7784	7795#	7830	7878#	8796	8942#	9249	9266#	9272	9294#	9295		
T\$NS2 = 000002	5986#	6027	6029#	6083	6900#	6910	6938#	6948	6984#	699#	7085#	7205	7208#
	7260	7263#	7315	7340#	7350	7378#	7388	7416#	7426	7460#	7470	7879#	8304
	8309#	8795	8943#	9046	9048#	9248							
	7093#	7199	7223#	7254	7278#	7309							
T\$NS3 = 000003	3454#												
T\$PTNU= 000000	3454#												
T\$SAVL= 177777	3454#												
T\$SEGL= 177777	3454#	7093#	7199#	7223#	7254#	7278#	7309#						
T\$SEKO= 010000	7093#	7199	7223#	7254	7278#	7309							
T\$SUBN= 000002	3454#	5590#	5658#	5700#	5755#	5859#	5905#	5985#	5986#	6029#	6099#	6210#	6485#
	6726#	6890#	6900#	6928#	6938#	6967#	6984#	7060#	7085#	7208#	7263#	7330#	7340#
	7368#	7378#	7406#	7416#	7449#	7460#	7488#	7573#	7617#	7661#	7707#	7751#	7795#
	7878#	7879#	8309#	8942#	8943#	9048#							
T\$TAGL= 177777	3454#												
T\$TAGN= 010103	3454#	3524#	3552#	4859#	4886#	4913#	4919#	4929#	4936#	4958#	4967#	4997#	5006#
	5074#	5156#	5392#	5405#	5513#	5546#	5558#	5571#	5590#	5627#	5658#	5700#	5795#
	5859#	5905#	5985#	5986#	6029#	6099#	6210#	6485#	6726#	6890#	6900#	6928#	6938#
	6967#	6984#	7060#	7085#	7208#	7263#	7330#	7340#	7368#	7378#	7406#	7416#	7449#
	7460#	7488#	7573#	7617#	7661#	7707#	7751#	7795#	7878#	7879#	8309#	8942#	8943#
	9048#	9266#	9294#										
T\$TEMP= 000000	3507#	3543#	3553#	4872#	4899#	4915#	4925#	4932#	4954#	4963#	4993#	5004#	5033#
	5096#	5183#	5396#	5487#	5535#	5549#	5561#	5572#	5616#	5632#	5688#	5781#	5851#
	5896#	5963#	6027#	6040#	6083#	6084#	6120#	6172#	6182#	6191#	6195#	6214#	6226#
	6255#	6489#	6513#	6529#	6554#	6578#	6588#	6698#	6800#	6827#	6840#	6863#	6876#
	6878#	6894#	6908#	6910#	6915#	6932#	6946#	6948#	6953#	6971#	6978#	6992#	6994#
	6999#	7067#	7077#	7199#	7205#	7254#	7260#	7309#	7315#	7317#	7334#	7348#	7350#
	7355#	7372#	7386#	7388#	7393#	7410#	7424#	7426#	7430#	7453#	7468#	7470#	7475#
	7493#	7505#	7513#	7518#	7527#	7544#	7552#	7559#	7578#	7589#	7594#	7606#	7622#
	7633#	7638#	7650#	7666#	7680#	7685#	7696#	7712#	7723#	7728#	7740#	7756#	7767#
	7772#	7784#	7800#	7813#	7818#	7830#	7885#	7891#	7694#	7901#	7907#	7913#	7919#
	7925#	7937#	7940#	7947#	7953#	7959#	7961#	7970#	7977#	7984#	7993#	8001#	8010#
	8018#	8024#	8032#	8041#	8047#	8053#	8055#	8064#	8071#	8079#	8086#	8092#	8094#
	8097#	8104#	8110#	8117#	8120#	8127#	8133#	8142#	8150#	8156#	8163#	8172#	8180#
	8191#	8194#	8201#	8207#	8217#	8220#	8227#	8233#	8235#	8245#	8248#	8255#	8261#
	8263#	8273#	8276#	8283#	8289#	8295#	8301#	8304#	8313#	8319#	8325#	8333#	8339#
	8345#	8351#	8357#	8368#	8371#	8379#	8385#	8387#	8398#	8404#	8410#	8419#	8426#
	8432#	8438#	8444#	8450#	8455#	8464#	8472#	8479#	8488#	8494#	8496#	8505#	8513#
	8520#	8526#	8532#	8538#	8540#	8543#	8550#	8556#	8562#	8568#	8576#	8579#	8587#
	8593#	8599#	8608#	8617#	8623#	8631#	8640#	8648#	8659#	8662#	8674#	8680#	8683#
	8690#	8696#	8698#	8704#	8713#	8716#	8723#	8725#	8735#	8738#	8745#	8751#	8759#
	8762#	8769#	8775#	8781#	8787#	8793#	8795#	8796#	8947#	8953#	8956#	8959#	8971#
	8975#	8982#	8985#	8991#	8997#	9006#	9009#	9015#	9019#	9026#	9029#	9032#	9039#
	9042#	9046#	9052#	9059#	9066#	9072#	9075#	9078#	9090#	9094#	9101#	9104#	9113#
	9116#	9119#	9126#	9130#	9137#	9146#	9152#	9161#	9164#	9167#	9171#	9175#	9182#
	9185#	9188#	9191#	9198#	9204#	9210#	9216#	9222#	9235#	9238#	9241#	9248#	9249#
	9268#	9269#	9270#	9272#	9295#	9307#							

