

DMV 11

DMV 11 MICROTRAC STC P1
CYDMACO

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901	902	903	904	905	906	907	908	909	910	911	912	913	914	915	916	917	918	919	920	921	922	923	924	925	926	927	928	929	930	931	932	933	934	935	936	937	938	939	940	941	942	943	944	945	946	947	948	949	950	951	952	953	954	955	956	957	958	959	960	961	962	963	964	965	966	967	968	969	970	971	972	973	974	975	976	977	978	979	980	981	982	983	984	985	986	987	988	989	990	991	992	993	994	995	996	997	998	999	1000

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.TITLE CVDMACO DMV11 MCTAL DIAG #1
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IDENTIFICATION

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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HISTORY
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DATE
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REASON
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A	14 JAN-81	INITIAL RELEASE
B	11 JUL-83	INSTALLED OUTSTANDING PATCHES
C	29 JUL-84	INCREASED TIMING PARAMETERS TO ALLOW PROGRAM TO RUN ON A J-11 PROCESSOR (ORION). (NICK MCCAMY)

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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.

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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

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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.

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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

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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	PPINT 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

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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 ANSWER D, 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

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*****
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 RESTORES 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.

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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 0 VECTOR ADDR 4) A FLAG WILL BE SET SHOWING
; * WHICH CSR ADDR AND INSTRUCTION FAILED. "T1.MSW" REFLECTS "TST" INSTRUCTIONS
; * AND "T1.MSB" REFLECTS "TSTB" INSTRUCTIONS.
; *
; *      EXAMPLES:
; *
; *      IF "TSTB BSEL1" FAILS, BIT # 1 OF "T1.MSB" WILL BE SET.
; *      IF "TST BSEL4" FAILS, BIT # 4 OF "T1.MSW" WILL BE SET
; *      (NOTE: ONLY EVEN BITS IN "T1.MSW" 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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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
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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      ;*****
3027
3028
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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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      ;*****
3045      ;*      TEST 9 <LOW RAM (00-0F) SCRATCHPAD>
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      ;*****
3060      ;*      TEST 10 <DATA RAM MOVING INVERSIONS (LOC'S 0018-01FF HEX)>
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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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 EXCEDED 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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3148 ;* DATA PATTERN C (WITH VIA REGS AND THEIR DATA SHOWN IN OCTAL) :
3149 ;* REGISTER = 00 01 02 03 06 07 12 13 14 15 16 17
3150 ;* DATA = 100, 101, 377, 377, 106, 107, 112, 040, 042, 000, 200, 117
3151 ;* NEXT, 000 IS LOADED INTO DDRA, AND DDRA IS READ AND COMPARED TO 377. THEN,
3152 ;* THE 377 IS LOADED BACK INTO DDRA, AND DDRA IS LOADED WITH 000 AND DDRA IS
3153 ;* READ AND COMPARED TO 377.
3154 ;*****
3155
3156 ;*****
3157 ;* TEST 12 <VIA'S DDRA DATA READ/WRITE>
3158 ;*
3159 ;* DDRA == "DATA DIRECTION REGISTER A"
3160 ;* FIRST, A MASTER CLEAR IS PERFORMED. THEN :
3161 ;* READ/WRITE BITS 0-7 OF VIA DATA DIRECTION REGISTER A ARE TESTED BY WRITING,
3162 ;* READING, AND COMPARING EACH BYTE OF DATA PATTERN B.
3163 ;* DATA PATTERN B = 125, 252, 000, 377, 001, 002, 004, 010, 020, 040, 100,
3164 ;* 200, 376, 375, 373, 367, 357, 337, 277, 177, 000
3165 ;*
3166 ;*****
3167
3168 ;*****
3169 ;* TEST 13 <VIA'S DDRA DATA READ/WRITE>
3170 ;*
3171 ;* DDRA == "DATA DIRECTION REGISTER A"
3172 ;*
3173 ;* FIRST, A MASTER CLEAR IS PERFORMED. THEN :
3174 ;* READ/WRITE BITS 0-7 OF VIA DATA DIRECTION REGISTER A ARE TESTED BY WRITING,
3175 ;* READING, AND COMPARING EACH BYTE OF DATA PATTERN B.
3176 ;* DATA PATTERN B = 125, 252, 000, 377, 001, 002, 004, 010, 020, 040, 100,
3177 ;* 200, 376, 375, 373, 367, 357, 337, 277, 177, 000
3178 ;*
3179 ;*****
3180
3181 ;*****
3182 ;* TEST 14 <VIA'S ORB DATA READ/WRITE>
3183 ;*
3184 ;* ORB == "OUTPUT REGISTER PORT B"
3185 ;*
3186 ;* FIRST, A MASTER CLEAR IS PERFORMED. NEXT, 377 IS LOADED INTO DATA
3187 ;* DIR. REG. B (DDRB) TO SET ALL B PORT PINS FOR OUTPUT MODE. THEN :
3188 ;* READ/WRITE BITS 0-7 OF VIA OUTPUT REG. PORT B ARE TESTED BY WRITING,
3189 ;* READING, AND COMPARING EACH BYTE OF DATA PATTERN B.
3190 ;* DATA PATTERN B = 125, 252, 000, 377, 001, 002, 004, 010, 020, 040, 100,
3191 ;* 200, 376, 375, 373, 367, 357, 337, 277, 177, 000
3192 ;*
3193 ;*****
3194
3195 ;*****
3196 ;* TEST 15 <VIA'S T1 DATA READ/WRITE>
3197 ;*
3198 ;* T1 == "TIMER #1"
3199 ;*
3200 ;* THIS TEST WRITES, READS, AND CHECKS THE T1 LATCHES AND COUNTER REGISTERS
3201 ;* WITH DATA PATTERNS IN EACH OF 3 SUBTESTS.
3202 ;*
3203 ;*

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3204 ;*
3205 ;* FIRST SUBTEST: CHECKS FOR PROPER LOADING OF LATCHES
3206 ;* IT ALSO CHECKS TO BE SURE THAT THE COUNTER APPEARS TO BE DOING
3207 ;* SOMETHING TO THE COUNTERS. AS LONG AS THEY HAVE CHANGED FROM THE
3208 ;* VALUE LOADED INTO THEM, WE WILL BE SATISFIED.
3209 ;*
3210 ;* A. A MASTER CLEAR IS PERFORMED.
3211 ;* B. ALL LATCHES ARE LOADED TO ZEROES (JUST IN CASE), ACR6 & ACR7 ARE SET
3212 ;* TO ZERO (MODE 00), AND "T1" INTERRUPT ENABLE FLAG IS CLEARED.
3213 ;*
3214 ;* C. T1L-L(ADR 04) IS LOADED WITH THE CURRENT BYTE OF DATA PATTERN B.
3215 ;* D. T1L-L(ADR 06) IS READ AND COMPARED TO THE BYTE JUST WRITTEN.
3216 ;* E. T1C-L(ADR 04) IS READ AND CHECKED TO BE DIFFERENT THAN THE TEST BYTE.
3217 ;*
3218 ;* F. T1L-L(ADR 06) IS LOADED WITH THE COMPLEMENT OF THE CURRENT DATA BYTE.
3219 ;* G. T1L-L(ADR 06) IS READ AND COMPARED TO THE BYTE JUST WRITTEN.
3220 ;*
3221 ;* H. T1L-L(ADR 06) IS RE-LOADED WITH 0 TO MAKE T1C-M DECREMENT FAST.
3222 ;* T1L-M(ADR 05) IS LOADED WITH THE ORIGINAL TEST DATA PATTERN BYTE.
3223 ;* I. T1L-M(ADR 07) IS READ AND COMPARED TO THE BYTE LOADED INTO T1L-M.
3224 ;*
3225 ;* J. T1C-M(ADR 05) IS READ AND CHECKED TO BE DIFFERENT THAN THE TEST BYTE.
3226 ;*
3227 ;* K. T1L-M(ADR 07) IS LOADED WITH THE COMPLEMENT OF THE CURRENT DATA BYTE.
3228 ;* L. T1L-M(ADR 07) IS READ AND COMPARED TO THE BYTE JUST LOADED.
3229 ;*
3230 ;* M. STEPS C-L ARE REPEATED USING EACH BYTE OF DATA PATTERN B.
3231 ;*
3232 ;*
3233 ;* SECOND SUBTEST: CHECKS FOR CROSS-TALK AND ADDRESSING ERRORS
3234 ;* FROM T1L-L TO T1L-M
3235 ;*
3236 ;* A. T1L-M(ADR 07) IS LOADED WITH 000 TO CLEAR IT.
3237 ;* B. T1L-L(ADR 06) IS LOADED WITH A BYTE OF DATA PATTERN B.
3238 ;* C. T1L-L(ADR 06) IS READ AND COMPARED TO THE DATA JUST WRITTEN.
3239 ;* D. T1L-M(ADR 07) IS READ AND COMPARED TO 000.
3240 ;* E. STEPS B-D ARE REPEATED USING EACH BYTE OF DATA PATTERN B.
3241 ;*
3242 ;*
3243 ;* THIRD SUBTEST: CHECKS FOR CROSS-TALK AND ADDRESSING ERRORS
3244 ;* FROM T1L-M TO T1L-L
3245 ;*
3246 ;* A. T1L-L(ADR 04) IS LOADED WITH 000 TO CLEAR IT
3247 ;* B. T1L-M(ADR 07) IS LOADED WITH A BYTE OF DATA PATTERN B.
3248 ;* C. T1L-M(ADR 07) IS READ AND COMPARED TO THE DATA JUST WRITTEN.
3249 ;* D. T1L-L(ADR 06) IS READ AND COMPARED TO 000.
3250 ;* E. STEPS B-D ARE REPEATED USING EACH BYTE OF DATA PATTERN B.
3251 ;*
3252 ;* DATA PATTERN B = 125, 252, 000, 377, 001, 002, 004, 010, 020, 040, 100,
3253 ;* 200, 376, 375, 373, 367, 357, 337, 277, 177, 000
3254 ;*****
3255 ;*****
3256 ;*****
3257 ;*****
3258 ;* TEST 16 <VIA'S SR DATA READ/WRITE>
3259 ;*

```

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3260      ;*      SR == "SHIFT REGISTER"
3261      ;*
3262      ;* FIRST, A MASTER CLEAR IS PERFORMED AND THE ACR IS SET TO 000. THEN :
3263      ;* READ/WRITE BITS 0-7 OF VIA SHIFT REGISTER ARE TESTED BY WRITING, READING,
3264      ;* AND COMPARING EACH BYTE OF DATA PATTERN B.
3265      ;* DATA PATTERN B = 125, 252, 000, 377, 001, 002, 004, 010, 020, 040, 100,
3266      ;*                      200, 376, 375, 373, 367, 357, 337, 277, 177, 000
3267      ;*
3268      ;*****
3269
3270      ;*****
3271      ;*      TEST 17 <VIA'S ACR DATA READ/WRITE>
3272      ;*
3273      ;*      ACR == "AUXILIARY CONTROL REGISTER"
3274      ;*
3275      ;* FIRST, A MASTER CLEAR IS PERFORMED. THEN :
3276      ;* READ/WRITE BITS 0-7 OF THE ACR ARE TESTED BY WRITING, READING,
3277      ;* AND COMPARING EACH BYTE OF DATA PATTERN B.
3278      ;* DATA PATTERN B = 125, 252, 000, 377, 001, 002, 004, 010, 020, 040, 100,
3279      ;*                      200, 376, 375, 373, 367, 357, 337, 277, 177, 000
3280      ;*
3281      ;*****
3282
3283      ;*****
3284      ;*      TEST 18 <VIA'S PCR DATA READ/WRITE>
3285      ;*
3286      ;*      PCR == "PERIPHERAL CONTROL REGISTER"
3287      ;*
3288      ;* FIRST, A MASTER CLEAR IS PERFORMED. THEN :
3289      ;* READ/WRITE BITS 0-7 OF THE PCR REGISTER ARE TESTED BY WRITING, READING,
3290      ;* AND COMPARING EACH BYTE OF A SUBSET OF DATA PATTERN B.
3291      ;* DATA PATTERN B (SUBSET) = 125, 252, 000, 377, 001, 002, 004, 010, 020,
3292      ;*                      040, 100, 200.
3293      ;*
3294      ;*****
3295
3296      ;*****
3297      ;*      TEST 19 <VIA'S IER DATA READ/WRITE>
3298      ;*
3299      ;*      IER == "INTERRUPT ENABLE REGISTER"
3300      ;*
3301      ;* BITS 0-6 OF THE IER CAN BE SET OR CLEARED ON A WRITE, UNDER CONTROL OF THE
3302      ;* SET/CLEAR CONTROL BIT 7. TO TEST THIS, EACH BYTE OF DATA PATTERN D IS
3303      ;* WRITTEN INTO IER, AND THE REGISTER IS READ AND COMPARED TO THE CORRESPOND-
3304      ;* ING BYTE OF DATA PATTERN E.
3305      ;*
3306      ;* DATA PATTERN D = 200, 201, 202, 204, 210, 220, 240, 300, 200, 000, 001,
3307      ;*                      002, 004, 010, 020, 040, 100, 000, 325, 125, 252, 052
3308      ;*
3309      ;* DATA PATTERN E = 000, 001, 003, 007, 017, 037, 077, 177, 177, 177, 176,
3310      ;*                      174, 170, 160, 140, 100, 000, 000, 125, 000, 052, 000
3311      ;*
3312      ;*****
3313
3314      ;*****
3315

```

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```

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.

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```
3372 ;*****
3373
3374 ;*****
3375 ;*      TEST 25 <VIA'S PCR MASTER CLEAR TEST>
3376 ;*
3377 ;*      PCR == "PERIPHERAL CONTROL REGISTER"
3378 ;*
3379 ;*
3380 ;* A 377 BYTE IS WRITTEN INTO PCR AND THE REGISTER IS READ BACK AND CHECKED
3381 ;* FOR 377. THEN, A MASTER CLEAR IS PERFORMED AND PCR IS READ AND CHECKED FOR
3382 ;* 000.
3383 ;*****
3384
3385 ;*****
3386 ;*      TEST 26 <VIA'S IER MASTER CLEAR TEST>
3387 ;*
3388 ;*
3389 ;*      IER == "INTERRUPT ENABLE REGISTER"
3390 ;*
3391 ;* A 377 BYTE IS WRITTEN INTO IER AND THE REGISTER IS READ BACK AND CHECKED
3392 ;* FOR 377. THEN, A MASTER CLEAR IS PERFORMED AND IER IS READ AND CHECKED FOR
3393 ;* 200.
3394 ;*****
3395
```

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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

3397
3398
3399
3400
3401
3402
3403
3404
3405
3406
3407
3408
3409
3410
3411
3412
3413
3414
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LISTING & ASSEMBLY CONTROL

.SBTTL LISTING & ASSEMBLY CONTROL

HELP=0 ; CONTROL LISTING OF HELP INFORMATION
; HELP=0 NO LIST
; HELP=1 LIST

002000 . =2000

.MCALL SVC
SVC

; INITIALIZE SUPERVISOR MACROS

BGNMOD LUIMOD

\$LSTIN= 1
\$LSTTAG= 1

SVCINS= 1 ; LIST INSTRUCTIONS, SHIFTED RIGHT
SVCTST= 1 ; LIST TEST TAGS, SHIFTED RIGHT
SVCSUB= 1 ; LIST SUBTEST TAGS, SHIFTED RIGHT
SVCGBL= 1 ; LIST GLOBAL TAGS, SHIFTED RIGHT
SVCTAG= 1 ; LIST OTHER TAGS, SHIFTED RIGHT

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

POINTER BGNAU,BGNDU,ERRTBL

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PROGRAM HEADER

3482 .SBTTL PROGRAM HEADER
3483 ;**

;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.

;**

3490
3491 002000 HEADER CVDMA.C.0.110..0

(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

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\$TIME::
.WORD 110.
L\$MPCP::
.WORD L\$HARD
L\$SPCP::
.WORD 0
L\$MPTP::
.WORD L\$HW
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

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(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

3492
3498

.EVEN

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

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DISPATCH TABLE

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		

```

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

```

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
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DEFAULT HARDWARE P-TABLE

```

3516 .SBTTL DEFAULT HARDWARE P-TABLE
3517
3518 ;////////////////////////////////////////////////////////////////////
3519 ;// THE DEFAULT HARDWARE P-TABLE CONTAINS DEFAULT VALUES OF
3520 ;// THE TEST-DEVICE PARAMETERS. THE STRUCTURE OF THIS TABLE
3521 ;// IS IDENTICAL TO THE STRUCTURE OF THE RUN-TIME P-TABLE.
3522 ;////////////////////////////////////////////////////////////////////
3523
3524 BGNHW DFPTBL
3525
3526 (3) 002214 000007 .WORD L10000-L$HW/2
3527 (3) 002214
3528 (3) 002216 L$HW::
3529 (3) 002216 DFPTBL::
3530
3531 .WORD 160020 ;DMV11 CSR UNIBUS ADDRESS
3532 .WORD 300 ;DMV11 INTERRUPT VECTOR
3533 .WORD 4000 ;DMV11 INTERRUPT PRIORITY LEVEL = 4
3534 .WORD 000 ;SWITCH REG. #1 (BOOT ADDRESS)
3535 .WORD 000 ;SWITCH REG. #2 (DDCMP ADDRESS)
3536 .WORD 0 ;H3254&H3255 USED
3537 .WORD 000111 ;MISC. CONTROLS:
3538
3539 ; POWER-UP MODE 0 MASK = 100
3540 ; 0 = NOT JUMPED FOR MODE 0 POWER-UP
3541 ; 1 = JUMPED FOR MODE 0 POWER-UP <=== DEFAULT SETTING
3542 ; BOTH W5 & W6 REMOVED
3543
3544 ; BAUD RATE MASK = 77
3545 ; 7 = 19.2 K
3546 ; 11 = 56 K <=== DEFAULT SETTING
3547
3548 ENDHW
3549
3550 L10000:

```

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

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SOFTWARE P-TABLE

```
3545 .SBTTL SOFTWARE P-TABLE
3546
3547 ;////////////////////////////////////
3548 ;// THE SOFTWARE P-TABLE CONTAINS THE VALUES OF THE PROGRAM
3549 ;// PARAMETERS THAT CAN BE CHANGED BY THE OPERATOR.
3550 ;////////////////////////////////////
3551
3552          BGNSW  SFPTBL
      (3) 002234 000000
      (3) 002236
      (3) 002236
3553 002236          ENDSW
      (3) 002236
```

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

CVDMAC0 DMV11 MCTRL DIAG #1
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GLOBAL EQUATES SECTION

.SBTTL GLOBAL EQUATES SECTION

```

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

```

EQUALS

; BIT DIFINITIONS

```

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

```

```

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

```

; EVENT FLAG DEFINITIONS

; EF32:EF17 RESERVED FOR SUPERVISOR TO PROGRAM COMMUNICATION

```

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

```

; PRIORITY LEVEL DEFINITIONS

```

;
PRI07== 340
PRI06== 300
PRI05== 240
PRI04== 200

```

```

3555
3556
3557
3558
3559
3560
3561
3562
3563 002236
(1)
(1)
(1)
(1) 100000
(1) 040000
(1) 020000
(1) 010000
(1) 004000
(1) 002000
(1) 001000
(1) 000400
(1) 000200
(1) 000100
(1) 000040
(1) 000020
(1) 000010
(1) 000004
(1) 000002
(1) 000001
(1)
(1) 001000
(1) 000400
(1) 000200
(1) 000100
(1) 000040
(1) 000020
(1) 000010
(1) 000004
(1) 000002
(1) 000001
(1)
(1)
(1)
(1) 000040
(1) 000037
(1) 000036
(1) 000035
(1) 000034
(1)
(1)
(1)
(1)
(1) 000340
(1) 000300
(1) 000240
(1) 000200

```

CVDMACO DMV11 MCTRL DIAG #1
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GLOBAL EQUATES SECTION

```

(1)      000140      PRI03== 140
(1)      000100      PRI02== 100
(1)      000040      PRI01== 40
(1)      000000      PRI00== 0
(1)
(1)      ;
(1)      ;OPERATOR FLAG BITS
(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
3589      000100      NPRGO    = BIT6      ;SET FOR NOP, CLEAR TO "GO" / 0=DONE, 1=BUSY
3591      000040      NPRI0    = 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      LSI0CL   = BIT1      ;IF SET, WILL CAUSE POWER DOWN CONDITION IN LSI!
3596      000001      DMVDAI   = BIT0      ;"DISABLE INIT" FROM EFFECTING DMV-11
3597
3598

```

CVDMAC0 DMV11 MCTRL DIAG #1
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NPR REQUEST FUNCTIONS

```

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

```

CVDMACO DMV11 MCTRL DIAG #1
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SWITCH PACKS

3617
3618
3619
3620
3621
3622
3623
3624
3625

.SBTTL SWITCH PACKS

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

121000
121400

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

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CSR REG. DEFINITION FOR MAINT. LOOP

```

3627      .SBTTL  CSR REG. DEFINITION FOR MAINT. LOOP
3628
3629      ;*****
3630      .SBTTL      MAINTENANCE REGISTER - BSEL0
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

```

CVDMAC0 DMV11 MCTRL DIAG #1
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DMV INTERNAL ADDRESSES

.SBTTL DMV INTERNAL ADDRESSES

```
;*****
;                               DMV INTERNAL ADDRESSES
;--*****
```

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

.SBTTL BYTE & WORD SELECT REGISTERS

3671		SLT0	=020
3672	000020	BSLT0	=SLT0
3673	000020	BSLT1	=SLT0+1
3674	000021	SLT2	=SLT0+2
3675	000022	BSLT2	=SLT0+2
3676	000022	BSLT3	=SLT0+3
3677	000023	SLT4	=SLT0+4
3678	000024	BSLT4	=SLT0+4
3679	000024	BSLT5	=SLT0+5
3680	000025	SLT6	=SLT0+6
3681	000026	BSLT6	=SLT0+6
3682	000026	BSLT7	=SLT0+7
3683	000027		

.SBTTL VIA'S REGISTERS

3687	120000	ORB	=120000
3688	120001	ORA	=ORB+1
3689	120002	DORB	=ORB+2
3690	120003	DDRA	=ORB+3
3691	120004	T1CL	=ORB+4
3692	120005	T1CH	=ORB+5
3693	120005	T1LMGO	=ORB+5
3694	120006	T1LL	=ORB+6
3695	120007	T1LH	=ORB+7
3696	120010	T2LL	=ORB+10
3697	120010	T2CL	=T2LL
3698	120011	T2CH	=ORB+11
3699	120012	SR	=ORB+12
3700	120013	ACR	=ORB+13
3701	120014	PCR	=ORB+14
3702	120015	IFR	=ORB+15
3703	120016	IENR	=ORB+16
3704	120017	ORAM	=ORB+17

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

3705
3706
3707

CVDMACO DMV11 MCTRL DIAG #1
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VIA'S "IFR" REGISTER'S BIT ASSIGNMENTS

3708	000200	IFRIQ	=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				

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GLOBAL DATA SECTION