CVDMACO DMV11 MCTRL DIAG #1
CVDMAC.P11 16-AUG-84 13:59

MACY11 30A(1052) 16-AUG-84 14:51 PAGE 82-19
CROSS REFERENCE TABLE -- USER SYMBOLS

T:TEST= 000034

T:TEST= 177777

3454	5590	5658	5700	5795	5852	5905	5985	5986	6029	6099	6210	6485
6724	6850	6900	6928	6938	6967	6984	7060	7085	7208	7263	7330	7340
7368	7378	7406	7416	7419	7460	7488	7574	7617	7661	7707	7751	7795
7878	7879	8309	8942	8943	9048	9308						
3454	4864	4891	4915	4920	4922	4925	4932	4941	4950	4954	4959	4961
4963	4971	4972	4973	4975	4976	4978	4979	4982	4983	4984	4986	4987
4989	4990	4993	5000	5002	5004	5018	5021	5024	5027	5030	5033	5047
5050	5077	5080	5083	5087	5090	5093	5096	5119	5130	5133	5168	5171
5174	5175	5178	5179	5183	5211	5212	5213	5214	5215	5216	5217	5218
5226	5227	5228	5229	5236	5409	5412	5415	5418	5429	5431	5447	5480
5482	5487	5514	5530	5533	5535	5547	5548	5549	5560	5561	5572	5594
5610	5615	5616	5628	5629	5630	5631	5632	5664	5687	5688	5780	5781
5801	5840	5851	5867	5882	5894	5896	5916	5923	5952	5960	5963	5986
5989	6026	6027	6029	6039	6040	6082	6083	6084	6103	6112	6119	6120
6171	6172	6181	6182	6190	6191	6195	6213	6214	6225	6226	6230	6239
6243	6254	6255	6488	6489	6512	6513	6528	6529	6547	6553	6554	6565
6577	6578	6587	6588	6599	6697	6698	6729	6736	6742	6759	6773	6799
6800	6808	6814	6820	6826	6827	6834	6839	6840	6846	6852	6862	6863
6869	6875	6876	6878	6893	6894	6900	6907	6908	6910	6915	6931	6932
6938	6945	6946	6948	6953	6970	6971	6977	6978	6984	6991	6992	6994
6999	7066	7067	7076	7077	7085	7093	7110	7126	7144	7165	7177	7195
7199	7205	7208	7223	7239	7250	7254	7260	7263	7278	7294	7305	7309
7315	7317	7333	7334	7340	7347	7348	7350	7355	7371	7372	7378	7385
7386	7388	7393	7409	7410	7416	7423	7424	7426	7430	7452	7453	7460
7467	7468	7470	7475	7492	7493	7504	7505	7512	7513	7517	7518	7526
7527	7532	7543	7544	7551	7552	7557	7559	7577	7578	7588	7589	7593
7594	7604	7606	7621	7622	7632	7633	7637	7638	7648	7650	7665	7666
7679	7680	7684	7685	7694	7696	7711	7712	7722	7723	7727	7728	7738
7740	7755	7756	7766	7767	7771	7772	7782	7784	7799	7800	7812	7813
7817	7818	7828	7830	7879	7884	7885	7890	7891	7894	7900	7901	7906
7907	7912	7913	7918	7919	7924	7925	7926	7927	7936	7937	7940	7946
7947	7952	7953	7958	7959	7960	7961	7969	7970	7976	7977	7983	7984
7993	7995	8000	8001	8009	8010	8017	8018	8023	8024	8025	8031	8032
8040	8041	8046	8047	8052	8053	8054	8055	8063	8064	8070	8071	8079
8085	8086	8091	8092	8093	8094	8097	8103	8104	8109	8110	8111	8116
8117	8120	8126	8127	8132	8133	8134	8141	8142	8149	8150	8151	8156
8162	8163	8164	8171	8172	8175	8180	8182	8190	8191	8194	8200	8201
8206	8207	8208	8216	8217	8220	8226	8227	8232	8233	8234	8235	8244
8245	8248	8254	8255	8260	8261	8262	8263	8272	8273	8276	8282	8283
8288	8289	8294	8295	8300	8301	8302	8304	8309	8312	8313	8318	8319
8325	8332	8333	8338	8339	8344	8345	8350	8351	8356	8357	8358	8367
8368	8371	8378	8379	8384	8385	8386	8387	8397	8398	8403	8404	8409
8410	8419	8425	8426	8431	8432	8437	8438	8443	8444	8449	8450	8451
8454	8455	8463	8464	8468	8471	8472	8478	8479	8487	8488	8493	8494
8495	8496	8504	8505	8513	8519	8520	8525	8526	8531	8532	8537	8538
8539	8540	8543	8549	8550	8555	8556	8561	8562	8567	8568	8569	8575
8576	8579	8586	8587	8592	8593	8598	8599	8600	8607	8608	8616	8617
8618	8623	8630	8631	8632	8639	8640	8643	8648	8650	8658	8659	8662
8664	8673	8674	8679	8680	8683	8689	8690	8695	8696	8697	8698	8704
8706	8712	8713	8716	8722	8723	8724	8725	8734	8735	8738	8744	8745
8750	8751	8752	8758	8759	8762	8768	8769	8774	8775	8780	8781	8786
8787	8792	8793	8794	8795	8796	8830	8888	8943	8946	8947	8952	8953
8956	8958	8959	8971	8974	8975	8981	8982	8985	8987	8990	8991	8997
9005	9006	9009	9011	9015	9018	9019	9025	9026	9029	9031	9032	9038
9039	9042	9044	9046	9048	9051	9052	9058	9059	9065	9066	9071	9072
9075	9077	9078	9090	9093	9094	9101	9103	9104	9112	9113	9116	9118

CVDMACO DMV11 MCTRL DIAG #1
CVDMAC.P11 16-AUG-84 13:59

MACY11 30A(1052) 16-AUG-84 14:51 PAGE 82-22
CROSS REFERENCE TABLE - USER SYMBOLS

T22	030226 G	3507	7617#											
T23	030356 G	3507	7661#											
T24	030512 G	3507	7707#											
T25	030642 G	3507	7751#											
T26	030772 G	3507	7795#											
T27	031130 G	3507	7878#											
T27.1	031130	7879#												
T27.2	033402	8309#												
T28	036362 G	3507	8942#											
T28.1	036362	8943#												
T28.2	037046	9048#												
T3	021242 G	3507	5700#											
T4	021434 G	3507	5795#											
T5	021576 G	3507	5859#											
T6	021720 G	3507	5905#											
T7	022132 G	3507	5985#											
T7.1	022132	5986#												
T7.2	022352	6029#												
T8	022642 G	3507	6099#											
T9	023210 G	3507	6210#											
T9.RST	023376	6217	6236	6259#										
UAM	= 000200 G	3563#												
VECTOR	040176	9269	9276#											
WA	= 003346	4389#	4390											
WB	= 003350	4390#	4391											
WC	= 003352	4391#	4392											
WD	= 003354	4392#	4393											
WE	= 003356	4393#	4394											
WF	= 003360	4394#												
WRCRAM	023414	6223	6266#											
WRILOC	= 000002	3654#	4651	4661	6031	6126	8862							
WRIPAG	= 000004	3656#												
WRITE	004322	4627#	4765	4779	4784	4789	4829	6283	6573	7097	7132	7153	7183	7227
		7282	7932	7972	7979	8059	8212	8240	8268	8363	8393	8500	8669	8675
		8708	8730	8754	8812	8815	9021	9034	9054	9061	9177	9230		
WRITEI	004334	4648#	6108	6250	6508	6524	6693	6732	6738	6754	6810	6842	6848	6973
		7150	7219	7274	7668	8156								
WSR0	002246	3984#	4707#	5227	6047	6051								
WSR10	002256	3992#	4711#	5229										
WSR12	002260	3994#	4712#	5229										
WSR14	002262	3996#	4713#	5229										
WSR16	002264	3998#	4714#	5229										
WSR2	002250	3986#	4708#	5227	6055	6060								
WSR4	002252	3988#	4709#	5227	6065	6069								
WSR6	002254	3990#	4710#	5227	6073	6076								
W0	= 003322	4379#	4380											
W1	= 003324	4380#	4381											
W2	= 003326	4381#	4382											
W3	= 003330	4382#	4383											
W4	= 003332	4383#	4384											
W5	= 003334	4384#	4385											
W6	= 003336	4385#	4386											
W7	= 003340	4386#	4387											
W8	= 003342	4387#	4388											
W9	= 003344	4388#	4389											
XDATA	002314	4015#	4922	4961	5002	5200#	5201#							