```

3968 .SBTTL GLOBAL DATA SECTION
3969 ;////////////////////////////////////
3970 ;/ THE GLOBAL DATA SECTION CONTAINS DATA THAT ARE USED
3971 ;/ IN MORE THAN ONE TEST.
3972 ;////////////////////////////////////
3973
3974
3975 ;*****
3976 .SBTTL CONTROL BLOCK FOR STACKED ERROR MESSAGES
3977 ;-----
3978
3979 002236 ERRRTBL
3980 (3) 002236 LERRRTBL::
3981 (1) 002236 000000 ERRRTYP:: .WORD 0
3982 (1) 002240 000000 ERRNBR:: .WORD 0
3983 (1) 002242 000000 ERRMSG:: .WORD 0
3984 (1) 002244 000000 ERRBLK:: .WORD 0
3985
3986 ;*****
3987 .SBTTL STORAGE FOR DEVICE REGISTERS
3988 ;-----
3989 002246 WSR0:
3990 002246 000000 BSR0: .WORD 0
3991 002250 WSR2:
3992 002250 000000 BSR1: .WORD 0
3993 002252 WSR4:
3994 002252 000000 BSR2: .WORD 0
3995 002254 WSR6:
3996 002254 000000 BSR3: .WORD 0
3997 002256 WSR10:
3998 002256 000000 BSR4: .WORD 0
3999 002260 WSR12:
4000 002260 000000 BSR5: .WORD 0
4001 002262 WSR14:
4002 002262 000000 BSR6: .WORD 0
4003 002264 WSR16:
4004 002264 000000 BSR7: .WORD 0
4005 002266 000000 BSR10: .WORD 0
4006 002270 000000 BSR11: .WORD 0
4007 002272 000000 BSR12: .WORD 0
4008 002274 000000 BSR13: .WORD 0
4009 002276 000000 BSR14: .WORD 0
4010 002300 000000 BSR15: .WORD 0
4011 002302 000000 BSR16: .WORD 0
4012 002304 000000 BSR17: .WORD 0
4013
4014 ;*****
4015 .SBTTL MISCELLANEOUS STORAGE
4016 ;-----
4017 002306 000000 TDATA: .WORD 0 ;TEST DATA
4018 002310 000000 GDATA: .WORD 0 ;EXPECTED DATA
4019 002312 000000 BDATA: .WORD 0 ;ACTUAL DATA
4020 002314 000000 XDATA: .WORD 0 ;EXCLUSIVE OR BETWEEN "GDATA" & "BDATA"
4021 002316 110400 DELAY1: .WORD 110400 ;DELAY TIME, 3 INST., 500 MILLISEC.
4022 002320 001000 DELAY2: .WORD 1000 ;DELAY TIME FOR M-LOOP FUNCTION, 100 USEC. APPROX.
4023 002322 000000 LOGDEV: .WORD 0 ;LOGICAL DEVICE NUMBER

```

CVDMAC0 DMV11 MCTRL DIAG #1
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MISCELLANEOUS STORAGE

4019 002324 000000
4020 002326 000000
4021
4022 002330 000000
4023
4024 002332 000000
4025 002334 000000
4026 002336 000000
4027 002340 000000
4028 002342 000000
4029 002344 000000
4030 002346 000000
4031 002350 000000

PSTACK: .WORD 0 ;CONTAINS BASE LEVEL PROGRAM STACK POINTER
INTFLG: .WORD 0 ;INTERRUPT RECEIVED FLAG BYTES. ALLOCATION:
; LOW BYTE FOR "A" & HIGH BYTE FOR "B"
INTWCH: .WORD 0 ;BYTE IS SET NON-ZERO WHEN HANDLER SHOULD BE
; WATCHING FOR INT'S. ALLOCATION: SEE INTFLG
ERRFLG: .WORD 0 ;ERROR FLAG
REGNUM: .WORD 0 ;REGISTER NUMBER -- FOR PASSING ARG. TO "ERR#"
FRSTIM: .WORD 0 ;FLAG=0 IF PROGRAM JUST LOADED
FRSPAS: .WORD 0 ;FLAG=0 IF FIRST PASS AFTER LOAD
DEVMAP: .WORD 0 ;BIT MAP OF ACTIVE DEVICES
DEVPTR: .WORD 0 ;DEVICE MAP BIT POINTER
CONSOL: .WORD 0 ;CONSOLE DEVICE FLAG -- NON-ZERO = NONE PRESENT
PFLAG: .WORD 0 ;MISC. PROGRAM FLAGS

; THE ABOVE WORD CONTAINS MISC. FLAGS WHICH CAN ONLY BE ACCESSED BY PATCHING.
; IT IS NOT INTENDED THAT THEY BE SET OR CLEARED EXCEPT UNDER VERY UNUSUAL
; CIRCUMSTANCES. THEREFORE, THEY WILL NOT BE DOCUMENTED ANY OTHER PLACE
; EXCEPT RIGHT HERE.

; BIT 0 -- WHEN SET, THOSE TESTS WHICH DO A BUS RESET WILL NOT BE EXECUTED.
; THIS WAS IMPLEMENTED TO SAVE WEAR & TEAR ON THE RX01 IN THE
; DEVELOPMENT SYSTEM WHILE DOING LONG TERM TESTING OF ALL OTHER
; TESTS.

; BIT 1 -- CPU TYPE. (NOT USED)

; BIT 2 -- CONTROLS PRINTING OF EXTENDED ERROR INFORMATION DURING "MOVING
; INVERSIONS TEST" OF RAM. NORMALLY ONLY ADDRESS, GOOD & BAD
; DATA, AND XOR WILL BE PRINTED. IF THIS BIT IS SET HOWEVER,
; INFORMATION IDENTIFYING WHERE WITHIN THE ALGORITHM THE ERROR
; WAS DETECTED IS REPORTED. THE FOLLOWING ABBREVIATIONS ARE USED
; IN THE HEADING:

BIT --- IDENTIFIES THE INNERMOST LOOP. WHICH BIT IS
BEING INVERTED AT EACH LOCATION. BITS ARE
IDENTIFIED AS 0 THROUGH 7.
DATA -- IDENTIFIES THE VALUE TO WHICH THE ABOVE BIT IS
BEING SET (I.E. 0 OR 1). IT IS FIRST READ AND
CHECKED FOR EXPECTED CONTENTS; THEN THE BIT IS
INVERTED TO THIS STATE (DATA) AND RE-WRITTEN;
THEN IT IS AGAIN READ & CHECKED FOR THE NEW
VALUE.
SEQ -- INDICATES THE DIRECTION (FWD OR BKWD) THE TEST
WAS SCANNING THROUGH RAM WHEN THE ERROR OCCURED.
LSB --- THIS IS THE LOGICAL LEAST SIGNIFICANT BIT OF THE
RAM ADDRESS AS WE SCAN THROUGH MEMORY. BY
VARYING THIS, THE ALGORITHM GENERATES NON-SEQUEN-
TIAL ADDRESSING OF RAM AND EFFECTS A MUCH MORE
THOROUGH TEST OF MEMORY.

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4033
4034
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CVDMAC0 DMV11 MCTRL DIAG #1
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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

```

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SCRATCH STORAGE FOR MESSAGE REPORTING

			.SBTTL	SCRATCH STORAGE FOR MESSAGE REPORTING	
4118					
4119					
4120	002440	000000	TMP0:	.WORD	0
4121	002442	000000	TMP1:	.WORD	0
4122	002444	000000	TMP2:	.WORD	0
4123	002446	000000	TMP3:	.WORD	0
4124	002450	000000	TMP4:	.WORD	0
4125	002452	000000	TMP5:	.WORD	0
4126	002454	000000	TMP6:	.WORD	0
4127	002456	000000	TMP7:	.WORD	0
4128	002460	000000	TMP8:	.WORD	0
4129	002462	000000	TMP9:	.WORD	0
4130	002464	000000	TMPA:	.WORD	0
4131	002466	000000	TMPB:	.WORD	0
4132	002470	000000	TMPC:	.WORD	0
4133	002472	000000	TMPE:	.WORD	0
4134	002474	000000	TMPE:	.WORD	0
4135	002476	000000	TMPE:	.WORD	0
4136	002500	000000	NEWPC:	.WORD	0
4137	002502	000000	OLDSP:	.WORD	0
4138					
4139					

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

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***** DATA PATTERN A *****

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

	.EVEN		.WORD	PATB-PATA-2	USAGE:
4141					# OF BYTES IN PATTERN
4142					BSEL0
4143					BSEL1
4144	002504	000020	.BYTE	001	BSEL2
4145	002506	001	.BYTE	002	BSEL3
4146	002507	002	.BYTE	004	BSEL4
4147	002510	004	.BYTE	010	BSEL5
4148	002511	010	.BYTE	020	BSEL6
4149	002512	020	.BYTE	040	BSEL7
4150	002513	040	.BYTE	100	BSEL10
4151	002514	100	.BYTE	200	BSEL11
4152	002515	200	.BYTE	052	BSEL12
4153	002516	052	.BYTE	300	BSEL13
4154	002517	300	.BYTE	140	BSEL14
4155	002520	140	.BYTE	060	BSEL15
4156	002521	060	.BYTE	030	BSEL16
4157	002522	030	.BYTE	014	BSEL17
4158	002523	014	.BYTE	006	
4159	002524	006	.BYTE	003	
4160	002525	003			

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

	.EVEN		.WORD	PATC-PATB-2	USAGE:
4161					# OF BYTES IN PATTERN
4162					
4163					
4164					
4165	002526	000026	.BYTE	125	
4166	002530	125	.BYTE	252	
4167	002531	252	.BYTE	000	
4168	002532	000	.BYTE	377	
4169	002533	377	.BYTE	001	
4170	002534	001	.BYTE	002	
4171	002535	002	.BYTE	004	
4172	002536	004	.BYTE	010	
4173	002537	010	.BYTE	020	
4174	002540	020	.BYTE	040	
4175	002541	040	.BYTE	100	
4176	002542	100	.BYTE	200	
4177	002543	200	.BYTE	376	
4178	002544	376	.BYTE	375	
4179	002545	375	.BYTE	373	
4180	002546	373	.BYTE	367	
4181	002547	367	.BYTE	357	
4182	002550	357	.BYTE	337	
4183	002551	337	.BYTE	277	
4184	002552	277	.BYTE	177	
4185	002553	177	.BYTE	000	
4186	002554	000			
4187					

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***** DATA PATTERN C *****

```

4189 .SBTTL ***** DATA PATTERN C *****
4190 ; USED BY TEST # 11 TO LOAD UP THE VIA'S REGISTERS. THE REGISTER NUMBER
4191 ; LOADED IS THE FIRST BYTE AND THE VALUE LOADED INTO IT IS THE SECOND BYTE
4192
4193 .EVEN
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 ; THIS TABLE IS THE LIST OF EXPECTED CONTENTS OF THE VIA'S REGISTERS
4208 PATCR: .BYTE 100 ; ORB
4209 .BYTE 000 ; ORA
4210 .BYTE 377 ; DDRB
4211 .BYTE 366 ; DDRA
4212 .BYTE 000 ; T1CL
4213 .BYTE 000 ; T1CH
4214 .BYTE 106 ; T1LL
4215 .BYTE 107 ; T1LH
4216 .BYTE 000 ; T2CL
4217 .BYTE 000 ; T2CH
4218 .BYTE 112 ; SR
4219 .BYTE 040 ; ACR
4220 .BYTE 042 ; PCR
4221 .BYTE 000 ; IFR
4222 .BYTE 200 ; IER
4223 .BYTE 000 ; ORA
4224
4225 ;
4226 ; THIS IS THE TABLE OF TEST PATTERN "A" MASKS. BEFORE A REGISTER'S
4227 ; CONTENTS IS TESTED, A BICB IS DONE USING ITS RESPECTIVE BYTE FROM
4228 ; THE TABLE BELOW (INSURING THAT "DON'T CARE" BITS ARE IGNORED).
4229 PATCH: .BYTE 000 ; ORB
4230 .BYTE 377 ; ORA -- THIS REGISTER CAN'T BE TESTED!!!
4231 .BYTE 000 ; DDRB
4232 .BYTE 000 ; DDRA
4233 .BYTE 377 ; T1CL -- THIS IS A FREE RUNNING COUNTER
4234 .BYTE 377 ; T1CH -- THIS IS A FREE RUNNING COUNTER
4235 .BYTE 000 ; T1LL
4236 .BYTE 000 ; T1LH
4237 .BYTE 377 ; T2CL -- THIS IS A FREE RUNNING COUNTER
4238 .BYTE 377 ; T2CH -- THIS IS A FREE RUNNING COUNTER
4239 .BYTE 000 ; SR
4240 .BYTE 000 ; ACR
4241 .BYTE 000 ; PCR
4242 .BYTE 377 ; IFR
4243 .BYTE 200 ; IER -- BIT 7 IS ALWAYS READ AS ZERO
4244 .BYTE 377 ; ORA -- THIS REGISTER CAN'T BE TESTED!!!

```

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***** DATA PATTERN D *****

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

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

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***** DATA PATTERN F *****

.SBTTL ***** DATA PATTERN F *****

.EVEN

PATF:

.WORD <PATG-PATF-2>/2

.WORD 125252

.WORD 052525

.WORD 000000

.WORD 177777

.WORD 000001

.WORD 000002

.WORD 000004

.WORD 000010

.WORD 000020

.WORD 000040

.WORD 000100

.WORD 000200

.WORD 000400

.WORD 001000

.WORD 002000

.WORD 004000

.WORD 010000

.WORD 020000

.WORD 040000

.WORD 100000

.WORD 177776

.WORD 177775

.WORD 177773

.WORD 177767

.WORD 177757

.WORD 177737

.WORD 177677

.WORD 177577

.WORD 177377

.WORD 176777

.WORD 175777

.WORD 173777

.WORD 167777

.WORD 157777

.WORD 137777

.WORD 077777

.WORD 000000

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

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***** DATA PATTERN F *****

4343 003040

4344

4345

4346

4347

4348 003040 000020

4349 003042 000

4350 003043 200

4351 003044 000

4352 003045 000

4353 003046 033

4354 003047 000

4355 003050 305

4356 003051 000

4357 003052 000

4358 003053 000

4359 003054 000

4360 003055 000

4361 003056 000

4362 003057 000

4363 003060 000

4364 003061 000

4365

4366

4367

4368 003062 000020

4369

PATG:

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

.EVEN

RESFMC: .WORD RESFT3-RESFMC-2

BSELRS: .BYTE	000	;BSEL0
.BYTE	200	;BSEL1 -- "RUN" BIT SET
.BYTE	000	;BSEL2
.BYTE	000	;BSEL3
.BYTE	033	;BSEL4 -- CODE FOR THE DMV-11
.BYTE	000	;BSEL5
.BYTE	305	;BSEL6 -- INDICATING VALID COMPLETION OF U DIAG.
.BYTE	000	;BSEL7
.BYTE	000	;BSEL10
.BYTE	000	;BSEL11
.BYTE	000	;BSEL12
.BYTE	000	;BSEL13
.BYTE	000	;BSEL14
.BYTE	000	;BSEL15
.BYTE	000	;BSEL16
.BYTE	000	;BSEL17

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

RESFT3: .BLKW 16.

.EVEN

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DATA BUFFER AREAS

.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
BT2 = BUFAREA+64

;BYTE TABLE # 1
;BYTE TABLE # 2

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

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GLOBAL TEXT SECTION

```

4399          .SBTTL GLOBAL TEXT SECTION
4400
4401          ;*****
4402          ;#      THE GLOBAL TEXT SECTION CONTAINS FORMAT STATEMENTS,
4403          ;#      MESSAGES, AND ASCII INFORMATION THAT ARE USED IN
4404          ;#      MORE THAN ONE TEST.
4405          ;*****
4406
4407          ;*****
4408          ;* NAMES OF DEVICES SUPPORTED BY PROGRAM
4409          ;-----
4410          003522          DEVTYP  <M8053 OR M8064>
4411          (4) 003522
4412          (3) 003522 034115 032460 020063          L$DVTYP::
4413          (3) 003530 051117 046440 030070          .ASCIZ  /M8053 OR M8064/
4414          (3) 003536 032066      000
4415          (2) 003542
4416          .EVEN
4417
4418          ;*****
4419          ;* TITLE OF PROGRAM
4420          ;-----
4421          000012          .RADIX  10.
4422          003542          DESCRIPT  <DMV-11 U-CONTRL LOGIC DIAG - PART 1 OF 2>
4423          (4) 003542          L$DESC::
4424          (3) 003542 046504 026526 030461          .ASCIZ  /DMV-11 U-CONTRL
4425          (3) 003550 052440 041455 047117
4426          (3) 003556 051124 020114 047514
4427          (3) 003564 044507 020103 044504
4428          (3) 003572 043501 026440 050040
4429          (3) 003600 051101 020124 020061
4430          (3) 003606 043117 031040      000
4431          (2) 003614
4432          000010          .EVEN
4433          .RADIX  8.
4434

```

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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,BSEL1 ;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,BSEL1 ;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 BSEL6,BSELRS+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
4430
4431
4432
4433
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
4466
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4468
4469
4470
4471
4472
4473
4474
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#:

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 CVDMAC.P11 16-AUG-84 13:59 MASCLR - MASTER CLEAR SUBROUTINE

```

4483 003666 127737 176470 003046      CMPB    BSEL4,BSELRS+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$:      JSR      PC,GETBSR ;GET THE BSEL REGISTERS FOR DUMPING
4488 003702                      GTOF    20$,ERR3 ;MASTER CLEAR ERROR
                                     ;      QUEUE "DEVICE FATAL" ERROR # 1
(2)                                     MOV      @T,EDF,ERRTYP
(5) 003702 012737 000001 002236                                     MOV      @1,ERRNBR
(5) 003710 012737 000001 002240                                     MOV      @20$,ERRMSG
(5) 003716 012737 003746 002242                                     MOV      @ERR3,ERRBLK
(5) 003724 012737 005426 002244
4489 003732 000261                      SEC      ;INDICATE TO THE CALLING ROUTINE THAT
4490 003734 000401                      BR       7$ ; AN ERROR WAS DETECTED
4491
4492 003736 000241      6$:      CLC      ;CLEAR THE CARRY BIT TO INDICATE NO ERROR
4493 003740 012602      7$:      MOV      (SP)+,R2 ;RESTORE REGISTER 2
4494 003742 012601      MOV      (SP)+,R1 ;RESTORE REGISTER 1
4495 003744 000207      RTS      PC ; RETURN TO THE CALLER
4496                                     .MLIST
4497 003746 040515 052123 051105 20$: .ASCIZ /MASTER CLEAR FAILURE/
4498                                     .LIST
4499                                     .EVEN
003774

```

CVDMACO DMV11 MCTRL DIAG #1
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M-LOOP -- MSTCLR -- MASTER CLEAR & ENTER M-LOOP

```

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
4528 (2) ; QUEUE "DEVICE FATAL" ERROR # 2
4529 (5) 004036 012737 000001 002236 MOV #T.EDF,ERRTYP
4530 (5) 004044 012737 000002 002240 MOV #2,ERRNBR
4531 (5) 004052 012737 014466 002242 MOV #EM3,ERRMSG
4532 (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

```

CVDMAC0 DMV11 MCTRL DIAG #1
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MACY11 30A(1052) 16-AUG-84 14:51 PAGE 31
M-LOOP -- READ

```

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),BSEL4 ;SETUP SOURCE REGISTER
4551 004102 112777 000001 176246 MOVB @REDLOC,BSEL2 ;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 R3,11
4556 004120 012603 MOV (SP),R3
4557
4558 004122 132777 000200 176226 BITB @MROY,BSEL2 ;DID THE M-LOOP FINISH
4559 004130 001023 BNE 51 ;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 ;"MROY" 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,ERRMBR
4567 (5) 004160 012737 014512 002242 MOV @EM4,ERRMSG
4568 (5) 004166 012737 005440 002244 MOV @ERR4,ERRBLK
4569 004174 000261 SEC
4570 004176 000401 BR 61 ;INDICATE AN ERROR HAS BEEN STACKED
4571 ;RETURN WITH THAT INDICATION
4572
4573 51: CLC
4574 61: MOVB @BSEL6,@(R5) ;INDICATE "NO ERROR"
4575 RTS R5 ;PUT DATA WHERE CALLER WANTS IT
4576 ;RETURN
4577