CVDMACO DMV11 MCTRL DIAG #1
CVDMAC.P11 16 AUG-84 13:59

MACY11 30A(1052) 16-AUG-84 14:51 PAGE 82-23
CROSS REFERENCE TABLE -- USER SYMBOLS

XORGB	011310	4921	4960	5001	5198#														
X\$ALWA=	000000	3454#																	
X\$FALS=	000040	3454#																	
X\$OFFS=	000400	3454#																	
X\$TRUE=	000020	3454#																	
\$E	= 000146	3721#	4488#	4527#	4563#	4602#	4662#	4845#	4864#	4891#	5615#	5687#	5780#	5840#					
		5894#	5952#	5960#	6026#	6039#	6082#	6119#	6171#	6181#	6190#	6298#	6335#	6565#					
		6599#	6799#	6826#	6839#	6862#	6875#	7110#	7126#	7144#	7165#	7177#	7195#	7239#					
		7250#	7294#	7305#	7532#	7557#	7604#	7648#	7694#	7738#	7782#	7828#	7926#	7960#					
		7995#	8025#	8054#	8093#	8111#	8134#	8151#	8164#	8175#	8182#	8208#	8234#	8262#					
		8302#	8358#	8386#	8451#	8468#	8495#	8539#	8569#	8600#	8618#	8632#	8643#	8650#					
		8664#	8697#	8706#	8724#	8752#	8794#	8867#	8958#	8974#	8987#	9011#	9018#	9031#					
		9044#	9077#	9093#	9103#	9118#	9129#	9139#	9166#	9174#	9187#	9223#	9240#						
		3459#																	
		3460#																	
\$LSTIN=	000001	4073#	4078	4079	4081	4082	4084	4085	4087	4088	4090	4091	4093	4094					
\$LSTTA=	000001	4096	4097	4099	4100														
\$MPCSR=	150000 G	3722#	5590#	5658#	5700#	5795#	5859#	5905#	5985#	6099#	6210#	6485#	6726#	6890#					
		6928#	6967#	7060#	7330#	7368#	7406#	7449#	7488#	7573#	7617#	7661#	7707#	7751#					
		7795#	7878#	8942#															
		3451#	4193#	4368#	4373#	4410#	4417#	4499#	5066#	5641#	6040	6120	6172	6182					
		6191	6214	6226	6253	6489	6511	6513	6527	6529	6552	6554	6576	6578					
		6586	6588	6696	6800	6827	6840	6863	6876	6894	6908	6932	6946	6971					
		6978	6992	7067	7075	7077	7334	7348	7372	7386	7410	7424	7453	7468					
		7493	7505	7513	7518	7527	7544	7552	7578	7589	7594	7622	7633	7638					
		7666	7680	7685	7712	7723	7728	7756	7767	7772	7800	7813	7818	7885					
		7889	7891	7893	7894	7899	7901	7905	7907	7911	7913	7917	7919	7923					
		7925	7935	7937	7939	7940	7945	7947	7951	7953	7957	7959	7961	7968					
		7970	7975	7977	7982	7984	7992	7993	7999	8001	8008	8010	8016	8018					
		8022	8024	8030	8032	8039	8041	8045	8047	8051	8053	8055	8062	8064					
		8069	8071	8078	8079	8084	8086	8090	8092	8094	8096	8097	*102	8104					
		8108	8110	8115	8117	8119	8120	8125	8127	8131	8133	8140	8142	8148					
		8150	8155	8156	8161	8163	8170	8172	8179	8180	8189	8191	8193	8194					
		8199	8201	8205	8207	8215	8217	8219	8220	8225	8227	8231	8233	8235					
		8243	8245	8247	8248	8253	8255	8259	8261	8263	8271	8273	8275	8276					
		8281	8283	8287	8289	8293	8295	8299	8301	8313	8317	8319	8324	8325					
		8331	8333	8337	8339	8343	8345	8349	8351	8355	8357	8366	8368	8370					
		8371	8377	8379	8383	8385	8387	8396	8398	8402	8404	8408	8410	8418					
		8419	8424	8426	8430	8432	8436	8438	8442	8444	8448	8450	8453	8455					
		8462	8464	8472	8477	8479	8486	8488	8492	8494	8496	8503	8505	8512					
		8513	8518	8520	8524	8526	8530	8532	8536	8538	8540	8542	8543	8548					
		8550	8554	8556	8560	8562	8566	8568	8574	8576	8579	8585	8587	8591					
		8593	8597	8599	8606	8608	8615	8617	8622	8623	8629	8631	8638	8640					
		8647	8648	8657	8659	8662	8672	8674	8678	8680	8682	8683	8688	8690					
		8694	8696	8698	8703	8704	8711	8713	8715	8716	8721	8723	8725	8733					
		8735	8737	8738	8743	8745	8749	8751	8757	8759	8761	8762	8767	8769					
		8773	8775	8779	8781	8785	8787	8791	8793	8947	8951	8953	8955	8956					
		8959	8970	8971	8975	8980	8982	8984	8985	8989	8991	8996	8997	9004					
		9006	9008	9009	9014	9015	9019	9024	9026	9028	9029	9032	9037	9039					
		9041	9042	9052	9057	9059	9064	9066	9070	9072	9074	9075	9078	9089					
		9090	9094	9100	9101	9104	9111	9113	9115	9116	9119	9125	9126	9130					
		9136	9137	9144	9146	9151	9152	9159	9161	9163	9164	9167	9170	9171					
		9175	9180	9182	9184	9185	9188	9190	9191	9196	9198	9202	9204	9208					
		9210	9214	9216	9220	9222	9233	9235	9237	9238	9241	9245	9299#						

CVDMACO DMV11 MCTRL DIAG #1
CVDMAC.P11 16-AUG-84 13:50

MACY11 30A(1052) 16-AUG-84 14:51 PAGE 83-1
CROSS REFERENCE TABLE -- MACRO NAMES

ENDSRV	580#	3454#	4872	4899											
ENDSUB	596#	3454#	6027	6083	6910	6948	6994	7205	7260	7315	7350	7388	7426	7470	8304
	8795	9046	9248												
ENDSW	614#	3454#	3553												
ENDTST	624#	3454#	5616	5688	5781	5851	5896	5963	6084	6195	6255	6698	6878	6915	6953
	6999	7317	7355	7393	7430	7475	7559	7606	7650	7696	7740	7784	7830	8796	9249
EQUALS	642#	3454#	3563												
ERRDF	714#	3454#	4864	4891	5615	5687	5780	5840	5894	5952	5960	6026	6039	6082	6119
	6171	6181	6190	6565	6599	6799	6826	6839	6862	6875	7110	7126	7144	7165	7177
	7195	7239	7250	7294	7305	7532	7557	7604	7648	7694	7738	7782	7828	7926	7960
	7995	8025	8054	8093	8111	8134	8151	8164	8175	8182	8208	8234	8262	8302	8358
	8386	8451	8468	8495	8539	8569	8600	8618	8632	8643	6650	8664	8697	8706	8724
	8752	8794	8958	8974	8987	9011	9018	9031	9044	9077	9093	9103	9118	9129	9139
	9166	9174	9187	9223	9240										
ERRHRD	718#	3454#													
ERROR	722#	3454#	5664	5801	5867	5882	5916	5989	6103	6112	6213	6225	6239	6254	6488
	6512	6528	6553	6577	6587	6697	6729	6736	6742	6759	6773	6808	6814	6820	6834
	6846	6852	6869	6893	6907	6931	6945	6970	6977	6991	7066	7076	7333	7347	7371
	7385	7409	7423	7452	7467	7492	7504	7512	7517	7526	7543	7551	7577	7588	7593
	7621	7632	7637	7665	7679	7684	7711	7722	7727	7755	7766	7771	7799	7812	7817
	7884	7890	7900	7906	7912	7918	7924	7936	7946	7952	7950	7969	7976	7983	8000
	8009	8017	8023	8031	8040	8046	8052	8063	8070	8085	8091	8103	8109	8116	8126
	8132	8141	8149	8162	8171	8190	8200	8206	8216	8226	8232	8244	8254	8260	8272
	8282	8288	8294	8300	8312	8318	8332	8338	8344	8350	8356	8367	8378	8384	8397
	8403	8409	8425	8431	8437	8443	8449	8454	8463	8471	8478	8487	8493	8504	8519
	8525	8531	8537	8549	8555	8561	8567	8575	8586	8592	8598	8607	8616	8630	8639
	8658	8673	8679	8689	8695	8712	8722	8734	8744	8750	8758	8768	8774	8780	8786
	8792	8830	8888	8946	8952	8981	8990	9005	9025	9038	9051	9058	9065	9071	9112
	9145	9160	9181	9197	9203	9209	9215	9221	9234	9246					
ERRSF	726#	3454#													
ERRSOF	730#	3454#													
ERRTBL	734#	3454#	3979												
ESCAPE	744#	3454#	6040	6120	6172	6182	6191	6214	6226	6489	6513	6529	6554	6578	6588
	6800	6827	6840	6863	6876	6894	6908	6932	6946	6971	6978	6992	7067	7077	7334
	7348	7372	7386	7410	7424	7453	7468	7493	7505	7513	7518	7527	7544	7552	7578
	7589	7594	7622	7633	7638	7666	7680	7685	7712	7723	7728	7756	7767	7772	7800
	7813	7818	7885	7891	7894	7901	7907	7913	7919	7925	7937	7940	7947	7953	7959
	7961	7970	7977	7984	7993	8001	8010	8018	8024	8032	8041	8047	8053	8055	8064
	8071	8079	8086	8092	8094	8097	8104	8110	8117	8120	8127	8133	8142	8150	8156
	8163	8172	8180	8191	8194	8201	8207	8217	8220	8227	8233	8235	8245	8248	8255
	8261	8263	8273	8276	8283	8289	8295	8301	8313	8319	8325	8333	8339	8345	8351
	8357	8368	8371	8379	8385	8387	8398	8404	8410	8419	8426	8432	8438	8444	8450
	8455	8464	8472	8479	8488	8494	8496	8505	8513	8520	8526	8532	8538	8540	8543
	8550	8556	8562	8568	8576	8579	8587	8593	8599	8608	8617	8623	8631	8640	8648
	8659	8662	8674	8680	8683	8690	8696	8698	8704	8713	8716	8723	8725	8735	8738
	8745	8751	8759	8762	8769	8775	8781	8787	8793	8947	8953	8956	8959	8971	8975
	8982	8985	8991	8997	9006	9009	9015	9019	9026	9029	9032	9039	9042	9052	9059
	9066	9072	9075	9078	9090	9094	9101	9104	9113	9116	9119	9126	9130	9137	9146
	9152	9161	9164	9167	9171	9175	9182	9185	9188	9191	9198	9204	9210	9216	9222
	9235	9238	9241												
EXIT	771#	3454#													
FEQUAL	810#	3454#													
GEDF	3737#	4864	4891	5615	5687	5780	5840	5894	5952	5960	6026	6039	6082	6119	6171
	6181	6190	6565	6599	6799	6826	6839	6862	6875	7110	7126	7144	7165	7177	7195
	7239	7250	7294	7305	7532	7557	7604	7648	7694	7738	7782	7828	7926	7960	7995
	8025	8054	8093	8111	8134	8151	8164	8175	8182	8208	8234	8262	8302	8358	8386

CVDMAC0 DMV11 MCTRL DIAG #1
CVDMAC.P11 16-AUG-84 13:59MACY11 30A(1052) 16-AUG-84 14:51 PAGE 83-2
CROSS REFERENCE TABLE -- MACRO NAMES