```

CVDMAC0 DMV11 MCTRL DIAG #1
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M-LOOP -- READ IMMEDIATE

```

4571 .SBTTL M-LOOP -- READ IMMEDIATE
4572 ;.....
4573 ; READI - READ IMMEDIATE THE SPECIFIED ADDRESS WITHIN THE DMV-11
4574 ;
4575 ; CALLING SEQUENCE:
4576 ;
4577 ;     JSR     R5,READI
4578 ;     .WORD   <ADDRESS OF REGISTER WITHIN DMV-11>
4579 ;     .WORD   <DESTINATION -- CONTENTS OF REG. IS PUT HERE>
4580 ;     BCC     N6 ;IF NO ERROR OCCURED, PROCEED WITH ROUTINE
4581 ;     ERROR   ;AN ERROR MESSAGE HAS BEEN STACKED: PRINT IT
4582 ;     <ANY OTHER SPECIAL ERROR PROCESSING MAY BE DONE HERE (I.E. CKLOOP)>
4583 ;
4584 ; N6:  <RESUMPTION OF NORMAL PROCESSING>
4585 ;
4586 ;-----
4587
4588 READI:
4589 004210 012577 176146      MOV     (R5),BSEL4 ;SETUP SOURCE POINTER
4590 004214 112777 000001 176134  MOVB   @REDLOC,BSEL2 ;TELL M-LOOP TO GIVE US THE REQUESTED DATA
4591
4592 004222 010346      MOV     R3,-(SP)
4593 004224 012703 001000      MOV     #512,R3 ;WAIT FOR THE M-LOOP TO FINISH THE OPERATION
4594 004230 077301 11:      SOB     R3,11
4595 004232 012603      MOV     (SP),R3
4596
4597 004234 132777 000200 176114  BITB   @MROY,BSEL2 ;DID THE M-LOOP FINISH
4598 004242 001023      BNE     51 ;YES, GOOD. RETURN
4599
4600 004244 004737 004610      JSR     PC,GETWSR ;GET BYTE SELECT REGISTERS
4601 004250 012737 000001 0023:0  MOV     @REDLOC,GDATA ;IDENTIFY REQUESTED FUNCTION
4602 004256      GTDF     EM4,ERR4 ;"MROY" TIMEOUT
4603      ;          QUEUE "DEVICE FATAL" ERROR # 4
4604      ;
4605      ;          MOV     @T.EDF,ENRTYP
4606      ;          MOV     @4,ERRNBR
4607      ;          MOV     @EM4,ERRMSG
4608      ;          MOV     @ERR4,ERRBLK
4609
4610      SEC
4611      BR      61 ;INDICATE AN ERROR HAS BEEN STACKED
4612
4613      51:      CLC
4614      61:      MOV     BSEL6,(R5) ;INDICATE "NO ERROR"
4615      RTS     R5 ;PUT DATA WHERE CALLER WANTS IT
4616      ;RETURN

```

CVDMAC0 DMV11 MCTRL DIAG 01
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MACY11 30A(1052) 16-AUG-84 14:51 PAGE 33
M-LOOP -- WRITE

```

4610      .SBTTL M-LOOP -- WRITE
4611      ;.....
4612      ; WRITE - WRITE THE SPECIFIED DATA INTO THE SPECIFIED DMV-11 ADDRESS
4613      ;
4614      ; CALLING SEQUENCE:
4615      ;
4616      ;     JSR      RS,WRITE
4617      ;     .WORD    <ADDRESS OF REGISTER WITHIN DMV-11>
4618      ;     .WORD    <ADDRESS OF DATA BYTE>
4619      ;     BCC      N6          ;IF NO ERROR OCCURED, PROCEED WITH ROUTINE
4620      ;     ERROR    ;AN ERROR MESSAGE HAS BEEN STACKED: PRINT IT
4621      ;     <ANY OTHER SPECIAL ERROR PROCESSING MAY BE DONE HERE (I.E. CKLOOP)>
4622      ;
4623      ; N6:    <RESUMPTION OF NORMAL PROCESSING>
4624      ;
4625      ;-----
4626
4627      004322 012577 176034      WRITE:  MOV      (RS)+,BSEL4      ;SETUP SOURCE POINTER
4628      004326 113577 176034      MOVB     B(RS)+,BSEL6      ;MAKE DATA AVAILABLE TO M-LOOP
4629      004332 000404              BR       MLWRI          ;THE REST OF THIS ROUTINE IS THE SAME AS "WRITEI"

```

CVDMAC0 DMV11 MCTRL DIAG #1
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M-LOOP -- WRITE IMMEDIATE

```

4631 .SBTTL M-LOOP -- WRITE IMMEDIATE
4632 ;*****
4633 ; WRITEI - WRITE IMMEDIATE THE SPECIFIED DATA INTO THE SPECIFIED DMV-11 ADDRESS
4634 ;
4635 ; CALLING SEQUENCE:
4636 ;
4637 ;     JSR     R5,WRITEI
4638 ;     .WORD   <ADDRESS OF REGISTER WITHIN DMV-11>
4639 ;     .WORD   <DATA FIELD -- DATA TO BE WRITTEN IN DMV-11>
4640 ;     BCC     N0 ;IF NO ERROR OCCURED, PROCEED WITH ROUTINE
4641 ;     ERROR   ;AN ERROR MESSAGE HAS BEEN STACKED: PRINT IT
4642 ;     <ANY OTHER SPECIAL ERROR PROCESSING MAY BE DONE HERE (I.E. CXL'OP)>
4643 ;
4644 ; N0:  <RESUMPTION OF NORMAL PROCESSING>
4645 ;
4646 ;-----*****
4647
4648 004334 WRITEI:
4649 004334 012577 176022      MOV     (R5)+,BSEL4 ;SETUP SOURCE POINTER
4650 004340 012577 176022      MOV     (R5)+,BSEL6 ;MAKE DATA AVAILABLE TO M-LOOP
4651 004344 112777 000002 176004 MLWRI: MOVB    @WRILOC,BSEL2 ;TELL M-LOOP TO WRITE THE DATA
4652
4653 004352 010346      MOV     R3,-(SP)
4654 004354 012703 000050      MOV     @40.,R3 ;WAIT FOR THE M-LOOP TO FINISH THE OPERATION
4655 004360 077301      SOB     R3,10
4656 004362 012603      MOV     (SP)+,R3
4657
4658 004364 132777 000200 175764      BITB    @MRDY,BSEL2 ;DID THE M-LOOP FINISH
4659 004372 001023      BNE     50 ;YES, GOOD. RETURN
4660 004374 004737 004610      JSR     PC,GETWSR ;GET BYTE SELECT REGISTERS
4661 004400 012737 000002 002310      MOV     @WRILOC,GDATA ;IDENTIFY REQUESTED FUNCTION
4662 004406      GTDF     EM4,ERR4 ;"MRDY" TIMEOUT
4663      (2) ;
4664      (5) 004406 012737 000001 002236      MOV     @T.EDF,ERRTYP
4665      (5) 004414 012737 000005 002240      MOV     @5,ERRNBR
4666      (5) 004422 012737 014512 002242      MOV     @EM4,ERRMSG
4667      (5) 004430 012737 005440 002244      MOV     @ERR4,ERRBLK
4668 004436 000261      SEC
4669 004440 000401      BR      60 ;INDICATE AN ERROR HAS BEEN STACKED
4670 ;RETURN WITH THAT INDICATION
4671
4672 004442 000241      50: CLC
4673 004444 000205      60: RTS     R5 ;INDICATE "NO ERROR"
4674 ;RETURN

```

CVDMACO DMV11 MCTRL DIAG #1
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GETBSR -- GET BYTE SELECT REGISTERS

```

4669 .SBTTL GETBSP -- GET BYTE SELECT REGISTERS
4670
4671 ;*****
4672 ;
4673 ;   GET THE CONTENTS OF ALL CONTROL AND STATUS REGISTERS
4674 ;
4675 ;   FUNCTION - THIS SUBROUTINE COLLECTS THE CONTENTS OF THE
4676 ;               BYTE SELECT REGISTERS FOR THE PURPOSE OF DISPLAY.
4677 ;
4678 ;   ENTRY CONDITIONS - NONE
4679 ;
4680 ;   EXIT CONDITIONS - NONE
4681 ;
4682 ;   REGISTERS DESTROYED - NONE
4683 ;*****
4684
4685 GETBSR: MOVB    BSEL0,BSR0    ;PUT THE CURRENT CSR VALUES INTO THE PRINT-OUT
4686         MOVB    BSEL1,BSR1    ;TABLE
4687         MOVB    BSEL2,BSR2
4688         MOVB    BSEL3,BSR3
4689         MOVB    BSEL4,BSR4
4690         MOVB    BSEL5,BSR5
4691         MOVB    BSEL6,BSR6
4692         MOVB    BSEL7,BSR7
4693         MOVB    BSEL10,BSR10
4694         MOVB    BSEL11,BSR11
4695         MOVB    BSEL12,BSR12
4696         MOVB    BSEL13,BSR13
4697         MOVB    BSEL14,BSR14
4698         MOVB    BSEL15,BSR15
4699         MOVB    BSEL16,BSR16
4700         MOVB    BSEL17,BSR17
4701         RTS      PC          ;RETURN TO CALLER
4702
4703 .SBTTL GETWSR -- GET WORD SELECT REGISTERS
4704 ; "WORD" VERSION OF ABOVE SUBROUTINE
4705
4706 GETWSR: MOV     BSEL0,WSR0    ;MOVE THE 8 WORD REGISTERS TO THE OTHERWISE
4707         MOV     BSEL2,WSR2    ;BYTE TABLE
4708         MOV     BSEL4,WSR4
4709         MOV     BSEL6,WSR6
4710         MOV     BSEL10,WSR10
4711         MOV     BSEL12,WSR12
4712         MOV     BSEL14,WSR14
4713         MOV     BSEL16,WSR16
4714         RTS      PC          ;RETURN TO CALLER
4715

```

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		
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		

CVDMAC0 DMV11 MCTRL DIAG #1
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MACY11 30A(1052) 16-AUG-84 14:51 PAGE 36
.INITT1 -- INITIALIZE TIMER # 1

```

4717 .SBTTL .INITT1 -- INITIALIZE TIMER # 1
4718
4719 ;*****
4720 ;* INITT1 - INITIALIZE TIMER # 1
4721 ;*
4722 ;*      CALLING SEQUENCE:
4723 ;*
4724 ;*      JSR      R5,INITT1
4725 ;*      .WORD    <VALUE LOADED INTO THE T1 LATCH @ T1LL & T1LH>
4726 ;*      .WORD    <BITS 6 & 7 WILL BE LOADED INTO "ACR", BIT 5 WILL BE
4727 ;*              USED TO SET OR CLEAR BIT 6 ("T1") OF THE INTERRUPT
4728 ;*              ENABLE REGISTER ("IER")>
4729 ;*
4730 ;*
4731 ;* SEQUENCE OF EVENTS HEREIN:
4732 ;*
4733 ;*      SET THE VIA'S INTERRUPT ENABLE REGISTER ("IER")
4734 ;*
4735 ;*      SET THE VIA'S "ACR"
4736 ;*
4737 ;*      SET T1L-L (ADDR 06)
4738 ;*
4739 ;*      SET T1L-H (ADDR 07)
4740 ;*
4741 ;*      RETURN WITHOUT ANY ERROR CHECKING
4742 ;*
4743 ;*****
4744
4745 004672 010146      INITT1: MOV      R1,-(SP)      ;SAVE THE REGISTER WE WILL BE USING
4746 004674 112537 002455      MOV     (R5)+,TMP6+1 ;SETUP VALUES TO BE LOADED INTO THE LATCHES
4747 004700 112537 002457      MOV     (R5)+,TMP7+1
4748 004704 111537 002467      MOV     (R5),TMP8+1 ;GET & PROCESS BITS FOR ACR 6 & 7
4749 004710 142737 177477 002467      BICB   @C<BIT6+BIT7>,TMP8+1 ;EXTRACT BITS 6 & 7 & SAVE THEM FOR LATER
4750 004716 012501      MOV     (R5)+,R1 ;NOW, GET THE BIT TO BE USED IN SETTING OR
4751 ;CLEARING BIT 6 OF "IER"
4752
4753 ; THE PASSED BIT IS IN THE WRONG POSITION BUT, IT SHOULD CONTROL THE OPERATION.
4754 ; WE KNOW WE ARE SETTING OR CLEARING BIT 6 -- THUS, THE PASSED BIT WILL BECOME
4755 ; THE CONTROLLING BIT 7 AND WE WILL "OR" IN THE BIT WE WISH TO BE CONTROLLED
4756 ; (BIT 6).
4757
4758 004720 106301      ASLB    R1 ;THIS PUTS THE PASSED BIT INTO BIT 6.
4759 004722 042701 177677      BIC     @C<BIT6>,R1 ;WHILE HERE, CLEAR ALL OTHER BITS AND
4760 004726 140177 175426      BICB   R1,@SEL3 ;CLEAR THE INTERRUPT FLAG IN THE SELECT REG.
4761 004732 106301      ASLB    R1 ;NOW THE BIT IS IN THE CONTROLLING POSITION
4762 004734 052701 000100      BIS     @BIT6,R1 ;SET BIT 6
4763 004740 110137 002475      MOV     R1,TMP6+1 ;THE CALL WILL NOW WRITE THE APPROPRIATE VALUE
4764
4765 004744 004537 004322      JSR     R5,WRITE ;WRITE TO
4766 004750 120016      IENR    ;THE VIA'S IER
4767 004752 002475      TMP6+1 ;INTERRUPT ENABLE/DISABLE INFORMATION
4768 004754 103431      BCS     63# ;EXIT ON ERROR
4769
4770 004756 004537 004076      JSR     R5,READ ;READ THE CURRENT SETTING OF
4771 004762 120013      ACR     ;THE VIA'S ACR
4772 004764 002466      TMP8

```

CVDMAC0 DMV11 MCTRL DIAG #1
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.INIT1 -- 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      ACR
4781 005012 002467      TMPB+1
4782 005014 103411      BCS      63#      ;EXIT ON ERROR
4783
4784 005016 004537 004322  JSR      R5,WRITE      ;WRITE TO
4785 005022 120006      T1LL      ;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
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STREG -- STATIC TEST OF SPECIFIED DMV-11 LOCATION

```

4806 .SBTTL STREG -- STATIC TEST OF SPECIFIED DMV-11 LOCATION
4807
4808 ;*****
4809 ; STREG -- PERFORM A STATIC TEST OF THE SPECIFIED REGISTER
4810 ;
4811 ; CALLING SEQUENCE:
4812 ;
4813 ; <R0 CONTAINS THE ADDRESS OF THE REGISTER TO BE TESTED>
4814 ; <"TDATA" CONTAINS THE TEST BYTE>
4815 ; <"GDATA" CONTAINS THE EXPECTED DATA>
4816 ;
4817 ; JSR PC,STREG
4818 ; BCC N# ;IF NO ERROR OCCURED, PROCEED WITH ROUTINE
4819 ; ERROR ;AN ERROR MESSAGE HAS BEEN STACKED: PRINT IT
4820 ; <ANY OTHER SPECIAL ERROR PROCESSING MAY BE DONE HERE (I.E. CKLOOP)>
4821 ;
4822 ; N#: <RESUMPTION OF NORMAL PROCESSING>
4823 ;
4824 ;-----*****
4825
4826 STREG: MOV R0,2# ;PUT SPECIFIED REGISTER'S ADDRESS IN I/O CALLS
4827 MOV R0,4#
4828
4829 JSR R5,WRITE ;WRITE IT
4830 2#: 0 ;*** MODIFIED FROM ABOVE ***
4831 TDATA ;*** MODIFIED FROM ABOVE ***
4832 BCS 10# ;ON ERROR, EXIT
4833
4834 JSR R5,READ ;READ IT BACK AGAIN
4835 4#: 0 ;*** MODIFIED FROM ABOVE ***
4836 BDATA
4837 BCS 10# ;ON ERROR, EXIT
4838
4839 CMPB GDATA,BDATA ;DID WE READ WHAT WE WROTE?
4840 CLC ; (THIS ISN'T NEEDED FOR THE ERROR TEST BUT
4841 ; MUST BE CLEARED ON EXIT IF NO ERROR OCCURED)
4842 BEQ 10# ;YES, EXIT FROM SUBTEST
4843 MOV 2#,REGNUM ;BUILD REGISTER #
4844 BIC #177760,REGNUM
4845 GTDF EM25,ERR7 ;REPORT READ/WRITE ERROR
4846 ; QUEUE "DEVICE FATAL" ERROR # 6
4847 (2)
4848 (5) 005130 012737 000001 002236 MOV #T.EDF,ERRTYP
4849 (5) 005136 012737 000006 002240 MOV #6,ERRNBR
4850 (5) 005144 012737 015577 002242 MOV #EM25,ERRMSG
4851 (5) 005152 012737 006624 002244 MOV #ERR7,ERRBLK
4852
4853 SEC
4854 10#: RTS PC ;INDICATE THAT AN ERROR WAS DETECTED

```

CVDMACO DMV11 MCTRL DIAG #1
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INTERRUPT HANDLER -- MPIHAN

.SBTTL INTERRUPT HANDLER -- MPIHAN

```

;*****
; MPIHAN -- COUNT INTERRUPTS -- USUALLY INTERRUPT "A"
;
;   THIS ROUTINE WILL INCREMENT THE LOW BYTE OF "INTFLG" EACH TIME IT IS
;   ENTERED. IF "IHILNK" IS NON-ZERO, VECTOR TO THE ADDRESS THEREIN USING
;   A "JSR PC"
;*****

```

BGNSRV MPIHAN

MPIHAN::

```

MOV    R0, -(SP)    ;SAVE R0
TSTB   INTWCH       ;HAVE WE BEEN TOLD TO WATCH FOR TYPE "A" INT'S?
BNE     5$          ;YES, DO NORMAL INTERRUPT PROCESSING
JSR     PC,GETBSR    ;NO, DUMP REGISTERS AND
GEDF    EM34,ERR3    ;   REPORT "UNEXPECTED INTERRUPT"
;                   ;   "DEVICE FATAL" ERROR # 7

```

```

TRAP    C$ERDF
.WORD   7
.WORD   EM34
.WORD   ERR3

```

BR 10\$;GO TO EXIT

```

5$: INCB INTFLG    ;INCREMENT LOW BYTE OF INTERRUPT COUNTER
TST   IHILNK     ;ARE WE EXPECTED TO EXECUTE ANOTHER ROUTINE?
BEQ   10$        ;NO, GET OUT
JSR   PC,IHILNK  ;YES, GO TO IT -- I HOPE IT'S VALID!
10$: MOV (SP)+,R0 ;RESTORE R0
ENDSRV          ;RETURN TO INTERRUPTED PROCESS

```

L10002:

RTI

IHILNK: .WORD 0 ;POINTER TO AUXILIARY INT. HANDLING ROUTINE

```

4849
4850
4851
4852
4853
4854
4855
4856
4857
4858
4859 005164
(3) 005164
4860 005164 010046
4861 005166 105737 002330
4862 005172 001007
4863 005174 004737 004446
4864 005200
(2)
(6) 005200 104455
(7) 005202 000007
(7) 005204 015625
(7) 005206 005426
4865 005210 000407
4866
4867 005212 105237 002326
4868 005216 005737 005234
4869 005222 001402
4870 005224 004777 000004
4871 005230 012600
4872 005232
(3) 005232
(2) 005232 000002
4873
4874 005234 000000

```

CVDMAC0 DMV11 MCTRL DIAG #1
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INTERRUPT HANDLER -- MPOHAN

```

4876      .SBTTL  INTERRUPT HANDLER -- MPOHAN
4877
4878      ;*****
4879      ; MPOHAN -- SIMPLY COUNT INTERRUPTS -- USUALLY INTERRUPT "B"
4880      ;
4881      ;     THIS ROUTINE WILL INCREMENT THE HIGH BYTE OF "INTFLG" EACH TIME IT IS
4882      ;     ENTERED.  IF "IHOLNK" IS NON-ZERO, VECTOR TO THE ADDRESS THEREIN USING
4883      ;     A "JSR PC"
4884      ;-----*****
4885
4886      BGNSRV  MPOHAN
4887      (3) 005236
4888      005236 010046
4889      005240 105737 002331
4890      005244 001007
4891      005246 004737 00444C
4892      005252
4893      (2)
4894      (6) 005252 104455
4895      (7) 005254 000010
4896      (7) 005256 015656
4897      (7) 005260 005426
4898      005262 000407
4899      005264 105237 002327
4900      005270 005737 005306
4901      005274 001402
4902      005276 004777 000004
4903      005302 012600
4904      005304
4905      (3) 005304
4906      (2) 005304 000002
4907      005306 000000
4908
4909      54: INCB  INTFLG+1
4910      TST  IHOLNK
4911      BEQ  104
4912      JSR  PC, @IHOLNK
4913      104: MOV  (SP)+, R0
4914      ENDSRV
4915
4916      BR  104
4917
4918      IHOLNK: .WORD 0
4919
4920      MPOHAN::
4921      ;SAVE R0
4922      ;HAVE WE BEEN TOLD TO WATCH FOR TYPE "B" INT'S?
4923      ;YES, DO NORMAL INTERRUPT PROCESSING
4924      ;NO, DUMP REGISTERS AND
4925      ;REPORT "UNEXPECTED INTERRUPT"
4926      ;"DEVICE FATAL" ERROR # 8
4927
4928      TRAP  C$ERDF
4929      .WORD 8
4930      .WORD EM348
4931      .WORD ERR3
4932
4933      ;GO TO EXIT
4934
4935      ;INCREMENT HIGH BYTE OF INTERRUPT COUNTER
4936      ;ARE WE EXPECTED TO EXECUTE ANOTHER ROUTINE?
4937      ;NO, GET OUT
4938      ;YES, GO TO IT -- I HOPE IT'S VALID!
4939      ;RESTORE R0
4940      ;RETURN TO INTERRUPTED PROCESS
4941      L10003:
4942      RTI
4943
4944      ;POINTER TO AUXILIARY INT. HANDLING ROUTINE

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GLOBAL ERROR REPORT REPORT SECTION

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4903      .SBTTL  GLOBAL ERROR REPORT REPORT SECTION
4904
4905      ;////////////////////////////////////
4906      ;//  THE GLOBAL ERROR REPORT SECTION CONTAINS ERROR MESSAGES
4907      ;//  THAT ARE USED IN MORE THAN ONE TEST.
4908      ;////////////////////////////////////
4909      .EVEN
4910
4911      .SBTTL  ERROR HANDLER -- ERR1 -- "NO NOTHING" HANDLER
4912      ;-----
4913      BGNMSG  ERR1
4914      (3) 005310
4915      005310 004737 012104
4916      005314
4917      (3) 005314
4918      (3) 005314 104423
4919
4920      ;-----
4921      .SBTTL  ERROR HANDLER -- ERR2 -- CSR REGISTER ERROR REPORTING
4922      ;-----
4923      BGNMSG  ERR2
4924      (3) 005316
4925      005316
4926      (9) 005316 013746 002334
4927      (8) 005322 012746 013617
4928      (7) 005326 012746 012136
4929      (6) 005332 012746 000003
4930      (3) 005336 010600
4931      (4) 005340 104414
4932      (4) 005342 062706 000010
4933      005346 004737 011310
4934      005352
4935      (10) 005352 005046
4936      (10) 005354 153716 002314
4937      (9) 005360 005046
4938      (9) 005362 153716 002312
4939      (8) 005366 005046
4940      (8) 005370 153716 002310
4941      (7) 005374 012746 012173
4942      (6) 005400 012746 000004
4943      (3) 005404 010600
4944      (4) 005406 104414
4945      (4) 005410 062706 000012
4946      005414 004737 011334
4947      005420 004737 012104
4948      005424
4949      (3) 005424
4950      (3) 005424 104423
4951
4952      ;-----
4953      .SBTTL  ERROR HANDLER -- ERR3 -- DUMP THE BYTE SELECT REGISTERS
4954      ;-----
4955      BGNMSG  ERR3
4956      (3) 005426
4957      005426
4958      005426 004737 011334
4959      005432 004737 012104
4960      005436
4961      (3) 005436