	8451	8468	8495	8539	8569	8600	8618	8632	8643	8650	8664	8697	8706	8724	8752
	8794	8958	8974	8987	9011	9018	9031	9044	9077	9093	9103	9118	9129	9139	9166
	9174	9187	9223	9240											
GEHRD	37450														
GESF	37290														
GESFT	37530														
GETBYT	8240	34540													
GETPRI	8340	34540													
GETWOR	8290	34540													
GMANIA	8390	34540													
GMANID	8480	34540													
GMANIL	8590	34540													
GPHARD	8680	34540	5447												
GPRMA	8740	34540	9268	9269											
GPRMD	9030	34540	9270												
GPRML	9340	34540													
GTDF	37700	4488	4527	4563	4602	4662	4845	6298	6335	8867					
GTHRD	37780														
GTSF	37620														
GTSFT	37860														
HEADER	9540	34540	3491												
INLOOP	9620	34540													
I0SETU	9660	34540													
I0STAR	9740	34540													
KT11	9820	34540													
LASTAD	11470	34540	9308												
MANUAL	11620	34540													
MEMORY	11660	34540													
MSG	55760	5590	56450	5658	56920	5700	57850	5795	58550	5859	59000	5905	59670	5985	60880
	6099	61990	6210	64170	6485	67040	6726	68820	6890	69190	6928	69570	6967	70030	7060
	73210	7330	73590	7368	73970	7406	74340	7449	74790	7488	75630	7573	76100	7617	76540
	7661	77000	7707	77440	7751	77880	7795	78340	7878	89000	8942				
M#BYTE	20000	34540	34910												
M#CHEC	21180	34540													
M#CNT0	21820	34540	92680	92690	92700										
M#COUN	20660	34540	49200	49220	49410	49500	49590	49610	49710	49720	49730	49750	49760	49780	49790
	49820	49830	49840	49860	49870	49890	49900	50000	50020	50180	50210	50240	50270	50300	50470
	50500	50770	50800	50830	50870	50900	50930	51190	51300	51330	51680	51710	51740	51750	51780
	51790	52110	52120	52130	52140	52150	52160	52170	52180	52260	52270	52280	52290	52360	56280
	56290	56300	56310	79270											
M#DATA	18670	34540	34910	44100	44170										
M#DECR	20290	34540	35430	35530	48720	48990	49150	49250	49320	49540	49630	49930	50040	50330	50960
	51830	53960	54870	55350	55490	55610	55720	56160	56320	56880	57810	58510	58960	59630	60270
	60830	60840	61950	62550	66980	68780	69100	69150	69480	69530	69940	69990	71990	72050	72540
	72600	73090	73150	73170	73500	73550	73880	73930	74260	74300	74700	74750	75590	76060	76500
	76960	77400	77840	78300	83040	87950	87960	90460	92480	92490	92720	92950	93070		
M#DEFA	21700	34540	92680	92690	92700										
M#ENDE	20740	34540	35430	35530	48720	48990	49150	49250	49320	49540	49630	49930	50040	50330	50960
	51830	54870	55350	55490	55610	55720	56160	56320	56880	57810	58510	58960	59630	60270	60830
	60840	61950	62550	66980	68780	69100	69150	69480	69530	69940	69990	71990	72050	72540	72600
	73090	73150	73170	73500	73550	73880	73930	74260	74300	74700	74750	75590	76060	76500	76960
	77400	77840	78300	83040	87950	87960	90460	92480	92490	92720	92950	93070			
M#ERRI	16490	34540	48640	48910	56150	56870	57800	58400	58940	59520	59600	60260	60390	60820	61190
	61710	61810	61900	65650	65990	67990	68260	68390	68620	68750	71100	71260	71440	71650	71770
	71950	72390	72500	72940	73050	75320	75570	76040	76480	76940	77380	77820	78280	79260	79600
	79950	80250	80540	80930	81110	81340	81510	81640	81750	81820	82080	82340	82620	83020	83580

CVDMACO DMV11 MCTRL DIAG #1
CVDMAC.P11 16-AUG-84 13:59

MACY11 30A(1052) 16-AUG-84 14:51 PAGE 83-3
CROSS REFERENCE TABLE -- MACHU NAMES

	8386#	8451#	8468#	8495#	8539#	8569#	8600#	8618#	8632#	8643#	8650#	8664#	8697#	8706#	8724#
	8752#	8794#	8958#	8974#	8987#	9011#	9018#	9031#	9044#	9077#	9093#	9103#	9118#	9129#	9139#
	9166#	9174#	9187#	9223#	9240#										
M#ESCA	2006#	3454#	6040#	6120#	6172#	6182#	6191#	6214#	6226#	6489#	6513#	6529#	6554#	6578#	6588#
	6800#	6827#	6840#	6863#	6876#	6894#	6908#	6932#	6946#	6971#	6978#	6992#	7067#	7077#	7334#
	7348#	7372#	7386#	7410#	7424#	7453#	7468#	7493#	7505#	7513#	7518#	7527#	7544#	7552#	7578#
	7589#	7594#	7622#	7633#	7638#	7666#	7680#	7685#	7712#	7723#	7728#	7756#	7767#	7772#	7800#
	7813#	7818#	7885#	7891#	7894#	7901#	7907#	7913#	7919#	7925#	7937#	7940#	7947#	7953#	7959#
	7961#	7970#	7977#	7984#	7993#	8001#	8010#	8018#	8024#	8032#	8041#	8047#	8053#	8055#	8064#
	8071#	8079#	8086#	8092#	8094#	8097#	8104#	8110#	8117#	8120#	8127#	8133#	8142#	8150#	8156#
	8163#	8172#	8180#	8191#	8194#	8201#	8207#	8217#	8220#	8227#	8233#	8235#	8245#	8248#	8255#
	8261#	8263#	8273#	8276#	8283#	8289#	8295#	8301#	8313#	8319#	8325#	8333#	8339#	8345#	8351#
	8357#	8368#	8371#	8379#	8385#	8387#	8398#	8404#	8410#	8419#	8426#	8432#	8438#	8444#	8450#
	8455#	8464#	8472#	8479#	8488#	8494#	8496#	8505#	8513#	8520#	8526#	8532#	8538#	8540#	8543#
	8550#	8556#	8562#	8568#	8576#	8579#	8587#	8593#	8599#	8608#	8617#	8623#	8631#	8640#	8648#
	8659#	8662#	8674#	8680#	8683#	8690#	8696#	8698#	8704#	8713#	8716#	8723#	8725#	8735#	8738#
	8745#	8751#	8759#	8762#	8769#	8775#	8781#	8787#	8793#	8947#	8953#	8956#	8959#	8971#	8975#
	8982#	8985#	8991#	8997#	9006#	9009#	9015#	9019#	9026#	9029#	9032#	9039#	9042#	9052#	9059#
	9066#	9072#	9075#	9078#	9090#	9094#	9101#	9104#	9113#	9116#	9119#	9126#	9130#	9137#	9146#
	9152#	9161#	9164#	9167#	9171#	9175#	9182#	9185#	9188#	9191#	9198#	9204#	9210#	9216#	9222#
	9235#	9238#	9241#												
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CVDMACO DMV11 MCTRL DIAG #1
CVDMAC.P11 16-AUG-84 13:59

MACY11 30A(1052) 16-AUG-84 14:51 PAGE 83-4
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CVDMACO DMV11 MCTRL DIAG #1
CVDMAC.PJ 16-AUG-84 13:59

MACY11 30A(1052) 16-AUG-84 14:51 PAGE 83-5
CROSS REFERENCE TABLE -- MACRO NAMES

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CVDMACO DMV11 MCTRL DIAG #1
CVDMAC.P11 16-AUG-84 13:59

MACY11 30A(1052) 16-AUG-84 14:51 PAGE 83-6
CROSS REFERENCE TABLE -- MACRO NAMES

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CVDMACO DMV11 MCTRL DIAG #1 MACY11 30A(1052) 16-AUG-84 14:51 PAGE 83-7
CVDMAC.P11 16-AUG-84 13:59 CROSS REFERENCE TABLE -- MACRO NAMES

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CVDMACO DMV11 MCTPL DIAG #1
CVDMAC.P11 16-AUG-84 13:59