```

ERR1::
;USE COMMON ROUTINE TO TERMINATE ERROR MESSAGE
L10004:
TRAP C#MSG

ERR2::
MOV REGNUM, -(SP)
MOV #TXT5, -(SP)
MOV #FMT02, -(SP)
MOV #3, -(SP)
MOV SP, R0
TRAP C#PNTB
ADD #10, SP
CLR -(SP)
BISB XDATA, (SP)
CLR -(SP)
BISB BDATA, (SP)
CLR -(SP)
BISB GDATA, (SP)
MOV #FMT02A, -(SP)
MOV #4, -(SP)
MOV SP, R0
TRAP C#PNTB
ADD #12, SP
JSR PC, ERR4;
JSR PC, NULERR
ENDMSG
;DUMP THE BYTE SELECT REGISTERS
;USE COMMON ROUTINE TO TERMINATE ERROR MESSAGE
L10005:
TRAP C#MSG

ERR3::
;USE COMMON ROUTINE TO TERMINATE ERROR MESSAGE
L10006:

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

```

(3) 005436 104423
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

;-----
;SHTTL ERROR HANDLER -- ERR4 -- M-LOOP TIMEOUT ERROR HANDLING
;-----
      BGNMSG  ERR4
      MOV     R1, -(SP)      ;SAVE THE WORKING REGISTER
      MOV     GDATA, R1     ;SAVE THIS FOR LATER
      CMP     #17, R1       ;WAS THIS AN M-LOOP REQUEST?
      BHS     5#            ;YES, THEN REPORT THE FUNCTION CODE
      PRINTX  @FMT5, <B, R1> ;NO, THEN IT MUST BE A BSEL1 SETTING
                                CL.R      (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>, TXHLT(R1) ;REPORT THE FAILING FUNCTION
                                MOV     TXHLT(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
;-----
;SHTTL ERROR HANDLER -- ERR5 -- WORD SELECT REG. ERRORS
;-----
      BGNMSG  ERR5
      PRINTB  @FMT02, #TXT5, REGNUM
                                ERR5::
                                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

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ERROR HANDLER -- ERR5 -- WORD SELECT REG. ERRORS

(10) 005620 013746 002314
(9) 005624 013746 002312
(8) 005630 013746 002310
(7) 005634 012746 012666
(6) 005640 012746 000004
(3) 005644 010600
(4) 005646 104414
(4) 005650 062706 000012
4962 005654 004737 011722
4963 005660
(3) 005660
(3) 005660 104423
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

JSR PC,ERR5;
ENDMSG

;DUMP THE SELECT REGISTERS

MOV XDATA,-(SP)
MOV BDATA,-(SP)
MOV GDATA,-(SP)
MOV #FMT10,-(SP)
MOV #4,-(SP)
MOV SP,R0
TRAP C#PNTB
ADD #12,SP

L10010:

TRAP C#MSG

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)
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

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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   C1PNTX
      (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   C1PNTX
      (4) 006124 062706 000010  ADD    @10,SP

4977 006130 012701 003206      MOV    @BT2,R1      ,POINT TO XOR VALUES
4978 006134      PRINTX  @FMT06A,@TXT8C,<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    @TXT8C,-(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   C1PNTX
      (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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SEQ 67

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ERROR HANDLER -- ERR6 VIA REGISTER ERRORS W/FULL REG. DUMP

(6)	006224	012746	000003		MOV	#3,-(SP)
(3)	006230	010600			MOV	SP,R0
(4)	006232	104415			TRAP	C1PNTX
(4)	006234	062706	000010		ADD	#10,SP
4980				;*** PRINT SECOND HALF OF THE REGISTERS ***		
4981	006240	012701	002614	MOV	#PATCR.8.,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,R0
(4)	006262	104415			TRAP	C1PNTX
(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,R0
(4)	006336	104415			TRAP	C1PNTX
(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,R0
(4)	006366	104415			TRAP	C1PNTX
(4)	006370	062706	000010		ADD	#10,SP
4985	006374	012701	003132	MOV	#BT1.8.,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)

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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	#B12>B, 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)>	
(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: TRAP C#MSG
(3)	006622	104423				
4994						
4995						
4996						
4997	006624					
(3)	006624					

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

;BGNMSG ERR7
ERR7::

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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)

      MOV      TXTVRT(R1),-(SP)
      MOV      #TXTVR,-(SP)
      MOV      #FMT07,-(SP)
      MOV      #3,-(SP)
      MOV      SP,R0
      TRAP     C$PNTB
      ADD      #10,SP

5001 006662 004737 011310      JSR      PC,XORGB
5002 006666              PRINTB  #FMT02A,<B,GOATA>,<B,BDATA>,<B,XDATA>

      CLR      -(SP)
      BISB     XDATA,(SP)
      CLR      -(SP)
      BISB     BDATA,(SP)
      CLR      -(SP)
      BISB     GOATA,(SP)
      MOV      #FMT02A,-(SP)
      MOV      #4,-(SP)
      MOV      SP,R0
      TRAP     C$PNTB
      ADD      #12,SP

5003 006730 004737 012104      JSR      PC,NULERR      ;USE COMMON ROUTINE TO TERMINATE ERROR MESSAGE
5004 006734              ENDMSG

      L10012:
      TRAP     C$MSG

5005
5006      ;-----
5007      ;SBTTL ERROR HANDLER -- ERR47 -- FOR RAM DATA ERRORS IN STATIC TEST(S)
5008      ;-----
5008 006736              BGNMSG  ERR47
5009      ;
5010      ;PRINT HEADING LINE # 1
5011 006736 013700 002444      MOV      TMP2,R0      ;GET TEST PATTERN CODE
5012 006742 001404              BEQ      2$      ;ZERO IS UNDEFINED BUT THERE IS TEXT TO SAY THAT
5013 006744 020027 000006      CMP      R0,#6      ;THIS IT ALL WE UNDERSTAND FOR NOW
5014 006750 003401              BLE      2$      ;IF WITHIN LIMITS, LET IT GO
5015 006752 005000              CLR      R0      ;ELSE, MAKE IT 0 FOR "UNDEFINED"
5016 006754 006300 2$:      ASL      R0      ;CONVERT TO A WORD INDEX
5017 006756 016000 007626      MOV      TXT47P(R0),R0      ;GET ADDRESS OF REQUIRED TEXT
5018 006762              PRINTX  #FMT47A,R0      ;IDENTIFY TEST PATTERN BEING USED

      MOV      R0,-(SP)
      MOV      #FMT47A,-(SP)
      MOV      #2,-(SP)
      MOV      SP,R0
      TRAP     C$PNTX
      ADD      #6,SP

5019      ;PRINT HEADING LINE # 2
5020
5021 007004              PRINTX  #FMT47B      ;STANDARD PORTION OF LINE 2

      MOV      #FMT47B,-(SP)
      MOV      #1,-(SP)
      MOV      SP,R0
      TRAP     C$PNTX
      ADD      #4,SP

```

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ERROR HANDLER -- ERR47 -- FOR RAM DATA ERRORS IN STATIC TEST(S)

```

5022      ; PRINT HEADING LINE # 3
5023
5024      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      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      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      CLP  ER47CT              ;RE-INITIALIZE THE DATA LINE COUNTER
5032      JSR  PC,ERR47.           ;USE COMMON SUBROUTINE TO REPORT DATA
5033      ENDMMSG
      L10013:
      TRAP  C#MSG
5034
5035      ER47CT: .WORD 0            ;THIS VARIABLE WILL COUNT THE DATA LINES
5036      ER47MX: .WORD 16.         ;THIS CONSTANT LIMITS THE DATA LINES PRINTED
5037
5038      ERR47.:
5039
5040      CMP  ER47CT,ER47MX        ;HAVE WE REPORTED ENOUGH OF THESE DATA LINES?
5041      BHS  601                  ;YES, BYPASS THIS WHOLE ROUTINE AND EXIT
5042      INC  ER47CT              ;NO, COUNT THIS LINE
5043
5044      MOVB  TMP4,R1              ;GET EXPECTED DATA
5045      MOVB  TMP5,R3              ;SETUP TO CALCULATE XOR
5046      XOR   R1,R3               ;CALCULATE XOR OF EXPECTED & ACTUAL DATA
5047      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  TMP4,-(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      CMP  ER47CT,ER47MX      ;IF THESE TWO ARE EQUAL, WE WON'T BE PRINTING

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ERROR HANDLER -- ERR47 -- FOR RAM DATA ERRORS IN STATIC TEST(S)

```

5049 007220 001010      BNE      604      ;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      604:      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 TXTML6, TXT47C, TXT47D, TXT47E, TXT47F, TXT47G, TXT47H
      007634 007500 007522 007545
      007642 007570

5068
5069      ;      "TXTML6" 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
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      24
5080 007674      PRINTX  #FMT48B      ;PRINT EXTENDED PORTION OF LINE 1
      (7) 007674 012746 010361      MOVB     #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      24:      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

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ERROR HANDLER -- ERR48 -- FOR DATA ERRORS IN "MOVING INVERSIONS TEST"

```

(4) 007726 104415
(4) 007730 062706 000004
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,R0
(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,R0
(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,R0
(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 ENDMMSG
(3) 010034
(3) 010034 104423 L10014: TRAP C:MSG
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,R0 ;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,R0 ;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,R0,TMP4,<B,R1>,<B,TMP5>,<B,R3> ;PRINT STANDARD DATA LINE
(12) 010116 005046 CLR -(SP)

```

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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
5138 010361 045 032523 040445
5139 010414 047045 051445 022463
5140 010451 045 022516 031123
5141 010520 051445 022465 041101
5142 010563 045 022516 031523
5143 010623 045 033123 047445
5144 010656 047045 047045 051445
5145 010750 051120 020105 000
5146 010755 120 051517 000124
5147 010762 043040 042127 000
5148 010767 102 053513 000104

BIT #BIT2,PFLAG ;IF EXTENDED INFORMATION REQUESTED.
BEQ 104
;SETUP FOR PRINTING OF EXTENDED INFORMATION
MOV TMPD,R1 ;DATA BIT VALUE (0 OR 1)
BIC #CBIT0,R1 ; MAKE SURE WE ONLY HAVE ONE BIT
TST TMPD ;DIRECTION?
BNE 64 ;BACKWARD --
MOV #TXT48C,R0 ;FORWARD ---
BR 84
64: MOV #TXT48D,R0 ;BACKWARD --
84: PRINTX #FMT48H,TMPB,R1,R0,<B,TMP9> ;PRINT EXTENDED INFORMATION
CLR -(SP)
BISB TMP9,(SP)
MOV R0,-(SP)
MOV R1,-(SP)
MOV TMPB,-(SP)
MOV #FMT48H,-(SP)
MOV #5,-(SP)
MOV SP,R0
TRAP C$PNTX
ADD #14,SP
CMP ER48CT,ER48MX ;IF THESE TWO ARE EQUAL, WE WON'T BE PRINTING
BNE 604 ;ANY MORE LINES FOR A WHILE. SO,
PRINTX #FMT48I ; PUT OUT A MESSAGE TO THAT EFFECT.
MOV #FMT48I,-(SP)
MOV #1,-(SP)
MOV SP,R0
TRAP C$PNTX
ADD #4,SP

604:
RTS PC
.NLIST
BEX
FMT48A: .ASCIIZ \###S2#APRE OR (ALL VALUES IN OCTAL)\
FMT48B: .ASCIIZ \###S5#EXTENDED INFORMATION:\
FMT48C: .ASCIIZ \###S3#APOST RAM SHOULD\
FMT48E: .ASCIIZ \###S2#AWRITE ADDRESS BE IS XOR\
FMT48F: .ASCIIZ \###S5#BIT DATA SEQ LSB(DECIMAL)\
FMT48G: .ASCIIZ \###S3#T#S4#04#S4#03#S3#03#S2#03\
FMT48H: .ASCIIZ \###S6#01#S5#01#S3#T#S2#02#A.\
FMT48I: .ASCIIZ \###S5#AFURTHER DATA LINES SUPRESSED UNTIL NEW TEST DATA\
TXT48A: .ASCIIZ \PRE \
TXT48B: .ASCIIZ \POST\
TXT48C: .ASCIIZ \ FWD\
TXT48D: .ASCIIZ \BKWD\

```

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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 #C<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

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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

;AND THE VALUES READ FROM THOSE REGISTERS:

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

BISB TMP8+1, (SP)
MOV #FMT50D, -(SP)
MOV #3, -(SP)
MOV SP, R0
TRAP C#PNTX
ADD #10, SP

5176
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 #FMT50E, <B, TMP8>, <B, TMPD>

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 011244
(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 TMP8, (SP)
MOV #FMT50E, -(SP)
MOV #3, -(SP)
MOV SP, R0
TRAP C#PNTX
ADD #10, SP

5180
5181 011300 004737 012104
5182 011304 012601
5183 011306
(3) 011306
(3) 011306 104423

JSR PC, NULERR
MOV (SP)+, R1
ENDMSG

;USE COMMON ROUTINE TO TERMINATE ERROR MESSAGE
;RESTORE R1 FOR CALLER

L10015:

TRAP C#MSG

5184
5185

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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
5213 (9) 011334 012746 013265 MOV #TXT1, -(SP)
5214 (8) 011340 012746 013466 MOV #TXT3, -(SP)
5215 (7) 011344 012746 012257 MOV #FMT4, -(SP)
5216 (6) 011350 012746 000003 MOV #3, -(SP)
5217 (5) 011354 010600 MOV SP, R0
5218 (4) 011356 104415 TRAP C:PNTX
5219 (4) 011360 062706 000010 ADD #10, SP
5220
5221 PRINTX #FMT4A, <B.BSR0>, <B.BSR1>, <B.BSR2>, <B.BSR3>
5222
5223 (11) 011364 005046 CLR -(SP)
5224 (11) 011366 153716 002254 BISB BSR3, (SP)
5225 (10) 011372 005046 CLR -(SP)
5226 (10) 011374 153716 002252 BISB BSR2, (SP)
5227 (9) 011400 005046 CLR -(SP)
5228 (9) 011402 153716 002250 BISB BSR1, (SP)
5229 (8) 011406 005046 CLR -(SP)
5230 (8) 011410 153716 002246 BISB BSR0, (SP)
5231 (7) 011414 012746 012317 MOV #FMT4A, -(SP)
5232 (6) 011420 012746 000005 MOV #5, -(SP)
5233 (3) 011424 010600 MOV SP, R0
5234 (4) 011426 104415 TRAP C:PNTX
5235 (4) 011430 062706 000014 ADD #14, SP
5236
5237 PRINTX #FMT4B, #TXT2
5238
5239 (8) 011434 012746 013323 MOV #TXT2, -(SP)
5240 (7) 011440 012746 012352 MOV #FMT4B, -(SP)
5241 (6) 011444 012746 000002 MOV #2, -(SP)
5242 (3) 011450 010600 MOV SP, R0
5243 (4) 011452 104415 TRAP C:PNTX
5244 (4) 011454 062706 000006 ADD #6, SP
5245
5246 PRINTX #FMT4C, <B.BSR4>, <B.BSR5>, <B.BSR6>, <B.BSR7>
5247
5248 (11) 011460 005046 CLR -(SP)
5249 (11) 011462 153716 002264 BISB BSR7, (SP)

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ERROR HANDLER SUBROUTINE -- ERR41

(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 #FMT4B,#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 #FMT4B,#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
5220
5221

PRINTX #FMT4B,#TXT2A

PRINTX #FMT4A,<B.BSR10>,<B.BSR11>,<B.BSR12>,<B.BSR13>

PRINTX #FMT4B,#TXT2B

PRINTX #FMT4C,<B.BSR14>,<B.BSR15>,<B.BSR16>,<B.BSR17>

RTS PC

CLR -(SP)
BISB BSR6,(SP)
CLR -(SP)
BISB BSR5,(SP)
CLR -(SP)
BISB BSR4,(SP)
MOV #FMT4C,-(SP)
MOV #5,-(SP)
MOV SP,R0
TRAP C1PNTX
ADD #14,SP

MOV #TXT2A,-(SP)
MOV #FMT4B,-(SP)
MOV #2,-(SP)
MOV SP,R0
TRAP C1PNTX
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,R0
TRAP C1PNTX
ADD #14,SP

MOV #TXT2B,-(SP)
MOV #FMT4B,-(SP)
MOV #2,-(SP)
MOV SP,R0
TRAP C1PNTX
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,R0
TRAP C1PNTX
ADD #14,SP

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.....ERROR HANDLER SUBROUTINE -- ERR58

5222		.SBTTL	ERROR HANDLER SUBROUTINE -- ERR5\$	
5223		:	-----	
5224		:	COMMON ERROR SUBROUTINE TO PRINT SELECT REGISTERS	
5225	011722	ERR5\$.		
5226	011722		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,R0
(4)	011744	104415		TRAP C#PNTX
(4)	011746	062706	000010	ADD #10,SP
5227	011752		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,R0
(4)	012004	104415		TRAP C#PNTX
(4)	012006	062706	000014	ADD #14,SP
5228	012012		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,R0
(4)	012030	104415		TRAP C#PNTX
(4)	012032	062706	000006	ADD #6,SP
5229	012036		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,R0
(4)	012070	104415		TRAP C#PNTX
(4)	012072	062706	000014	ADD #14,SP
5230	012076	004737	012104	JSR PC,NULERR ;USE COMMON ROUTINE TO TERMINATE ERROR MESSAGE
5231	012102	000207		RTS PC
5232				
5233		:	-----	
5234		.SBTTL	SUBROUTINE TO PERFORM "PRINTB #ENDEMB"	
5235		:		
5236	012104		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,R0
(4)	012116	104414		TRAP C#PNTB
(4)	012120	062706	000004	ADD #4,SP
5237	012124	000207		RTS PC
5238		:	-----	

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FORMAT SPEC'S FOR ERROR HANDLERS -- "FMT..."

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S240 .SBTTL FORMAT SPEC'S FOR ERROR HANDLERS -- "FMT..."
S241 |-----|
S242 |-----|
S243 |-----|
S244 .MLIST BEX
S245 012126 047045 047045 000 ENDEMB: .ASCIZ /NNNN/
S246 012133 045 000116 NEMLIN: .ASCIZ /NN/
S247
S248 012136 047045 040445 040506 FMT02: .ASCIZ /NNNAFAILING REG = #T#ASEL#02/
S249 012173 045 022516 020101 FMT02A: .ASCIZ /NNNA EXPECTED: #03#A ACTUAL: #03#A XOR: #03/
S250 012257 045 022516 020101 FMT4: .ASCIZ /NNNA THE CONTENTS OF ALL#T#N#T/
S251 012317 045 022516 030523 FMT4A: .ASCIZ /NNNS1#03#S5#03#S5#03#S5#03/
S252 012352 047045 052045 000 FMT4B: .ASCIZ /NNNT/
S253 012357 045 022516 032523 FMT4C: .ASCIZ /NNNS5#03#S5#03#S5#03#S5#03/
S254 012412 047045 040445 020040 FMT5: .ASCIZ /NNNA WHEN #03#A LOADED INTO BSEL1/
S255 012455 045 022516 020101 FMT5A: .ASCIZ /NNNA ATTEMPTING "M-LOOP" FUNCTION CODE #02#A (#T#A)/
S256 012542 040445 020040 042504 FMT07: .ASCIZ /NA DETECTED IN #T#T#A --/
S257 012574 047045 047045 052045 FMT06: .ASCIZ /NNNT/
S258 012603 045 022516 022524 FMT06A: .ASCIZ /NNNT#03#S2#03#S2#03#S2#03#S2#03#S2#03/
S259 012651 045 031123 047445 FMT06B: .ASCIZ /NS2#03#S2#03/
S260 012666 047045 040445 020040 FMT10: .ASCIZ /NNNA EXPECTED: #08#A ACTUAL: #08#A XOR: #08/
S261 012742 047045 047445 022470 FMT11: .ASCIZ /NN#08#08#08#08/
S262 012761 045 022516 020101 FMT50A: .ASCIZ /NNNA TIMER # 1 MODE: #01#A REGISTERS:/
S263 013033 045 022516 030523 FMT50B: .ASCIZ /NNNS1#AT1CH T1CL T1LM T1LL ACR IFR IER/
S264 013114 047045 051445 022463 FMT50C: .ASCIZ /NNNS3#T#S1#03#S3#03#S3#03#S3#03/
S265 013154 051445 022463 031517 FMT50D: .ASCIZ /NS3#03#S9#03/
S266 013171 045 031523 047445 FMT50E: .ASCIZ /NS3#03#S3#03/
S267 013206 047045 022462 030523 FMT50H: .ASCIZ /NN2#S10#A(T1CH & T1CL HAVEN'T YET BEEN LOADED)/
S268
S269 .SBTTL TEXT STRINGS FOR ERROR HANDLERS -- "TXT..."
S270 |-----|
S271 |-----|
S272 |-----|
S273 |-----|
S274 013265 102 042523 030114 TXT1: .ASCIZ /BSEL0 BSEL1 BSEL2 BSEL3/
S275 013323 040 020040 041040 TXT2: .ASCIZ / BSEL4 BSEL5 BSEL6 BSEL7/
S276 013365 102 042523 030514 TXT2A: .ASCIZ /BSEL10 BSEL11 BSEL'2 BSEL13/
S277 013424 020040 041040 042523 TXT2B: .ASCIZ / BSEL14 BSEL15 BSEL16 BSEL17/
S278 013466 041040 052131 020105 TXT3: .ASCIZ / BYTE SELECT REG'S ARE:/
S279 013516 020040 051440 046105 TXT4: .ASCIZ / SEL0 SEL2 SEL4 SEL6/
S280 013556 020040 051440 046105 TXT4A: .ASCIZ / SEL10 SEL12 SEL14 SEL16/
S281 013617 102 000 TXT5: .ASCIZ /B/
S282 013621 040 042523 042514 TXT6: .ASCIZ / SELECT REG'S ARE:/
S283 013644 051040 043505 051511 TXT7: .ASCIZ / REGISTERS ORB ORA DORB DORA T1CL T1CH T1LL T1LM /
S284 013731 040 020040 020040 TXT7A: .ASCIZ / T2CL T2CH SR ACR PCR IFR IER ORA /
S285 014016 042440 050130 041505 TXT8A: .ASCIZ / EXPECTED: /
S286 014033 040 041501 052524 TXT8B: .ASCIZ / ACTUAL: /
S287 014050 054040 051117 020072 TXT8C: .ASCIZ / XOR: /
S288 014065 040 047514 042101 TXT8D: .ASCIZ / LOADED: /
S289 014102 051040 040505 035104 TXT8E: .ASCIZ / READ: /
S290
S291 014117 116 050117 000 TXTML0: .ASCIZ /NOP/
S292 014123 122 040505 020104 TXTML1: .ASCIZ /READ 1 BYTE/
S293 014137 127 044522 042524 TXTML2: .ASCIZ /WRITE 1 BYTE/
S294 014154 050116 026522 052517 TXTML3: .ASCIZ /NPR-OUT 256 BYTES/
S295 014176 050116 026522 047111 TXTML4: .ASCIZ /NPR-IN 256 BYTES/

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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						

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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 /HOLDY 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 /"HOLDY" 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 027304 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

```

CVDMACO DMV11 MCTRL DIAG #1
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TEXT ADDRESS TABLES FOR ERROR HANDLERS -- "TXT__T"

```

5372      .SBTTL TEXT ADDRESS TABLES FOR ERROR HANDLERS -- "TXT__T"
5373      ;-----
5374      ;----- TEXT ADDRESS TABLES USED BY ERROR HANDLERS -----
5375      ;-----
5376
5377 017544 014117 014123 014137 TXTML1: .WORD TXTML0,TXTML1,TXTML2,TXTML3,TXTML4,TXTML5,TXTML6,TXTML7
5378
5379 017564 014341          .WORD TXTVR
5380 017566 014357 014363 014367 TXTVRT: .WORD TXTVR0,TXTVR1,TXTVR2,TXTVR3,TXTVR4,TXTVR5,TXTVR6,TXTVR7
5381 017606 014425 014432 014437      .WORD TXTVR8,TXTVR9,TXTVRA,TXTVRB,TXTVRC,TXTVRD,TXTVRE,TXTVRF
5382
5383      .LIST BEX

```

CVDMACO DMV11 MCTRL DIAG #1
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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::

CVDMAC0 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
5409         017634 010637 002324
5410         (3) 017640 012700 000040
5411         (3) 017644 104447
5412         017646
5413         (2) 017646 103417
5414
5415         017650
5416         (3) 017650 012700 000037
5417         (3) 017654 104447
5418         017656
5419         (2) 017656 103435
5420
5421         017660
5422         (3) 017660 012700 000035
5423         (3) 017664 104447
5424         017666
5425         (2) 017666 103433
5426
5427         017670
5428         (3) 017670 012700 000036
5429         (3) 017674 104447
5430         017676
5431         (2) 017676 103401
5432         017700 000436
5433
5434         017702 000137 020106
5435
5436         017706
5437
5438         017706 005037 002346
5439         017712
5440         (7) 017712 012746 000000
5441         (6) 017716 012746 020206
5442         (5) 017722 012746 000004
5443         (4) 017726 012746 000003
5444         (3) 017732 104437
5445         (2) 017734 062706 000010
5446         017740 005737 177564
5447         017744
5448         (3) 017744 012700 000004
5449         (3) 017750 104436
5450

```

```

;SAVE BASE-LEVEL STACK POINTER
;SEE IF PROGRAM JUST STARTED, BR IF YES
;READef #EF.START

MOV SP,PSTACK
;SEE IF PROGRAM JUST RESTARTED, BR IF YES
;READef #EF.RESTART

MOV #EF.START,R0
TRAP C$REFG

BCS STARST

;SEE IF THIS IS A NEW PASS, BR IF YES
;READef #EF.NEW

MOV #EF.RESTART,R0
TRAP C$REFG

BCS RESTRT

;SEE IF PROGRAM WAS JUST CONTINUED
;READef #EF.CONTINUE

MOV #EF.NEW,R0
TRAP C$REFG

BCS NEWST

;THIS IS TO FAR AWAY FOR A "BR" INSTRUCTION)
10$: JMP CONTIN

STARST: ;ENTER HERE IF "START" COMMAND ISSUED

; TEST FOR THE PRESENCE OR ABSENCE OF A CONSOLE TERMINAL.

CLR CONSOL ;RESET THE CONSOLE TERMINAL FLAG
SETVEC #4,#CONST,#0 ;SETUP BUS TIMEOUT VECTER TO TEST FOR A CONSOLE

MOV #0,-(SP)
MOV #CONST,-(SP)
MOV #4,-(SP)
MOV #3,-(SP)
TRAP C$SVEC
ADD #10,SP

TST #0177564 ;TRY TO ACCESS THE CONSOLE TERMINAL'S "XCSR"
CLRVEC #4 ;WE SHOULD BE THROUGH WITH THIS BY NOW

MOV #4,R0
TRAP C$CVEC

```

CVDMAC0 DMV11 MCTRL DIAG #1
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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          GETPRM:
5446 017776 005237 002322          INC      LOGDEV          ;INCREMENT LOGICAL DEVICE NUMBER
5447 020002          GPWARD LOGDEV,R1          ;GET P-TABLE POINTER INTO R1
5448          (3) 020002 013700 002322          MOV      LOGDEV,R0
5449          (3) 020006 104442          TRAP      C:GPWARD
5450          (3) 020010 010001          MOV      R0,R1
5451          BCOMPLETE 10$          ;BR IF DEVICE AVAILABLE
5452 020012          (2) 020012 103403          BCS      10$
5453 020014 006337 002344          ASL      DEVPTR          ;IF UN-AVAILABLE, SHIFT DEVICE MAP BIT POINTER
5454 020020 000766          BR      GETPRM          ; AND SKIP THIS DEVICE
5455
5456 020022 053737 002344 002342 10$: BIS      DEVPTR,DEVMAP          ;ELSE, SET BIT FOR THIS DEVICE IN DEVICE MAP
5457 020030 006337 002344          ASL      DEVPTR          ;SHIFT DEVICE MAP BIT POINTER
5458
5459          ; "R1" WAS RETURNED WITH A POINTER TO THE CURRENT "P-TABLE"
5460
5461 020034 012100          MOV      (R1)+,R0          ;GET THE DEVICE CSR ADDRESS
5462 020036 012703 000020          MOV      @16,R3          ;WE HAVE TO SETUP THIS MANY ADDRESS POINTERS
5463 020042 012702 002352          MOV      @MPCSR,R2          ;THIS IS THE ADDRESS OF THE FIRST POINTER
5464 020046 010022          12$: MOV      R0,(R2)+          ;SETUP ONE CSR POINTER
5465 020050 005200          INC      R0          ;POINT TO THE NEXT CSR ADDRESS
5466 020052 077303          SOB      R3,12$          ;LOOP AS LONG AS THERE ARE MORE TABLE ENTRIES
5467          ;ELSE, FALL THROUGH TO CONTINUE GETTING MORE
5468          ; P-TABLE DATA
5469
5470 020054 012100          MOV      (R1)+,R0          ;GET INTERRUPT VECTOR
5471 020056 010037 002412          MOV      R0,MPIVEC          ;SETUP "A" VECTOR PCINTER
5472 020062 022020          CMP      (R0)+,(R0)+          ;ADD 4 TO VECTOR TO GET ADDRESS OF "B" VECTOR
5473 020064 010037 002414          MOV      R0,MPOVEC          ;SETUP "B" VECTOR POINTER
5474
5475 020070 012100          MOV      (R1)+,R0          ;GET DMV11 DEVICE PRIORITY
5476 020072 006200          ASR      R0          ; RE-POSITION IT
5477 020074 006200          ASR      R0
5478 020076 006200          ASR      R0
5479 020100 006200          ASR      R0
5480 020102 010037 002416          MOV      R0,MPPRIOR          ;SETUP OUR VARIABLE FOR INT. VECTOR INIT'S
5481
5482 020106          CONTIN:          ;ENTER HERE WHEN A "CONTINUE" COMMAND IS ISSUED
5483
5484 020106          SETVEC @MPIVEC,@MPIHAN,@MPPRIOR ;SETUP "A" INT. VECTOR
5485          (7) 020106 013746 002416          MOV      @MPPRIOR,-(SP)
5486          (6) 020112 012746 005164          MOV      @MPIHAN,-(SP)
5487          (5) 020116 013746 002412          MOV      @MPIVEC,-(SP)
5488          (4) 020122 012746 000003          MOV      @3,-(SP)

```

CVDMAC0 DMV11 MCTRL DIAG #1
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MACY11 30A(1052) 16-AUG-84 14:51 PAGE 46-2
INITIALIZE SECTION

```

(3) 020126 104437
(2) 020130 062706 000010
5481 020134 005037 005234      CLR    IHILNK      ;WE DON'T WANT THE HANDLER TO LINK ELSEWHERE
5482 020140                SETVEC  @MPOVEC,@MPOHAN,@MPRIOR ;SETUP "B" INT. VECTOR
(7) 020140 013746 002416      MOV    @MPRIOR,-(SP)
(6) 020144 012746 005236      MOV    @MPOHAN,-(SP)
(5) 020150 013746 002414      MOV    @MPOVEC,-(SP)
(4) 020154 012746 000003      MOV    @3,-(SP)
(3) 020160 104437
(2) 020162 062706 000010      TRAP   C$SVEC
5483 020166 005037 005306      ADD    @10,SP
5484 020172 005037 002330      CLR    IHOLNK      ;WE DON'T WANT THE HANDLER TO LINK ELSEWHERE
5485                CLR    INTWCH      ;RESET "INTERRUPT WATCH" FLAGS (BOTH "A" & "B")
5486 020176 012737 000001 002336  MOV    @1,FRSTIM      ;MARK FLAG FOR NEXT TIME THROUGH
5487 020204                ENDINIT      ;END OF "INIT" CODE
(3) 020204                L10017:
(3) 020204 104411                TRAP   C$INIT
5488
5489      ; ***** SUBROUTINES USED BY "INIT" CODE *****
5490
5491      ; INTERRUPT HANDLER FOR CONSOLE TERMINAL PRESENCE TESTING
5492
5493 020206 012737 177777 002346  CONTST: MOV    @-1,CONSOL      ;INDICATE THAT NO CONSOLE TERMINAL EXISTS!
5494 020214 000002                RTI      ;RETURN
5495

```

CVDMACO DMV11 MCTRL DIAG #1
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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

```

L$AUTO::
SETVEC #4, #AD.HIT, #0 ;SETUP INVALID-ADDRESS TRAP VECTOR
                                MOV #0, -(SP)
                                MOV #AD.HIT, -(SP)
                                MOV #4, -(SP)
                                MOV #3, -(SP)
                                TRAP C$SVEC
                                ADD #10, SP

CLR TMP0 ;INITIALIZE TRAP FLAG REGISTER
MOV #1, R2 ;FLAG BIT
MOV BSEL0, R3 ;INIT ADDRESS POINTER

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

MOV BSEL0, R3 ;RE-INIT ADDRESS POINTER
MOV #1, R2 ;RE-INIT FLAG BIT
2$: TST (R3)+ ;ACCESS THE CSR'S BY WORDS.
    ASL R2
    ASL R2
    BCC 2$

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

TST TMP0 ;DID WE GET HIT WITH AN INVALID ADDRESS TRAP?
BEQ AD.OK ;NO, EXIT TEST
DODU LOGDEV ;YES, DROP THIS LOGICAL DEV.
                                MOV LOGDEV, R0
                                TRAP C$DODU

AD.OK: NOP ;(FOR PATCHING IN A HALT IF NECESSARY)
        ENDAUTO

                                L10020:
                                TRAP C$AUTO

AD.HIT: BIS R2, TMP0 ;FLAG THE HIT IF WE GET IT!
        RTI ;RETURN

```

5497
5498
5499
5500
5501
5502
5503
5504
5505
5506
5507
5508
5509
5510
5511
5512
5513 020216
(3) 020216
5514 020216
(7) 020216 012746 000000
(6) 020222 012746 020334
(5) 020226 012746 000004
(4) 020232 012746 000003
(3) 020236 104437
(2) 020240 062706 000010
5515 020244 005037 002440
5516 020250 012702 000001
5517 020254 013703 002352
5518
5519 020260 105723
5520 020262 006302
5521 020264 103375
5522
5523 020266 013703 002352
5524 020272 012702 000001
5525 020276 005723
5526 020300 006302
5527 020302 006302
5528 020304 103374
5529
5530 020306
(3) 020306 012700 000004
(3) 020312 104436
5531 020314 005737 002440
5532 020320 001403
5533 020322
(3) 020322 013700 002322
(3) 020326 104451
5534 020330 000240
5535 020332
(3) 020332
(3) 020332 104461
5536 020334 050237 002440
5537 020340 000002

CVDMAC0 DMV11 MCTRL DIAG #1
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CLEANUP CODING SECTION

.SBTTL CLEANUP CODING SECTION

;/;;;/;
;/ THE CLEANUP CODING SECTION CONTAINS THE CODING THAT IS PERFORMED
;/ AT THE END OF THE TEST SEQUENCE ON A PARTICULAR UNIT.
;/;;;/;

5539				BGNCLN				
5540								
5541								
5542								
5543								
5544								
5545								
5546	020342							
(3)	020342							
5547	020342			CLRVEC	00MPIVEC			
(3)	020342	013700	002412					
(3)	020346	104436						
5548	020350			CLRVEC	00MPOVEC			
(3)	020350	013700	002414					
(3)	020354	104436						
5549	020356			ENDCLN				
(3)	020356							
(3)	020356	104412						

L\$CLEAN::

;RETURN VECTORS TO SUPERVISOR

MOV 00MPIVEC,R0
TRAP C\$CVEC

MOV 00MPOVEC,R0
TRAP C\$CVEC

L10021:

TRAP C\$CLEAN

CVDMACO DMV11 MCTRL DIAG #1
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MACY11 30A(1052) 16-AUG-84 14:51 PAGE 49
DROP UNIT SECTION

```
5551 .SBTTL DROP UNIT SECTION
5552
5553 ;////////////////////////////////////
5554 ;// THE DROP-UNIT SECTION CONTAINS THE CODING THAT CAUSES A DEVICE
5555 ;// TO NO LONGER BE TESTED.
5556 ;////////////////////////////////////
5557
5558 BGNDU
5559 (3) 020360 L$DU::
5560 ;ISSUE UNIBUS RESET TO CLEAN UP
5561 (3) 020360 104433 BRESET
5562 (3) 020362 ENDDU
5563 (3) 020362 104453
5564 TRAP C$RESET
5565 L10022:
5566 TRAP C$DU
```

CVDMACO DMV11 MCTRL DIAG #1
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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 .SBTTL TEST 1 -- DMV-11 AVAILABILITY
(2)
(2)
(2)
(2)
(2)
(3)
(3)
(3)
(3)
(3)
(3)
(3)
(3)
(3)
(3)
(2)
(2)
(2)
(2)
(5)
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
5595
5596 020430 105723
5597 020432 006302
5598 020434 103375
5599
5600 020436 013737 020532 020534
5601 020444 005037 020532
5602 020450 012702 000001
5603 020454 013703 002352
5604
5605 020460 005723
5606 020462 006302
5607 020464 006302
5608 020466 103374
5609
5610 020470
(3) 020470 012700 000004
(3) 020474 104436
5611 020476 005737 020532
5612 020502 001003
5613 020504 005737 020534
5614 020510 001404
5615 020512

;*****
;*
;* 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 @SEL1" FAILS, BIT # 1 OF "T1.HSB" WILL BE SET.
;* IF "TST @SEL4" 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".
;*****
;
; 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$SVEC
; ADD #10,SP
;
1$: TSTB (R3)+ ;ACCESS THE CSR'S BY BYTES.
ASL R2
BCC 1$
;
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
;
2$: TST (R3)+ ;ACCESS THE CSR'S BY WORDS.
ASL R2
ASL R2
BCC 2$
;
CLRVEC #4 ;RESTORE THE VECTOR TO DS
;
MOV #4,R0
TRAP C$CVEC
;
TST T1.HSW ;DID WE GET AN INVALID ADDRESS TRAP?
BNE 3$ ;YES, REPORT FAILURE
TST T1.HSB
BEQ T1.OK
3$: GEDF T1.END,T1.EM1 ;YES, REPORT THE ERROR

```

CVDMACO DMV11 METRL DIAG #1
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MACY11 30A(1032) 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
(3) 020522
(3) 020522 104401
5617
5618 020524 050237 020532
5619 020530 000002
5620
5621 020532 000000
5622
5623
5624 020534 000000
5625
5626
5627 020536
(3) 020536
5628 020536
(8) 020536 013746 002352
(7) 020542 012746 020703
(6) 020546 012746 000002
(3) 020552 010600
(4) 020554 104414
(4) 020556 062706 000006
5629 020562
(7) 020562 012746 020765
(6) 020566 012746 000001
(3) 020572 010600
(4) 020574 104415
(4) 020576 062706 000004
5630 020602
(7) 020602 012746 021020
(6) 020606 012746 000001
(3) 020612 010600
(4) 020614 104415
(4) 020616 062706 000004
5631 020622
(9) 020622 013746 020534
(8) 020626 013746 020532
(7) 020632 012746 021072
(6) 020636 012746 000003
(3) 020642 010600
(4) 020644 104415
(4) 020646 062706 000010
5632 020652
(3) 020652
(3) 020652 104423
5633
5634

T1.OK: ENDTST

T1.HIT: BIS R2,T1.HSW ;FLAG THE HIT IF WE GET IT!
RTI ;RETURN

T1.HSW: .WORD 0 ;INVALID ADDRESS TRAP FLAG WORD:
;BITS SET INDICATE TRAPS ON WORD ACCESSES
;(BIT # SET = CSR # THAT FAILED)

T1.HSB: .WORD 0 ;INVALID ADDRESS TRAP FLAG WORD:
;BITS SET INDICATE TRAPS ON BYTE ACCESSES
;(BIT # SET = CSR # THAT FAILED)

BGNMSG T1.EM1
PRINTB @T1.1,MPCSR ;IDENTIFY ERROR AND ON WHAT DEVICE

PRINTX @T1.2 ;IF REQUESTED, ALSO INDICATE MISSES (TRAPS)

PRINTX @T1.3

PRINTX @T1.4,T1.HSW,T1.HSB

ENDMSG

;DEVICE FATAL" ERROR # 9
TRAP C#ERDF
.WORD 9
.WORD T1.EMD
.WORD T1.EM1

L10024: TRAP C#ETST

T1.EM1::
MOV MPCSR,-(SP)
MOV @T1.1,-(SP)
MOV @2,-(SP)
MOV SP,R0
TRAP C#PNTB
ADD @6,SP
MOV @T1.2,-(SP)
MOV @1,-(SP)
MOV SP,R0
TRAP C#PNTX
ADD @4,SP
MOV @T1.3,-(SP)
MOV @1,-(SP)
MOV SP,R0
TRAP C#PNTX
ADD @4,SP
MOV T1.HSB,-(SP)
MOV T1.HSW,-(SP)
MOV @T1.4,-(SP)
MOV @3,-(SP)
MOV SP,R0
TRAP C#PNTX
ADD @10,SP

L10025: TRAP C#MSG

.NLIST BEX