MACY11 30A(1052) 16-AUG-84 14:51 PAGE 83-8
CROSS REFERENCE TABLE -- MACRO NAMES

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	72230	72390	72500	72540	72600	72630	72780	72940	73050	73090	73150	73170	73330	73340	73400
	73470	73480	73500	73550	73710	73720	73780	73850	73860	73880	73930	74090	74100	74160	74230
	74240	74260	74300	74520	74530	74600	74670	74680	74700	74750	74920	74930	75040	75050	75120
	75130	75170	75180	75260	75270	75320	75430	75440	75510	75520	75570	75590	75770	75780	75880
	75890	75930	75940	76040	76060	76210	76220	76320	76330	76370	76380	76480	76500	76650	76660
	76790	76800	76840	76850	76940	76960	77110	77120	77220	77230	77270	77280	77380	77400	77550
	77560	77660	77670	77710	77720	77820	77840	77990	78000	78120	78130	78170	78180	78280	78300
	78790	78840	78850	78900	78910	78940	79000	79010	79060	79070	79120	79130	79180	79190	79240
	79250	79260	79270	79360	79370	79400	79460	79470	79520	79530	79580	79590	79600	79610	79690
	79700	79760	79770	79830	79840	79930	79950	80000	80010	80090	80100	80170	80180	80230	80240
	80250	80310	80320	80400	80410	80460	80470	80520	80530	80540	80550	80630	80640	80700	80710
	80790	80850	80860	80910	80920	80930	80940	80970	81030	81040	81090	81100	81110	81160	81170
	81200	81260	81270	81320	81330	81340	81410	81420	81490	81500	81510	81560	81620	81630	81640
	81710	81720	81750	81800	81820	81900	81910	81940	82000	82010	82060	82070	82080	82160	82170
	82200	82260	82270	82320	82330	82340	82350	82440	82450	82480	82540	82550	82600	82610	82620
	82630	82720	82730	82760	82820	82830	82880	82890	82940	82950	83000	83010	83020	83040	83090
	83120	83130	83180	83190	83250	83320	83330	83380	83390	83440	83450	83500	83510	83560	83570
	83580	83670	83680	83710	83780	83790	83840	83850	83860	83870	83970	83980	84030	84040	84090
	84100	84190	84250	84260	84310	84320	84370	84380	84430	84440	84490	84500	84510	84540	84550
	84630	84640	84680	84710	84720	84780	84790	84870	84880	84930	84940	84950	84960	85040	85050
	85130	85190	85200	85250	85260	85310	85320	85370	85380	85390	85400	85430	85490	85500	85550
	85560	85610	85620	85670	85680	85690	85750	85760	85790	85860	85870	85920	85930	85980	85990
	86000	86070	86080	86160	86170	86180	86230	86300	86310	86320	86390	86400	86430	86480	86500
	86580	86590	86620	86640	86730	86740	86790	86800	86830	86890	86900	86950	86960	86970	86980
	87040	87060	87120	87130	87160	8720	87230	87240	87250	87340	87350	87380	87440	87450	87500
	87510	87520	87580	87590	87620	87680	87690	87740	87750	87800	87810	87860	87870	87920	87930
	87940	87950	87960	88300	88880	89430	89460	89470	89520	89530	89560	89580	89590	89710	89740
	89750	89810	89820	89850	89870	89900	89910	89970	90050	90060	90090	90110	90150	90180	90190
	90250	90260	90290	90310	90320	90380	90390	90420	90440	90460	90480	90510	90520	90580	90590
	90650	90660	90710	90720	90750	90770	90780	90900	90930	90940	91010	91030	91040	91120	91130
	91160	91180	91190	91260	91290	91300	91370	91390	91450	91460	91520	91600	91610	91640	91660
	91670	91710	91740	91750	91810	91820	91850	91870	91880	91910	91970	91980	92030	92040	92090
	92100	92150	92160	92210	92220	92230	92340	92350	92380	92400	92410	92460	92480	92490	
MATSTL	19210	34540	48640	48910	49150	49200	49220	49250	49320	49410	49500	49540	49590	49610	49630
	49710	49720	49730	49750	49760	49780	49790	49820	49830	49840	49860	49870	49890	49900	49930
	50000	50020	50040	50180	50210	50240	50270	50300	50330	50470	50500	50770	50800	50830	50870
	50900	50930	50960	51190	51300	51330	51680	51710	51740	51750	51780	51790	51830	52110	52120
	52130	52140	52150	52160	52170	52180	52260	52270	52280	52290	52360	54090	54120	54150	54180
	54290	54310	54470	54800	54820	54870	55140	55300	55330	55350	55470	55480	55490	55600	55610

CVDMACO DMV11 MCTRL DIAG #1 MACY11 30A(1052) 16-AUG-84 14:51 PAGE 83-10
 CVDMAC.P11 16-AUG-84 13:59 CROSS REFERENCE TABLE -- MACRO NAMES

PRINTB	12390	34540	4920	4922	4959	4961	5000	5002	5236	5628					
PRINTF	12790	34540													
PRINTS	13190	34540													
PRINTX	13590	34540	4941	4950	4971	4972	4973	4975	4976	4978	4979	4982	4983	4984	4986
	4987	4989	4990	5018	5021	5024	5027	5030	5047	5050	5077	5080	5083	5087	5090
	5093	5119	5130	5133	5168	5171	5174	5175	5178	5179	5211	5212	5213	5214	5215
	5216	5217	5218	5226	5227	5228	5229	5629	5630	5631	7927				
READBU	13990	34540													
READEF	14030	34540	5409	5412	5415	5418									
RFLAGS	14080	34540													
SETDF	38800	4488	4527	4563	4602	4662	4845	6298	6335	8867					
SETHRD	38850														
SETPRI	14130	34540													
SETSF	38750														
SETSFT	38900														
SETVEC	14180	34540	5429	5480	5482	5514	5594								
SLASH	14240	34540													
STARS	14380	34540													
SVC	14520	34530	3454												
T%GEN	38980	4488	4527	4563	4602	4662	4845	6298	6335	8867					
XFER	16120	34540													
XFERF	16160	34540													
XFERT	16200	34540													
%GEDF	38040	4864	4891	5615	5687	5780	5840	5894	5952	5960	6026	6039	6082	6119	6171
	6181	6190	6565	6599	6799	6826	6839	6862	6875	7110	7126	7144	7165	7177	7195
	7239	7250	7294	7305	7532	7557	7604	7648	7694	7738	7782	7828	7926	7960	7995
	8025	8054	8093	8111	8134	8151	8164	8175	8182	8208	8234	8262	8302	8358	8386
	8451	8468	8495	8539	8569	8600	8618	8632	8643	8650	8664	8697	8706	8724	8752
	8794	8958	8974	8987	9011	9018	9031	9044	9077	9093	9103	9118	9129	9139	9166
	9174	9187	9223	9240											
%GHRD	38140														
%GESF	37940														
%GESFT	38250														
%GTDF	38450	4488	4527	4563	4602	4662	4845	6298	6335	8867					
%GTHRD	38550														
%GTSF	38350														
%GTSFT	38650														

. ABS. 040374 000

ERRORS DETECTED: 0

CVDMAC,CVDMAC/CRF=SVC34R.MLB,CVDMAC.P11

RUN-TIME: 48 59 6 SECONDS

RUN-TIME RATIO: 142/114=1.2

CORE USED: 22K (43 PAGES)