```

CVDMACO DMV11 MCTRL DIAG #1
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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	'#MS15#AE C A 8 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
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TEST 2 -- MASTER CLEAR, RUN MICRODIAGNOSTICS

```

5658 .SBTTL TEST 2 -- MASTER CLEAR, RUN MICRODIAGNOSTICS
(2) ; .....
(2) ;
(2) ;*
(2) ;* TEST 2 -- MASTER CLEAR, RUN MICRODIAGNOSTICS
(2) ;*
(3) ;* A MASTER CLEAR IS ISSUED TO THE DMV-11, AND THE PROGRAM ALLOWS SUFFICIENT
(3) ;* TIME FOR THE MICRODIAGNOSTICS TO BE PERFORMED. THESE MICRODIAGNOSTICS RESIDE
(3) ;* IN 6502 PROGRAM MEMORY, AND THOROUGHLY VERIFY THE OPERATION OF THE 6502
(3) ;* MICROPROCESSOR CHIP. THEN, THEY CHECK OUT THE DATA RAM, THE 6502'S ACCESS TO
(3) ;* THE CSR'S, AND PERFORM A SIMPLE MESSAGE TEST USING THE 6522 CHIP AND THE
(3) ;* USYRT, WITH INTERNAL LOOPBACK.
(3) ;*
(3) ;* NEXT, THE LSI-11 PROGRAM READS THE THE CSR S (SEL0-SEL6) AND CHECKS THEM FOR
(3) ;* THEIR EXPECTED INITIALIZED STATES. IF AN ERROR HAS OCCURRED IN THE MICRO-
(3) ;* DIAGNOSTICS THE NUMBER OF THE FAILING TEST WILL BE FOUND IN SEL4, AND RUN
(2) ;* (BIT 7) WILL NOT BE SET IN BSEL1.
(2) ;*
(2) ; .....
(2) ;
(2) ; BGNTST
(5) ;
5659 ; ISSUE A MASTER CLEAR, AND DELAY FOR MICRO-DIAGNOSTICS TO COMPLETE BY CALLING T2::
5660 ; SUBROUTINE MASCLR.
5661
5662 021132 004737 003614 JSR PC,MASCLR ; -ATTEMPT- TO RUN THE MICRO-DIAGNOSTIC
5663 021136 103002 BCC B1 ; IF NO ERROR, PROCEED
5664 021140 ERROR ; ELSE, REPORT IT AND
(3) 021140 104460 TRAP C$ERROR
5665 021142 000436 BR 24 ; EXIT THIS TEST
5666
5667 ; FIRST, INITIALIZE INDEX REGISTERS
5668 021144 005001 81: CLR R1 ; R1 IS THE INDEX OF THE BYTE SELECT TABLE
5669 021146 005002 CLR R2 ; R2 IS THE INDEX OF THE RESULTS TABLE
5670 021150 016203 003040 MOV RESFMC(R2),R3 ; GET THE NUMBER OF PATTERNS IN RESULTS TABLE
5671 021154 062702 000002 ADD #2,R2 ; MOVE POINTER TO NEXT BYTE
5672 021160 126271 003040 002352 24: CMPB RESFMC(R2),BSEL(R1) ; COMPARE EXPECTED RESULTS WITH CSR'S.
5673 021166 001005 BNE 18 ; A MISMATCH IS A DEVICE FATAL ERROR
5674 021170 005202 INC R2 ; INCREMENT TABLE POINTER
5675 021172 005201 INC R1 ; INCREMENT POINTER
5676 021174 005201 INC R1 ; BY 2 (WORD INCREMENT)
5677
5678 021176 077310 SOB R3,24 ; CONTINUE TO LOOP THROUGH TABLE
5679
5680 021200 000417 BR 24 ; TEST COMPLETE WITH NO ERRORS, GO END TEST.
5681

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CVDMAC0 DMV11 MCTRL DIAG #1
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TEST 2 -- MASTER CLEAR, RUN MICRODIAGNOSTICS

5682	021202	117137	002352	002312	14:	MOVB	BBSEL(R1),B0DATA	; GET DATA BYTE THAT FAILED		
5683	021210	004737	004446			JSR	PC,GETBSR	;GET THE BSEL REGISTERS FOR DUMPING		
5684	021214	116237	003040	002310		MOVB	RESFMC(R2),GDATA	; GET EXPECTED RESULT FROM TABLE		
5685	021222	006201				ASR	R1	;CONVERT WORD OFFSET TO BYTE CSR #		
5686	021224	010137	002334			MOV	R1,REGNUM			
5687	021230					GEDF	EM14,ERR2	;DEVICE FATAL ERROR, REPORT IT AND END TEST		
(2)								; "DEVICE FATAL" ERROR # 10		
(6)	021230	104455							TRAP	C\$ERDF
(7)	021232	000012							.WORD	10
(7)	021234	014701							.WORD	EM14
(7)	021236	005316							.WORD	ERR2
5688	021240			244:		ENDTST				
(3)	021240								L10026:	
(3)	021240	104401							TRAP	C\$ETST

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TEST 3 -- CSR ADDRESSING

```

5700 .SBTTL TEST 3 -- CSR ADDRESSING
(2) ;*****
(2) ;
(2) ;*
(2) ;* TEST 3 -- CSR ADDRESSING
(2) ;*
(3) ;* FIRST, HALT THE 6502 UP BY CLEARING ALL CSRS. THEN, WRITE A DIFFERENT WORD
(3) ;* OF DATA PATTERN A INTO EACH OF BSEL0-17, AND AFTER EACH WRITE, READ AND
(3) ;* COMPARE ALL REGS TO EXPECTED VALUES.
(3) ;*
(3) ;* DATA PATTERN A = 001, 002, 004, 010, 020, 040, 100, 200, 052, 300, 140,
(3) ;* 060, 030, 014, 006, 003
(2) ;*
(2) ;*****
(2) ;
(2) ; BGNTST
(5) ; T3::
021242 ;-----
5701 ; ***** DETAILED TEST DESCRIPTION *****
5702 ; THIS TEST PROCEEDS AS FOLLOWS:
5703 ;
5704 ; (1) CLEAR ALL CSRS AND VERIFY SAME (CLEARING BSEL01 HALTS 6502)
5705 ; (2) WRITE 01 INTO BSEL0; VERIFY BSEL0=01, ALL OTHERS=0
5706 ; (3) WRITE 02 INTO BSEL1; VERIFY BSEL0=01, BSEL1=02, ALL OTHERS=0.
5707 ; (4) WRITE 04 INTO BSEL2; VERIFY BSEL0=01, BSEL1=02, BSEL2=04, ALL OTHERS=0
5708 ;
5709 ; (5) -> (17) CONTINUE TO INCREMENTALLY WRITE DATA-PATTERN-A INTO THE BSR'S,
5710 ; CHECKING ALL BSR'S AFTER EACH WRITE, UNTIL BSR'S COMPLETELY
5711 ; FILLED WITH DATA-PATTERN-A.
5712 ;
5713 ; NOTE: IF AN ERROR OCCURS, THE FIRST BAD BSR NUMBER AND GOOD/BAD VALUES ARE
5714 ; GIVEN, FOLLOWED BY A COMPLETE BSR DUMP.
5715 ;-----
5716 ;
5717 ; CLEAR DMV CSRS AND RESULTS TABLE
5718 ;
5719 021242 012703 000010 MOV #10,R3 ;GET # OF CSRS
5720 021246 013701 002352 MOV @BSEL,R1 ;GET 1ST CSR ADDRESS
5721 021252 012702 003062 MOV @RESFT3,R2 ;GET 1ST RESULTS TABLE ADDRESS
5722 021256 005021 14: CLR (R1); ;CLEAR CSR, BUMP POINTER
5723 021260 005022 CLR (R2); ;CLEAR RESULTS TABLE LOC., BUMP POINTER
5724 021262 005022 CLR (R2); ; AND DO AGAIN
5725 021264 077304 SOB R3,14 ;LOOP UNTIL ALL DONE
5726 ;
5727 ; NOW VERIFY CSRS ARE ALL ZEROED
5728 ;
5729 021266 005002 CLR R2 ;CLEAR BSR ADDRESS INDEX
5730 021270 012703 000020 MOV @CSREGS,R3 ;GET # OF CSRS
5731 021274 105772 002352 TSTB @BSEL(R2) ;IS THIS CSR=0 ?
5732 021300 001035 BNE 54 ;IF NO: GO REPORT ERROR
5733 021302 005722 TST (R2); ; YES: BUMP INDEX
5734 021304 077305 SOB R3,24 ;DO UNTIL ALL BSRS CHECKED
5735 ;
5736 ;*****
5737 ;
5738 ; INITIALIZE INDEX REGISTERS
5739 021306 005001 CLR R1 ;INITIALIZE PATTERN INDEX REGISTER

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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$:      MOV      R1,R2      ;GET INDEX INTO TEST DATA AREA
5752 021324 105742      TSTB     -(R2)      ;IT'S ONE WORD TOO LARGE
5753 021326 006302      ASL      R2      ;CONVERT FROM BYTE TO WORD INDEX
5754
5755      ; NOW, SETUP THE EXPECTED RESULTS AREA AND LOAD THE SELECT REGISTER
5756
5757 021330 116162 002504 003062      MOVB     PATA(R1),RESFT3(R2) ;UPDATE THE EXPECTED RESULTS TABLE
5758 021336 116172 002504 002352      MOVB     PATA(R1),BBSEL(R2) ;PUT PATTERN INTO THE CSR
5759
5760 021344 005201      INC      R1      ;BUMP DATA POINTER FOR NEXT TIME AROUND
5761 021346 005002      CLR      R2      ;INITIALIZE TABLE INDEX
5762 021350 012703 000020      MOV      #CSREGS,R3      ;INITIALIZE NUMBER OF REGISTERS
5763
5764 021354 126272 003062 002552 4$:      CMPB     RESFT3(R2),BBSEL(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$:      MOVB     RESFT3(R2),GDATA ;# GET THE EXPECTED RESULT FROM TABLE
5776 021402 117237 002352 002312      MOVB     BBSEL(R2),BDATA ;# GET THE FAILED BYTE
5777 021410 004737 004446      JSR      PC,GETBSR      ;GET THE BSEL REGISTERS FOR DUMPING
5778 021414 006202      ASR      R2      ;CONVERT WORD OFFSET TO BYTE CSR ADDRESS
5779 021416 010237 002334      MOV      R2,REGNUM      ;GET THE REGISTER THAT FAILED
5780 021422      GEDEF     EM6,ERR2      ;ERROR **** DEVICE FATAL ****
5781      ;          "DEVICE FATAL" ERROR # 11
5782      ;
5783      ;          TRAP      C$ERDF
5784      ;          .WORD     11
5785      ;          .WORD     EM6
5786      ;          .WORD     ERR2
5787
5788 021432      24$:      ENDTST
5789
5790      L10027:      TRAP      C$E1ST
5791
5792 021432 104401

```

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TEST 4 -- CSR REGISTERS DATA READ/WRITE

```

5795 .SBTTL TEST 4 -- CSR REGISTERS DATA READ/WRITE
(2)
(2)
(2)
(2)
(2)
(3)
(3)
(3)
(3)
(3)
(3)
(3)
(2)
(2)
(2)
(2)
(5) 021434
5796 021434 004737 003774
5797
5798
5799
5800 021440 103002
5801 021442
(3) 021442 104460
5802 021444 000453
5803
5804
5805
5806
5807
5808
5809
5810 021446 005001
5811 021450 005002
5812 021452 016103 002526
5813 021456 062702 000002
5814
5815 021462 113777 000101 160664
5816
5817 021470 116137 002526 002310
5818
5819
5820
5821
5822
5823
5824 021476 022702 000002
5825 021502 001003
5826
5827
5828
5829 021504 142737 000300 002310
5830
5831 021512 113772 002310 002352 24:

;*****
;*
;* TEST 4 -- CSR REGISTERS DATA READ/WRITE
;*
;* WRITE, READ, AND COMPARE EACH BYTE OF DATA PATTERN B INTO REGISTER BSEL0.
;* THEN, REPEAT THIS USING EACH OF THE REMAINING CSR'S, BSEL1-BSEL17. WHEN BSEL1
;* IS BEING TESTED, THE PROGRAM ALWAYS SETS BIT 7 IN THE DATA PATTERN SO THAT
;* RUN WILL NOT BE CLEARED, AND IT ALWAYS CLEARS BIT6 SO THAT MCLR WILL NOT BE
;* SET.
;*
;* 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
;
; JSR PC,MSTCLR ;CALL MAINTENANCE READY INITIALIZATION. IF
;               T4::
;               ;MSTCLR SHOULD FAIL BECAUSE THE MRDY FLAG DOES
;               ;NOT BECOME SET, A DEVICE FATAL ERROR WILL BE
;               ;REPORTED, AND MSTCLR WILL SET THE "C" BIT
;               ;IF NO ERROR, PROCEED
;               ;ELSE, REPORT IT AND
;               TRAP C$ERROR
; BR 24: ; EXIT THIS TEST
;
; NOTE - THE FIRST BYTE LOCATION OF THE PATTERN B TABLE, USED IN THIS TEST,
;        CONTAINS THE NUMBER OF TEST PATTERNS OF PATTERN B TABLE, NOT A
;        TEST PATTERN.
;
; FIRST, INITIALIZE INDEX AND COUNT REGISTERS
84: CLR R1 ;R1 IS THE 'PATB' INDEX REGISTER
CLR R2 ;R2 IS THE CSR INDEX REGISTER
MOV PATB(R1),R3 ;R3 CONTAINS THE NUMBER OF BYTES IN PATB
ADD #2,R2 ;MOVE POINTER TO FIRST BYTE OF DATA
MOV 101,BSEL1 ;STOP THE MICRO-PROCESSOR!!!
14: MOV PATB(R1),GDATA ;GET THE PATB DATA BYTE, WE ARE TO USE
; DON'T GET CAUGHT BY THE NEXT INSTRUCTION! "R2" IS AN OFFSET INTO A
; WORD TABLE WHICH CONTAINS THE ADDRESSES OF THE CSR'S. THEREFORE, WHEN
; R2 = 0 -- IT POINTS TO BSEL0'S ADDRESS, AND WHEN R2 = 2 -- IT POINTS TO
; BSEL1'S ADDRESS.
CMP #2,R2 ;IS "BSEL1" BEING TESTED?
BNE 24: ;IF YES, ALTER PATB DATA SO THAT BIT 7 IS
;ALWAYS SET, AND BIT6 IS ALWAYS RESET.
;ELSE, USE PATB DATA AS IS.
BICB #RUN:MCLR,GDATA ;FORCE PATTERN TO RESET BITS 7 & 6
24: MOV GDATA,BSEL0(R2) ;PUT PATB DATA INTO REGISTER BEING TESTED

```

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TEST 4 -- CSR REGISTERS DATA READ/WRITE

```

5832 021520 123772 002310 002352      CMPB    GDATA,88SELO(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    88SELO(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:
5851 021574      ENDTST
(3) 021574
(3) 021574 104401

```

L10030: TRAP C\$ETST

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TEST 5 -- BASIC MASTER CLEAR

```

5859      .SBTTL TEST 5 -- BASIC MASTER CLEAR
(2)
(2)
(2)
(2)
(2)
(3)
(3)
(2)
(2)
(2)
(2)
(2)
(2)
(2)
(5) 021576      ;
5860      ; *****
5861      ; *
5862      ; *      TEST 5 -- BASIC MASTER CLEAR
5863      ; *
5864      ; *      PERFORM INITIAL MASTER CLEAR. WRITE 356 INTO BSELO AND READ AND CHECK IT.
5865      ; *      THEN, ISSUE A MASTER CLEAR AND READ AND CHECK BSELO FOR 000.
5866      ; *
5867      ; *      *****
5868      ;
5869      ;      BGNTST
5870      ;
5871      ;      TS::
5872      ;      ISSUE A MASTER CLEAR, AND DELAY FOR MICRO-DIAGNOSTICS TO COMPLETE BY CALLING
5873      ;      SUBROUTINE MASCLR.
5874
5875      021576 004737 003614      JSR      PC,MASCLR      ; -ATTEMPT- TO RUN THE MICRO-DIAGNOSTIC
5876      ;
5877      ;      FAILURES WILL BE REPORTED BY THE SUBROUTINE
5878      ;      AS DEVICE FATAL AND THE "C" BIT WILL BE SET
5879      ;      IF NO ERROR, PROCEED
5880      ;      ELSE, REPORT IT AND
5881      ;
5882      ;      TRAP      C$ERROR
5883      ;
5884      ;      EXIT THIS TEST
5885      ;
5886      021602 103002      BCC      8$
5887      ;
5888      ;      ERROR
5889      ;
5890      ;      BR      24$
5891      ;
5892      ;      MOVW      #356,BSELO      ; # SET BSEL TO ALMOST ALL ONES
5893      ;
5894      ;      CMPB      #356,BSELO      ; # COMPARE
5895      ;
5896      ;      BNE      2$      ; A MISMATCH INDICATES A DEVICE FATAL ERROR
5897      ;
5898      ;
5899      ;      ISSUE A MASTER CLEAR, AND DELAY FOR MICRO-DIAGNOSTICS TO COMPLETE BY CALLING
5900      ;      SUBROUTINE MASCLR.
5901      ;
5902      021626 004737 003614      JSR      PC,MASCLR      ; -ATTEMPT- TO RUN THE MICRO-DIAGNOSTIC
5903      ;
5904      ;      FAILURES WILL BE REPORTED BY THE SUBROUTINE
5905      ;      AS DEVICE FATAL AND THE "C" BIT WILL BE SET
5906      ;      IF NO ERROR, PROCEED
5907      ;      ELSE, REPORT IT AND
5908      ;
5909      ;      TRAP      C$ERROR
5910      ;
5911      ;      EXIT THIS TEST
5912      ;
5913      021632 103002      BCC      9$
5914      ;
5915      ;      ERROR
5916      ;
5917      ;      BR      24$
5918      ;
5919      ;      EXIT THIS TEST
5920      ;
5921      021634 104460      BCC      9$
5922      ;
5923      ;      ERROR
5924      ;
5925      ;      BR      24$
5926      ;
5927      ;      EXIT THIS TEST
5928      ;
5929      021636 000425      BCC      9$
5930      ;
5931      ;      ERROR
5932      ;
5933      ;      BR      24$
5934      ;
5935      ;      EXIT THIS TEST
5936      ;
5937      021640 122777 000600 160504 9$: CMPB      #000,BSELO      ; THIS REGISTER SHOULD BE ZEROED DURING
5938      ;
5939      ;      INITIALIZATION
5940      ;
5941      ;      IF ZERO, *** TEST PASSES ***. ELSE REPORT ERROR
5942      ;
5943      ;      ---PREPARE FOR THE FAILURE PRINTOUT---
5944      ;
5945      ;      MOVW      #356,GDATA      ; # ALMOST ALL ONES IS EXPECTED DATA
5946      ;
5947      ;      MOVW      BSELO,BDATA      ; SOMETHING OTHER THAN ALL ONES WAS FOUND. SCORE IT.
5948      ;
5949      ;      JSR      PC,GETBSR      ; GET THE BSEL REGISTERS FOR DUMPING
5950      ;
5951      ;      CLRB      BSELO      ; DISABLE INTERRUPTS AS A PRECAUTIONARY MEASURE
5952      ;
5953      ;      MOV      #0,REGNUM      ; GET THE REGISTER THAT FAILED

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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          ENDTST
      (3) 021716                                     L10031:
      (3) 021716 104401                                     TRAP    C#ETST
```

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TEST 6 -- BUS RESET

```

5905 .SBTTL TEST 6 -- BUS RESET
(2) ;*****
(2) ;*
(2) ;* TEST 6 -- BUS RESET
(2) ;*
(3) ;* PERFORM AN INITIAL MASTER CLEAR. WRITE 377 INTO BSEL0 AND READ AND CHECK IT.
(3) ;* THEN, ISSUE A RESET INSTRUCTION, STALL FOR COMPLETION, AND READ AND CHECK
(3) ;* BSEL0 FOR 000.
(2) ;*
(2) ;*****
(2) ;
(2) ; BGNTEST
(5) 021720 ; T6::
5906 021720 032737 000001 002350 BIT #BIT0,PFLAG ;IF BUS RESETS ARE NOT ALLOWED,
5907 021726 001075 BNE 24 ; BYPASS THIS TEST
5908
5909 ; ELSE, ISSUE A MASTER CLEAR, AND DELAY FOR MICRO-DIAGNOSTICS TO COMPLETE BY
5910 ; CALLING SUBROUTINE MASCLR.
5911
5912 021730 004737 003614 JSR PC,MASCLR ; -ATTEMPT- TO RUN THE MICRO-DIAGNOSTIC
5913 ; FAILURES WILL BE REPORTED BY THE SUBROUTINE
5914 ; AS DEVICE FATAL AND THE "C" BIT WILL BE SET
5915 021734 103002 BCC 8 ;IF NO ERROR, PROCEED
5916 021736 ERROR ;ELSE, REPORT IT AND
(3) 021736 104460 TRAP C$ERROR
5917 021740 000470 BR 24 ; EXIT THIS TEST
5918
5919 021742 112777 000377 160402 8: MOVB #377,BSEL0 ;SET ALL BITS IN BSEL0
5920 021750 122777 000377 160374 CMPB #377,BSEL0 ;COMPARE TO ALL BITS SET
5921 021756 001040 BNE 1 ;A MISMATCH IS A DEVICE FATAL ERROR
5922
5923 021760 BRESET ;FORCE AN EXTERNAL BUS RESET. THIS SHOULD
(3) 021760 104433 TRAP C$RESET
5924 ;CAUSE BSEL0=0 IN ABOUT 100 MICROSECONDS
5925
5926 ; DELAY ABOUT 500 MILLISECONDS FOR THE MICRODIAGNOSTIC TO COMPLETE
5927
5928 ; MOV DELAY1,R1 ;INITIALIZE COUNTER
5929 ;2: TSTB DELAY1+1 ;THIS IS A DUMMY INSTRUCTION TO LENGTHEN THE DELAY
5930 ; DEC R1 ;TIME TO GET OUT OF THE DELAY?
5931 ; BNE 2 ;NO.
5932
5933 021762 010246 MOV R2,-(SP) ; SAVE REGISTER 2
5934 021764 012702 MOV #10,R2
5935 021770 013701 000010 002316 2: MOV DELAY1,R1 ;INITIALIZE THE LOOP COUNTER FOR DELAY LOOP
5936 021774 005301 10: DEC R1 ; ELSE, DECREMENT THE LOOP COUNTER AND
5937 021776 001376 BNE 10 ; CONTINUE TO LOOP.
5938 022000 005302 DEC R2
5939 022002 001372 BNE 2
5940
5941 022004 122777 000000 160340 CMPB #000,BSEL0 ;YES, CHECK FOR REGISTER TO BE ZERO
5942 022012 001443 BEQ 24 ;A MISMATCH IS A DEVICE FATAL ERROR
5943 ;ELSE, END TEST.
5944
5945 ;--PREPARE FOR THE FAILURE PRINTOUT--

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TEST 6 -- BUS RESET

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

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TEST 7 -- CSR, MAINTENANCE MICROCODE INTERACTION

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5985 .SBTTL TEST 7 -- CSR, MAINTENANCE MICROCODE INTERACTION
(2) ;*****
(2) ;
(2) ;*
(2) ;* TEST 7 -- CSR, MAINTENANCE MICROCODE INTERACTION
(2) ;*
(3) ;* THIS TEST INVOKES THE MAINTENANCE REQUEST MECHANISM THROUGH WHICH THE LSI-11
(3) ;* AND 6502 CAN COMMUNICATE. FIRST, A MASTER CLEAR IS DONE WITH ONLY BIT 0
(3) ;* (MREQ) SET IN BSEL1. THE PROGRAM THEN CHECKS FOR THE SETTING OF BSEL2 BIT 7
(3) ;* (MRDY) BY THE MAINTENANCE MICROCODE WITHIN ABOUT 50 MICRO-SEC., AND IF MRDY
(3) ;* DOES NOT GET SET, AN ERROR IS REPORTED.
(3) ;*
(3) ;* NEXT, THE PROGRAM LOADS SEL4 WITH 000010 AND BSEL6 WITH 125. THEN, ALL CSR'S
(3) ;* ARE READ AND CHECKED FOR EXPECTED CONTENTS.
(3) ;*
(3) ;* BSEL2 IS THEN LOADED WITH A WRITE COMMAND, WHICH SHOULD CAUSE THE MICROCODE
(3) ;* TO TRANSFER THE 125 INTO BSEL0. ALL CSR'S ARE THEN READ AND CHECKED FOR
(3) ;* EXPECTED CONTENTS.
(3) ;*
(3) ;* THEN, THE PROGRAM LOADS 252 INTO BSEL0 AND READS AND CHECKS ALL CSR'S. BSEL2
(3) ;* IS THEN LOADED WITH A READ COMMAND, WHICH SHOULD CAUSE THE MICROCODE TO
(3) ;* TRANSFER THE 252 INTO BSEL6. ALL CSR'S ARE READ AND CHECKED.
(2) ;*
(2) ;*****
(2) ;
(2) ; BGNTST
(5) ; BGNSUB
5986 022132 ; T7::
(3) 022132 ; T7.1:
(3) 022132 104402 ; TRAP C#BSUB
5987 022134 004737 003774 JSR PC,MSTCLR ;PUT THE MICROPROCESSOR IN THE MAINTENANCE LOOP
5988 022140 103003 BCC 10# ;IF NO ERROR, PROCEED
5989 022142 104460 ERROR ;ELSE, REPORT IT AND
(3) 022142 104460 ; TRAP C#ERROR
5990 022144 000137 022636 JMP ENDT7 ; EXIT THIS TEST
5991
5992 022150 012777 000020 160204 10# : MOV #SLTO,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,#SLTO ;COMPARE SELECT REGISTER 4 WITH THE ADDRESS SENT
6011 022260 001412 BEQ 3# ;A MISMATCH IS A DEVICE FATAL ERROR

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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                                ;--PREPARE FOR THE FAILURE PRINTOUT--
6025
6026 022340      41:    GEDF      EM7,ERR5      ;ELSE, AN ERROR HAS BEEN FOUND
                                ;      "DEVICE FATAL" ERROR # 16
                                ;
                                TRAP      C1ERDF
                                .WORD      16
                                .WORD      EM7
                                .WORD      ERR5
6027 022350      601:    ENDSUB
                                L10034:
                                TRAP      C1ESUB
6028                                ;***** > P A R T 2 < *****
6029 022352      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                                ;REG 0 = 125, REG 1 = 001
6049 022456 001412                      BEQ      61                      ;THIS PART OF THE TEST PASSES IF A MATCH IS FOUND
6050 022460 012737 000525 002310      MOV      #000525,GDATA      ;GET THE GOOD DATA
6051 022466 013737 002246 002312      MOV      WSR0,BDATA      ;GET THE BAD DATA

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TEST 7 -- CSR, MAINTENANCE MICROCODE INTERACTION

6052	022474	012737	000000	002334		MOV	#0,REGNUM	;GET THE REGISTER NUMBER
6053	022502	000451				BR	91	;EXIT TEST
6054								
6055	022504	023727	002250	000200	61:	CMP	WSR2,#000200	;COMPARE BYTE SELECT REGISTERS 2 AND 3
6056								;REG 2 = 200 -- "TRY" IS SET & COMMAND IS CLEARED
6057								;REG 3 = 000 SHOULD BE ZEROES.
6058	022512	001412				BEQ	71	;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	91	;EXIT TEST
6063								
6064								;SUBROUTINE ATTEMPTED TO ZERO THIS LOCATION.
6065	022540	023727	002252	000020	71:	CMP	WSR4,#SLT0	;REG 4 = 020, THE 6502 ADDRESS TO PUT DATA
6066								;REG 5 = 000, ZEROED BY MSTCLR
6067	022546	001412				BEQ	81	;THIS PART OF THE TEST PASSES IF A MATCH IS FOUND
6068	022550	012737	000020	002310		MOV	#SLT0,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	91	;EXIT TEST
6072								
6073	022574	023727	002254	000125	81:	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				91:	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

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TEST 8 -- RUN FLIP-FLOP

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6099 .SBTTL TEST 8 -- RUN FLIP-FLOP
(2) ; .....
(2) ; *
(2) ; * TEST 8 -- RUN FLIP-FLOP
(2) ; *
(3) ; * THE PROGRAM PUTS THE MICROCODE INTO THE MAINTENANCE LOOP. A 125 CHARACTER
(3) ; * IS LOADED INTO BSEL6 AND A REQUEST IS MADE TO WRITE THE CONTENTS OF BSEL6
(3) ; * INTO BSEL0. THE PROGRAM THEN READS AND CHECKS BSEL0 TO CONTAIN 125.
(3) ; * NEXT, THE RUN FLIP-FLOP IS CLEARED BY LOADING A 0 INTO RUN (BSEL1 BIT 7).
(3) ; * BSEL0 IS THEN CLEARED AND THE REQUEST IS MADE AGAIN TO WRITE THE CONTENTS
(3) ; * OF BSEL6 INTO BSEL0. THE PROGRAM STALLS FOR 50 MICRO-SEC. AND CHECKS FOR
(3) ; * MRODY (BSEL2 BIT 7) NOT SET, AND BSEL0 STILL CLEARED.
(3) ; * THEN, THE PROGRAM SETS THE RUN FLIP-FLOP AGAIN BY LOADING A 1 INTO RUN,
(3) ; * AND CHECKS FOR MRODY SET WITHIN 50 MICRO-SEC. AND BSEL0 = 125.
(2) ; *
(2) ; .....
(2) ;
(2) ; BGNTST
(5) ;
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$ERROR
6104 022652 000137 023206 JMP 24 ; EXIT THIS TEST
6105 ; DO NORMAL WRITE INTO LOCATION USED BY BSEL0
6106
6107
6108 022656 004537 004334 24: JSR RS,WRITEI ;WRITE INTO BSEL0 THROUGH THE BACK DOOR!
6109 022662 000020 SLTO ; ADDRESS OF BSEL0 WITHIN RAM
6110 022664 000125 104: 125 ; TEST DATA
6111 022666 103002 BCC 54 ;IF AN ERROR OCCURED,
6112 022670 ERROR ;REPORT IT &
(3) 022670 104460 TRAP C$ERROR
6113 022672 000545 BR 24 ; EXIT
6114 022674 123777 022664 157450 54: CHPB 104,BSEL0 ;DID THE DATA GO INTO BSEL0?
6115 022702 001416 BEQ 114 ;YES, NOW TRY IT WITH THE "RUN" BIT OFF
6116 022704 017737 157442 002312 MOV BSEL0,BDATA ;NO, SETUP & PRINT ERROR MESSAGE
6117 022712 013737 022664 002310 MOV 104,GDATA
6118 022720 005037 002334 CLR REGNUM ;WE'RE SINGLING OUT SELO FOR THE MESSAGE
6119 022724 GEDF EM16,ERR5
(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 BBSEL0 ;CLEAR BSEL0 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

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TEST 8 -- RUN FLIP-FLOP

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6127
6128
6129
6130
6131
6132
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    BSEL0          ;WHILE WE'RE AT IT, WE MAY AS WELL LOOK AT
6141 023000 001063          BNE     15:      ;BSEL0. 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 BSEL0 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 BSEL0 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          (2)
6173          (6) 023064 104455          TRAP    C$ERDF      ;
6174          (7) 023066 000024          .WORD   20          ;"DEVICE FATAL" ERROR # 20
6175          (7) 023070 015122          .WORD   EM17
6176          (7) 023072 005316          .WORD   ERR2
6177          (3) 023074 104410          ESCAPE  TST          ;EXIT TEST (OR LOOP, MAYBE?)
6178          (3) 023076 000110          TRAP    C$ESCAPE      ;
6179          .WORD   L10036-.
6180
6181                                ;IF WE GET HERE, BSEL2 CHANGED WHEN THE 6502 WASN'T SUPPOSED TO BE RUNNING!

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TEST 8 -- RUN FLIP-FLOP

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6176 023100 117737 157252 002312 144:  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, BSEL0 CHANGED WHEN THE 6502 WASN'T SUPPOSED TO BE RUNNING!
6185
6186 023150 117737 157176 002312 154:  MOVB  BSEL0,BDATA ;GET THE UNEXPECTEDLY ALTERED CONTENTS OF BSEL0
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 BSEL0
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          244:  ENDTST
      (3) 023206          L10036:
      (3) 023206 104401          TRAP  C$ETST

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TEST 9 -- LOW RAM (00-OF) SCRATCHPAD

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6210      .SBTTL TEST 9 -- LOW RAM (00-OF) SCRATCHPAD
(2)
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(3)
(3)
(2)
(2)
(2)
(2)
(5) 023210      .BGNTST
6211 023210      JSR      PC,MSTCLR      ;INIT DMV & ENTER M-LOOP
6212 023214      BCC      1$              ;IF NO ERROR, PROCEED WITH TESTING
6213 023216      ERROR                      ;ELSE, REPORT ERROR
(3) 023216      104460                      TRAP      C$ERROR
6214 023220      ESCAPE  TST              ; & EXIT TEST
(3) 023220      104410                      TRAP      C$ESCAPE
(3) 023222      000152                      .WORD     L10037-.
6215 023224      012737      000001      002444 1$: MOV      #1,TMP2      ;DATA GENERATION ALGORITHM CODE
6216 023232      012737      003777      002474 2$: MOV      #2047.,TMPE    ;LAST VALID ADDRESS
6217 023240      004737      023376      2$: JSR      PC,T9.RST      ;RESET TMP3, TMPA, & TMPF
6218 023244      005037      002450      CLR      TMP4      ;TEST DATA
6219 023250      005037      002452      CLR      TMP5      ;ACTUAL DATA
6220
6221      ; IN THIS PHASE OF TESTING WE WRITE, READ & CHECK EACH LOCATION INDIVIDUALLY.
6222
6223 023254      004737      023414      4$: JSR      PC,WRCRAM      ;WRITE, READ, & CHECK 1 BYTE OF RAM
6224 023260      103003                      ;IF NO ERROR, PROCEED
6225 023262      ERROR                      ;ELSE, REPORT IT
(3) 023262      104460                      TRAP      C$ERROR
6226 023264      ESCAPE  TST              ; & LOOP IF ERROR
(3) 023264      104410                      TRAP      C$ESCAPE
(3) 023266      000106                      .WORD     L10037-.
6227 023270      005237      002464      5$: INC      TMPA      ;POINT TO NEXT LOCATION
6228 023274      023737      002464      002474 CMP      TMPA,TMPE    ;HAVE WE TESTED ALL OF RAM?
6229 023302      101764                      BLOS     4$      ;NO, TEST ANOTHER BYTE
6230 023304      023304                      BREAK                     ;ELSE, SEE IF A +C HAS BEEN STRUCK
(3) 023304      104422                      TRAP      C$BRK
6231
6232      ; THEN PROCEED TO THE NEXT PHASE OF TESTING
6233
6234      ; IN THIS PHASE OF TESTING WE READ & CHECK DATA WHICH SHOULD ALREADY BE IN
6235      ; EACH LOCATION OF RAM BEING CHECKED.
6236 023306      004737      023376      8$: JSR      PC,T9.RST      ;RESET TMP3, TMPA, & TMPF
6237 023312      004737      023612      JSR      PC,RCRAM      ;READ & CHECK 1 BYTE OF RAM
6238 023316      103001                      BCC      9$      ;IF NO ERROR, PROCEED
6239 023320      ERROR                      ;ELSE, REPORT IT

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(3) 023320 104460                                TRAP    C#ERROR
6240 023322 005237 002464          98:    INC    TMPA      ;POINT TO NEXT LOCATION
6241 023326 023737 002464 002474    CMP    TMPA,TMPE    ;HAVE WE TESTED ALL OF RAM?
6242 023334 101766                  BLOS    B#          ;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          4#:    JSR    R5,WRITE    ;WRITE ONE BYTE OF THE TEST DATA
6284 023474 000000          .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          8#:    JSR    R5,READ    ;READ THAT BYTE BACK AGAIN
6289 023506 000000          .WORD    0      ;**** MODIFIED FROM ABOVE ****
6290 023510 002452          TMP5

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TEST 9 -- LOW RAM (00-OF) SCRATCHPAD

6291	023512	103435		BCS	141	;IF ERROR READING, FORGET THE REST
6292						
6293	023514	123737	002450	002452	CMPB	TMP4,TMP5
6294	023522	001430			BEQ	121
6295	023524	132737	000002	002476	BITB	#BIT1,TMPF
6296	023532	001020			BNE	91
6297	023534	112737	000002	002476	MOVB	#BIT1,TMPF
6298	023542				GTDF	EM47A,ERR47
(2)						; QUEUE "DEVICE FATAL" ERROR # 23
(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	101
6300						
6301	023574	004737	007122		91: JSR	PC,ERR47.
6302	023600	000261			101: SEC	
6303	023602	000401			BR	141
6304						; JUST PRINT DATA
6305	023604	000241				; & SET THE ERROR FLAG
6306	023606	012600				; & GO DIRECTLY TO THE EXIT "RTS"
6307	023610	000207				
6308						; NORMAL EXIT - MAKE SURE THE ERROR FLAG IS CLEAR
6309	023612	010046				; RESTORE WORK REGISTERS
6310						
6311	023614	004737	023772		RCRAM: MOV	RO, -(SP)
6312						; SAVE WORKING REGISTERS
6313	023620	013700	002464		JSR	PC,PATGEN
6314	023624	020027	000020			; GENERATE ONE DATA PATTERN BYTE
6315	023630	103412				
6316	023632	020027	000030		MOV	TMPA,RO
6317	023636	103007			CMP	RO,#SLTO
6318	023640	023727	002444	000006	BLO	21
6319	023646	001046			CMP	RO,#SLTO+8.
6320	023650	005337	002446		BHIS	21
6321	023654	000443			CMP	TMP2,#6
6322					BNE	121
6323	023656	010037	023666		DEC	TMP3
6324					BR	121
6325	023662	004537	004076			; AND THEN BYPASS THE TESTING
6326	023666	000000			21: MOV	RO,81
6327	023670	002452				; SETUP POINTER FOR THE CURRENT RAM LOCATION
6328	023672	103435			81: JSR	R5,READ
6329					.WORD	0
6330	023674	123737	002450	002452	TMP5	
6331	023702	001430			BCS	141
6332	023704	132737	000004	002476		;IF ERROR READING, FORGET THE REST
6333	023712	001020				
6334	023714	112737	000004	002476	CMPB	TMP4,TMP5
6335	023722				BEQ	121
(2)					BITB	#BIT2,TMPF
(5)	023722	012737	000001	002236	BNE	91
(5)	023730	012737	000030	002240	MOVB	#BIT2,TMPF
(5)	023736	012737	015747	002242	GTDF	EM47B,ERR47
(5)	023744	012737	006736	002244		; WAS THIS LOC. STILL OK?
6336	023752	000402				; YES, EXIT
						; NO, HAVE WE ALREADY DONE THIS ERROR'S HEADER?
						; YES, ONLY REPORT DATA
						; ELSE, CALL MONITOR & PRINT HEADING
						; QUEUE UP THE ERROR MESSAGE
						; QUEUE "DEVICE FATAL" ERROR # 24
						MOV #T.EDF,ERRTYP
						MOV #24,ERRNBR
						MOV #EM47B,ERRMSG
						MOV #ERR47,ERRBLK
					BR	101

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6337
6338 023754 004737 007122      9$: JSR    PC,ERR47.      ;JUST PRINT DATA
6339 023760 000261              10$: SEC                      ;      & SET THE ERROR FLAG
6340 023762 000401              BR      14$                ;      & GO DIRECTLY TO THE EXIT "RTS"
6341
6342 023764 000241              12$: CLC                      ;NORMAL EXIT - MAKE SURE THE ERROR FLAG IS CLEAR
6343 023766 012600              14$: MOV     (SP)+,R0        ;RESTORE WORK REGISTERS
6344 023770 000207              RTS     PC
6345
6346 ;*****
6347 ; PATGEN -- SUBROUTINE TO GENERATE A TEST DATA BYTE FOR A SPECIFIC ELEMENT
6348 ;
6349 ;      CALLING SEQUENCE:
6350 ;
6351 ;      <SET TEST PATTERN CODE # IN "TMP2">
6352 ;      <SET TEST PATTERN INDEX IN "TMP3">
6353 ;      JSR    PC,PATGEN
6354 ;      <NEXT SEQUENTIAL INSTRUCTION>
6355 ;
6356 ;      TEST PATTERN CODES:
6357 ;
6358 ;      1 -- ALL ONES
6359 ;      2 -- ALL ZEROES
6360 ;      3 -- 1 BIT ALTERNATING
6361 ;      4 -- 2 BITS ALTERNATING
6362 ;      5 -- ADDRESS IN ADDRESS
6363 ;      6 -- INCREMENTAL (INDEX IN ADDRESS)
6364 ;
6365 ;      THE TEST PATTERN INDEX INDICATES HOW FAR INTO THE TEST PATTERN STRING OF
6366 ;      BYTES WE ARE. I.E. IT SPECIFIES THE NUMBER OF THE BYTE OF THE WHOLE STRING
6367 ;      OF BYTES COMPOSING THE COMPLETE TEST PATTERN.
6368 ;
6369 ;-----*****
6370
6371
6372 023772      PATGEN:
6373 023772 023727 002444 000002      CMP     TMP2,#2      ;DECODE THE TEST PATTERN IDENTIFIER
6374 024000 002414      BLT     1$                ;0, 1, OR NEGATIVE WILL GIVE "ALL ONES"
6375 024002 001417      BEQ     2$                ;2 = "ALL ZEROES"
6376 024004 023727 002444 000004      CMP     TMP2,#4
6377 024012 002416      BIT     3$                ;3 = "1 BIT ALTERNATING"
6378 024014 001431      BTL     4$                ;4 = "2 BIT ALTERNATING PATTERN"
6379 024016 023727 002446 000006      CMP     TMP3,#6
6380 024024 002441      BLT     5$                ;5 = "ADDRESS IN ADDRESS"
6381 024026 001444      BEQ     6$                ;6 = "INCREMENTAL" (INDEX IN ADDRESS)
6382 024030 000404      BR      2$                ;UNDEFINED = "ALL ZEROES"
6383
6384 024032 112737 000377 002450 1$: MOVB    #377,TMP4      ;"ALL ONES" DATA PATTERN
6385 024040 000443      BR      60$
6386
6387 024042 105037 002450      2$: CLRB    TMP4                ;"ALL ZEROES" DATA PATTERN
6388 024046 000440      BR      60$
6389
6390 024050 132737 000001 002446 3$: BITB    #1,TMP3        ;"1 BIT ALTERNATING" PATTERN
6391 024056 001404      BEQ     20$                ;IF EVEN, USE "252"
6392 024060 112737 000125 002450      MOVB    #125,TMP4      ;IF ODD, USE "125"

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TEST 9 -- LOW RAM (00-0F) SCRATCHPAD

6393	024066	000430			BR	60:	; PATTERN: 10101010
6394	024070	112737	000252	002450	20:	MOV8	#252,TMP4
6395	024076	000424			BR	60:	; PATTERN: 01010101
6396							
6397	024100	132737	000001	002446	4:	BIT8	#1,TMP3
6398	024106	001404			BEQ	22:	; "2 BIT ALTERNATING" PATTERN
6399	024110	112737	000063	002450		MOV8	#063,TMP4
6400	024116	000414			BR	60:	; IF EVEN, USE "214"
6401	024120	112737	000214	002450	22:	MOV8	#214,TMP4
6402	024126	000410			BR	60:	; IF ODD, USE "063"
6403							; PATTERN: 11001100
6404	024130	113737	002464	002450	5:	MOV8	TMPA,TMP4
6405	024136	000404			BR	60:	; "ADDRESS IN ADDRESS"
6406							
6407	024140	113737	002446	002450	6:	MOV8	TMP3,TMP4
6408	024146	000400			BR	60:	; "INCREMENTAL" (INDEX IN ADDRESS)
6409							
6410	024150	005237	002446		60:	INC	TMP3
6411	024154	000207			62:	RTS	PC
6412							; INCREMENT PATTERN INDEX FOR NEXT CALL
6413							

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TEST 10 -- DATA RAM MOVING INVERSIONS (LOC'S 0018-01FF HEX)

```

(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 EXCEDED 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      ERROR      ;ELSE, REPORT ERROR
(3) 024164 104460      ESCAPE TST      ; & EXIT TEST      TRAP      C$ERROR
6489 024166 104410      ;      TRAP      C$ESCAPE
(3) 024170 000744      .WORD      L10040-.
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,TMPC      ;DATA = 1'S FIRST
6500
6501 ;----- INITIALIZE THE AREA BEING TESTED BY CLEARING IT TO ZEROES ---
6502
6503 ; ZERO OUT LOCATIONS 0 THROUGH 10 (HEX) -- THOSE BELOW THE SELECT REGISTERS
6504
6505 024224 005037 024240      CLR      3$      ;INITIALIZE ADDRESS
6506 024230 012703 000020      MOV      #SLTO,R3      ;RAM ADDRESS OF BSEL0 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      ERROR      ;ELSE, REPORT IT
(3) 024246 104460      ESCAPE TST      ; AND EXIT THIS TEST      TRAP      C$ERROR
6513 024250 104410      ;      TRAP      C$ESCAPE
(3) 024252 000662      .WORD      L10040 .
6514 024254 005237 024240      INC      3$      ;POINT TO NEXT LOCATION

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TEST 10 -- DATA RAM MOVING INVERSIONS (LOC'S 0018-01FF HEX)

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6515 024260 077313          SOB      R3,24      ;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      TMP0,64      ;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      44:      JSR      R5,WRITEI      ;ZERO OUT THE ALL OF THE TEST AREA
6525 024306 000J00      64:      .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$ERROR
6529 024316              TRAP      C$ESCAPE
(3) 024316 104410              .WORD      L10040-.
(3) 024320 000614
6530 024322 005237 024306              INC      64      ;POINT TO NEXT LOCATION
6531 024326 077313              SOB      R3,44      ;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      84:      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      104:      NOP
6546 024360 000240              NOP
6547 024362              BREAK      ;FIRST SEE IF A +C HAS BEEN STRUCK BY OPERATOR
(3) 024362 104422              TRAP      C$BRK
6548 024364 013737 002464 024376      MOV      TMPA,404      ;NO. PUT ADDRESS INTO READ CALL
6549 024372 004537 004076              JSR      R5,READ      ;GO READ ONE LOCATION
6550 024376 000000      404:      0      ;**** MODIFIED ABOVE **** (ADDRESS)
6551 024400 002452              TMP5      ;ADDRESS OF DATA READ
6552 024402 103003              BCC      .+10      ;IF NO ERROR, PROCEED
6553 024404              ERROR      ;ELSE, REPORT IT
(3) 024404 104460              ESCAPE TST      ; AND EXIT THIS TEST      TRAP      C$ERROR
6554 024406              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      124      ;IF OK, PROCEED
6562 024426 032737 000006 002476      BIT      @BIT1+BIT2,TMPF ;NO. HAS AN ERROR ALREADY BEEN REPORTED?
6563 024434 001010              BNE      424      ;YES, JUST PRINT DATA IF WANTED

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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
(3) 024536 104460      ESCAPE TST      ; AND EXIT THIS TEST      TRAP      C1ERROR
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, HAS 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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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      @SLT0,TMPA      ;IS IT BELOW THE AREA WE CAN'T CHECK?
6623      024656 101237      BHI      101      ;YES, THEN WE CAN CHECK THIS LOCATION -- DO IT
6624      024660 023737 002440 002464      CMP      TMP0,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      TMPC,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      TMPC      ;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.

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TEST 10 - DATA RAM MOVING INVERSIONS (LOC'S 0018-01FF HEX)

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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,R0        ;USE ONE BIT OF THE "DATA" SWITCH TO
6676 025060 006000                ROR      R0
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 ;----- "STOP" -----
6690
6691
6692 025116 000240                321:  NOP
6693 025120 004537 004334        381:  JSR     R5,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
6698 025134                ENDTST          ;THATS ALL FOLKS!
6699 025134                L10040:         TRAP     C#ERROR
6700                TRAP     C#ETST
;-----
.EVEN

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TEST 11 -- VIA REGISTER ADDRESSING

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6726 .SBTTL TEST 11 -- VIA REGISTER ADDRESSING
(2) ;*****
(2) ;
(2) ;*
(2) ;* TEST 11 -- VIA REGISTER ADDRESSING
(2) ;*
(3) ;* VIA -- "6522 VERSATILE INTERFACE ADAPTER"
(3) ;*
(3) ;* A MASTER CLEAR IS PERFORMED, NEXT, TIMER 1 LATCHES
(3) ;* ARE CLEARED BY WRITING 000 INTO VIA REGS 6 & 7
(3) ;* THEN, 377 IS LOADED INTO DATA DIRECTION REGISTERS A, B (DORA, DORB) TO
(3) ;* SET THE PORT PINS FOR OUTPUT MODE.
(3) ;* THEN, A DIFFERENT BYTE OF DATA PATTERN C IS WRITTEN INTO EACH VIA
(3) ;* LOCATION, (EXCEPT THE TIMER REGS 4,5,10,11 OCT) AND AFTER EACH IS WRITTEN,
(3) ;* ALL VIA REGS (EXCEPT 4,5,10,11) ARE READ AND COMPARED TO EXPECTED
(3) ;* CONTENTS. NOTE THAT SOME VIA REGS ARE ALTERED BY THE LOADING OF OTHERS,
(3) ;* AND THE PROGRAM TAKES THIS INTO ACCOUNT, IN THE SETTING OF EXPECTED REG
(3) ;* VALUES. THE DATA PATTERN IS CHOSEN TO AVOID ACTIVATING THE VIA CHIP (SUCH
(3) ;* AS GENERATING OUTPUTS ON CA1, CA2, CB1, CB2, OR CAUSING 6502
(3) ;* INTERRUPT REQUESTS).
(3) ;* DATA PATTERN C (WITH VIA REGS AND THEIR DATA SHOWN IN OCTAL) :
(3) ;* REGISTER = 00 01 02 03 06 07 12 13 14 15 16 17
(3) ;* DATA = 100, 101, 377, 377, 106, 107, 112, 040, 042, 000, 200, 117
(3) ;* NEXT, 000 IS LOADED INTO DORA, AND DORB IS READ AND COMPARED TO 377. THEN,
(3) ;* THE 377 IS LOADED BACK INTO DORA, AND DORF IS LOADED WITH 000 AND DORA IS
(3) ;* READ AND COMPARED TO 377.
(2) ;
(2) ;*****
(2) ;
(2) ; BGNTST
(5) ;
6727 025136 004737 003774 JSR PC,MSTCLR ;INIT DMV AND START UP THE MAINT. LOOP
6728 025142 103002 BCC 11 ;IF NO ERROR, PROCEED
6729 025144 104460 ERROR ;ELSE, REPORT IT AND TRAP C$ERROR
(3) 025144 104460 BR 254 ; EXIT THIS CLEAR
6730 025146 000546
6731
6732 025150 004537 004334 11: JSR R5,WRITEI ;CLEAR THE TIMER 1 LATCHES
6733 025154 120006 TILL
6734 025156 000000 0
6735 025160 103002 BCC 304 ;IF AN ERROR OCCURED,
6736 025162 104460 ERROR ;REPORT IT & TRAP C$ERROR
(3) 025162 104460 BR 254 ; EXIT
6737 025164 000537 004334 304: JSR R5,WRITEI
6738 025166 004537 TILL
6739 025172 120007 0
6740 025174 000000 BCC 314 ;IF AN ERROR OCCURED,
6741 025176 103002 ERROR ;REPORT IT & TRAP C$ERROR
(3) 025200 104460 BR 254 ; EXIT
6743 025202 000530
6744
6745 ; LOAD UP THE VIA'S REGISTERS WITH THE FIXED DATA STREAM OF PATTERN "C"
6746
6747 025204 013703 002556 314: MOV PATC,R3 ;GET COUNT OF # OF WRITES TO BE PERFORMED
6748 025210 012702 002560 MOV #PATC+2,R2 ;SETUP POINTER TO REGISTER ADDRESSES & DATA

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TEST 11 -- VIA REGISTER ADDRESSING

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6749
6750 025214 012737 120000 025236 24:  MOV  #0RB,44  ;ADDRESS OF FIRST REGISTER
6751 025222 152237 025236  BISB  (R2)+,44  ;OR IN REGISTER # TO BUILD REGISTER ADDRESS
6752 025226 112237 025240  MOVB  (R2)+,54  ;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   324  ;IF AN ERROR OCCURED,
6759 025244  ERROR  ;REPORT IT &
(3) 025244 104460 TRAP  C$ERROR
6760 025246 000506  BR    254  ; EXIT
6761 025250 077317 324:  SOB   R3,24  ;LOOP UNTIL THE WHOLE TABLE HAS BEEN WRITTEN
6762
6763 ; READ BACK THE VIA'S REGISTERS
6764
6765 025252 012703 000020  MOV  #PATCH-PATCH,R3 ;GET COUNT OF # OF REG'S TO BE READ
6766 025256 012737 120000 025276  MOV  #0RB,74  ;ADDRESS OF FIRST REGISTER
6767 025264 012737 003122 025300  MOV  #BT1,84  ;DESTINATION BUFFER AREA
6768
6769 025272 004537 004076 64:  JSR   R5,READ  ;READ ONE REGISTER
6770 025276 000000 74:  0  ;*** MODIFIED FROM ABOVE *** SOURCE ADDRESS
6771 025300 000000 84:  0  ;*** MODIFIED IN LINE *** DESTINATION ADDRESS
6772 025302 103002  BCC   334  ;IF AN ERROR OCCURED,
6773 025304  ERROR  ;REPORT IT &
(3) 025304 104460 TRAP  C$ERROR
6774 025306 000466  BR    254  ; EXIT
6775
6776 025310 005237 025276 334:  INC   74  ;POINT TO NEXT REGISTER
6777 025314 005237 025300  INC   84  ;POINT TO NEXT BUFFER LOCATION
6778 025320 077314  SOB   R3,64  ;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   104  ;IF NO ERROR, SKIP NEXT INSTRUCTION
6794 025364 005237 002332  INC   ERRFLG  ;IF ERROR, SET FLAG TO SAY SO!
6795 025370 077310 104:  SOB   R3,94  ;LOOP UNTIL ALL VALUES CHECKED
6796
6797 025372 005737 002332  TST   ERRFLG  ;WAS THERE AN ERROR DETECTED?
6798 025376 001406  BEQ   124  ;NO, PROCEED WITH TESTING
6799 025400  GE0F  EM20,ERR6  ;YES, REPORT A VIA REGISTER ERROR
(2) ; "DEVICE FATAL" ERROR # 27
(6) 025400 104455 TRAP  C$ERDF
(7) 025402 000033 .WORD 27

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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	TRAP	C\$ESCAPE
(3)	025410	104410							.WORD	L10041 .
(3)	025412	000344								
6801										
6802										
6803										
6804	025414	004537	004210	12:	JSR	R5,READI		;GET THE CURRENT VALUE OF THE VIA'S		
6805	025420	120003			DORA			; "DORA" REGISTER FOR LATER ERROR CHECKING		
6806	025422	000000		15:	0					
6807	025424	103002			BCC	34:		;IF AN ERROR OCCURED,		
6808	025426				ERROR			;REPORT IT &		
(3)	025426	104460							TRAP	C\$ERROR
6809	025430	000415			BR	25:		; EXIT		
6810	025432	004537	004334	34:	JSR	R5,WRITEI		;LOAD DORB WITH 000		
6811	025436	120002			DORB					
6812	025440	000000			0					
6813	025442	103002			BCC	35:		;IF AN ERROR OCCURED,		
6814	025444				ERROR			;REPORT IT &		
(3)	025444	104460							TRAP	C\$ERROR
6815	025446	000406			BR	25:		; EXIT		
6816	025450	004537	004076	35:	JSR	R5,READ		;READ IT BACK AND CHECK IT		
6817	025454	120002			DORB					
6818	025456	002312			BDATA					
6819	025460	103002			BCC	36:		;IF AN ERROR OCCURED,		
6820	025462				ERROR			;REPORT IT &		
(3)	025462	104460							TRAP	C\$ERROR
6821	025464	000534		25:	BR	24:		; EXIT		
6822	025466	105737	002312	36:	TSTB	BDATA		;THIS SHOULD NOW BE ZERO		
6823	025472	001413			BEQ	14:		;IT IS, PRECEDE TESTING		
6824	025474	105037	002310		CLRB	GDATA		;IT ISN'T! SETUP FOR & REPORT ERROR		
6825	025500	012737	000002	002334	MOV	#2,REGNUM		;IDENTIFY THE DORB REG.		
6826	025506				GDF	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	TRAP	C\$ESCAPE
(3)	025516	104410							.WORD	L10041-.
(3)	025520	000236								
6828										
6829	025522	113737	025422	002310	14:	MOVB	15:,GDATA	;THIS IS WHAT WE EXPECT TO READ NOW		
6830	025530	004537	004076		JSR	R5,READ		;READ BACK DORA -- IT SHOULD BE = 366		
6831	025534	120003			DORA					
6832	025536	002312			BDATA					
6833	025540	103002			BCC	37:		;IF AN ERROR OCCURED,		
6834	025542				ERROR			;REPORT IT &		
(3)	025542	104460							TRAP	C\$ERROR
6835	025544	000504			BR	24:		; EXIT		
6836	025546	123737	002310	002312	37:	CMPSB	GDATA,BDATA	;IS IT REALLY A 377?		
6837	025554	0								

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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			ESCAPE TST					
(3)	025574	104410						TRAP	C#E. CAPE
(3)	025576	000160						.WORD	L10041-
6841									
6842	025600	004537	004334	16:	JSR	R5,WRITEI			
6843	025604	120002			DORB				
6844	025606	177777		17:	-1				
6845	025610	103002			BCC	38:			
6846	025612				ERROR				
(3)	025612	104460						TRAP	C#ERROR
6847	025614	000460			BR	24:			
6848	025616	004537	004334	38:	JSR	R5,WRITEI			
6849	025622	120003			DORA				
6850	025624	000000			0				
6851	025626	103002			BCC	39:			
6852	025630				ERROR				
(3)	025630	104460						TRAP	C#ERPOR
6853	025632	000451			BR	24:			
6854									
6855	025634	004537	004076	39:	JSR	R5,READ			
6856	025640	120003			DORA				
6857	025642	002312			B0ATA				
6858	025644	105737	002312		TSTB	B0ATA			
6859	025650	001413			BEQ	18:			
6860	025652	105037	002310		CLRB	GDATA			
6861	025656	012737	000003	002334	MOV	#3,REGNUM			
6862	025664				GEDF	EM21,ERR7			
(2)									
(6)	025664	104455							
(7)	025666	000036						TRAP	C#ERDF
(7)	025670	015454						.WORD	30
(7)	025672	006624						.WORD	EM21
6863	025674							.WORD	ERR7
(3)	025674	104410			ESCAPE TST				
(3)	025676	000060						TRAP	C#ESCAPE
6864								.WORD	L10041-
6865	025700	004537	004076	18:	JSR	R5,READ			
6866	025704	120002			DORB				
6867	025706	002312			B0ATA				
6868	025710	103002			BCC	40:			
6869	025712				ERROR				
(3)	025712	104460						TRAP	C#ERROR
6870	025714	000420			BR	24:			
6871	025716	123737	002312	025606	40:	B0ATA,17:			
6872	025724	001414			BEQ	24:			
6873	025726	113737	025606	002310	MOVB	17:,GDATA			
6874	025734	012737	000002	002334	MOV	#2,REGNUM			
6875	025742				GEDF	EM22A,ERR7			
(2)									
(6)	025742	104455							
(7)	025744	000037						TRAP	C#ERDF
(7)	025746	015544						.WORD	31
								.WORD	EM22A

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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
TRAP C\$ESCAPE
L10041-

244: ENDTST

L10041:
TRAP C\$ETST

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TEST 12 -- VIA'S DORB DATA READ/WRITE

```

6890 .SBTTL TEST 12 -- VIA'S DORB DATA READ/WRITE
(2) ;*****
(2) ;*
(2) ;*   TEST 12 -- VIA'S DORB DATA READ/WRITE
(2) ;*
(3) ;*   DORB == "DATA DIRECTION REGISTER B"
(3) ;* FIRST, A MASTER CLEAR IS PERFORMED. THEN :
(3) ;* READ/WRITE BITS 0-7 OF VIA DATA DIRECTION REGISTER B ARE TESTED BY WRITING,
(3) ;* READING, AND COMPARING EACH BYTE OF DATA PATTERN B.
(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) ;   BGNTST
(5) ;
6891 025760 004737 003774          JSR    PC,MSTCLR      ;INIT DMV & START UP THE MAINT. LOOP
6892 025764 103003                BCC     304          ;IF AN ERROR OCCURED,
6893 025766                        ERROR              ;REPORT IT &
(3) 025766 104460                ESCAPE TST          ; EXIT
6894 025770                        TRAP    C$ERROR
(3) 025770 104410                        TRAP    C$ESCAPE
(3) 025772 000046                        .WORD   L10042-.
6895
6896 025774 012701 002526          304:  MOV    #PATB,R1      ;POINT TO PATTERN TABLE
6897 026000 012103                MOV    (R1)+,R3        ;GET # OF ENTRIES IN TABLE
6898
6899 T12.LP:  BGNSUB              ;THE SUBTEST ONLY TESTS THE ONE PATTERN
6900 026002                        T12.1:
(3) 026002                        TRAP    C$BSUB
(3) 026002 104402
6901
6902 026004 111137 002306          MOV    (R1),TDATA      ;SETUP TEST DATA BYTE FOR "STREG"
6903 026010 112137 002310          MOV    (R1)+,GDATA     ;SETUP EXPECTED DATA BYTE FOR "STREG"
6904 026014 012700 120002          MOV    #DORB,R0        ;SPECIFY THE REGISTER BEING TESTED
6905 026020 004737 005046          JSR    PC,STREG        ;PERFORM STATIC TEST OF THE SPECIFIED REGISTER
6906 026024 103003                BCC     104          ;WAS AN ERROR FOUND?
6907 026026                        ERROR              ;YES, REPORT IT AND
(3) 026026 104460                ESCAPE TST          ; EXIT FROM THE TEST. "CKLOOP" IS IMPLIED
6908 026030                        TRAP    C$ERROR
(3) 026030 104410                        TRAP    C$ESCAPE
(3) 026032 000006                        .WORD   L10042-.
6909
6910 026034                        104:  ENDSUB
(3) 026034                        L10043:
(3) 026034 104403                        TRAP    C$ESUB
6911
6912 026036 077317                SOB     R3,T12.LP      ;IF THERE IS IN FACT MORE DATA, LOOP BACK TO
6913                                ;TEST IT. ELSE, FALL OUT OF LOOP AND TEST
6914
6915                                ENDTST
(3) 026040                        L10042:
(3) 026040 104401                        TRAP    C$ETST

```

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TEST 13 -- VIA'S DDRA DATA READ/WRITE

6928
(2)
(2)
(2)
(2)
(2)
(3)
(3)
(3)
(3)
(3)
(3)
(2)
(2)
(2)
(2)
(5)
6929
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6931
(3)
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(3)
(3)
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(3)
(3)
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(3)
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(3)
(3)
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6953
(3)
(3)

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TEST 14 -- VIA'S ORB DATA READ/WRITE

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6967 .SBTTL TEST 14 -- VIA'S ORB DATA READ/WRITE
(2)
(2)
(2)
(2)
(2)
(3)
(3)
(3)
(3)
(3)
(3)
(3)
(3)
(3)
(2)
(2)
(2)
(2)
(5)
6968 026124 004737 003774
6969 026130 103003
6970 026132
(3) 026132 104460
6971 026134
(3) 026134 104410
(3) 026136 000066
6972
6973 026140 004537 004334
6974 026144 120002
6975 026146 177777
6976 026150 103003
6977 026152
(3) 026152 104460
6978 026154
(3) 026154 104410
(3) 026156 000046
6979
6980 026160 012701 002526
6981 026164 012103
6982
6983 026166
6984 026166
(3) 026166
(3) 026166 104402
6985
6986 026170 111137 002306
6987 026174 112137 002310
6988 026200 012700 120000
6989 026204 004737 005046
6990 026210 103003
6991 026212
(3) 026212 104460
6992 026214
(3) 026214 104410
(3) 026216 000006
6993

;*****
;*
;* 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 (DDRB) 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::
; INIT DMV & START UP THE MAINT. LOOP
; IF AN ERROR OCCURED,
; REPORT IT &
;
; TRAP C#ERROR
;
; 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-

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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

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TEST 15 -- VIA'S T1 DATA READ/WRITE

[illegible]

```

.SBTTL TEST 15 -- VIA'S T1 DATA READ/WRITE
;*****
;
; 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.
;
; 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-H DECREMENT FAST.
; T1L-H(ADR 05) IS LOADED WITH THE ORIGINAL TEST DATA PATTERN BYTE.
; I. T1L-H(ADR 07) IS READ AND COMPARED TO THE BYTE LOADED INTO T1L-H.
;
; J. T1C-H(ADR 05) IS READ AND CHECKED TO BE DIFFERENT THAN THE TEST BYTE.
;
; K. T1L-H(ADR 07) IS LOADED WITH THE COMPLEMENT OF THE CURRENT DATA BYTE.
; L. T1L-H(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-H
;
; A. T1L-H(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-H(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-H TO T1L-L
;
; A. T1L-L(ADR 04) IS LOADED WITH 000 TO CLEAR IT
; B. T1L-H(ADR 07) IS LOADED WITH A BYTE OF DATA PATTERN B.
; C. T1L-H(ADR 07) IS READ AND COMPARED TO THE DATA JUST WRITTEN.

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TEST 15 -- VIA'S T1 DATA READ/WRITE

```

(3) ; * D. T1L-L(ADR 06) IS READ AND COMPARED TO 000.
(3) ; * E. STEPS B-D ARE REPEATED USING EACH BYTE OF DATA PATTERN B.
(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) ; BGNTST
(5) 026226 ; T15::

7061 ; ***** STEP A *****
7062 ;
7063 ; JSR PC,MSTCLR ;INIT DMV & START UP M-LOOP
7064 026226 004737 003774 BCC 11 ;IF NO ERRORS, PROCEED
7065 026232 103003 ERROR ;ELSE, REPORT ERROR &
7066 026234 104460 ; TRAP C1ERROR
(3) 026234 104410 ; GET OUT OF THE TEST
7067 026236 104410 ; TRAP C1ESCAPE
(3) 026240 001030 ;.WORD L10050-.
7068 026242
7069
7070 ; ***** STEP B *****
7071 ;
7072 026242 004537 004672 JSR RS,INITT1 ;INITIALIZE THE TIMER'S REGISTERS
7073 026246 000000 0 ; WITH ZEROES
7074 026250 000000 .WORD 0 ; 00 --> ACR6 & ACR7 AND DISABLE INTERRUPTS
7075 026252 103003 BCC .+10 ;IF NO ERROR, PROCEED
7076 026254 104460 ERROR ;ELSE, REPORT IT
(3) 026254 104460 ; TRAP C1ERROR
7077 026256 104410 ; AND EXIT THIS TEST
(3) 026256 104410 ; TRAP C1ESCAPE
(3) 026260 001010 ;.WORD L10050-.
7078
7079 ;WE WANT THE LEAST ACTIVE OPERATING MODE FOR THIS TIMER WHILE WE ARE TESTING
7080 ;IT. THE MODE WE'RE USING HERE IS DOCUMENTED THUSLY: "GENERATE A SINGLE
7081 ;TIME-OUT INTERRUPT EACH TIME T1 IS LOADED. PB7 DISABLED."
7082 ;AS AN ADDED PRECAUTION, WE ARE DISABLING INTERRUPTS BY CLEARING THE "T1" FLAG
7083 ;WITHIN "IER".
7084
7085 026262 BGNSUB ;BEGIN THE FIRST SUBTEST
(3) 026262 ; T15.1:
(3) 026262 104402 ; TRAP C1BSUB
7086 026264 012701 002526 MOV @PATB,R1 ;POINT TO THE APPROPRIATE PATTERN TABLE
7087 026270 012103 MOV (R1),R3 ;EXTRACT THE BYTE COUNT FROM THE TABLE
7088
7089 026272 T16.LP:
7090 026272 112137 002306 MOVB (R1),TDATA ;GET ONE BYTE OF THE TEST DATA
7091 026276 013737 002306 002310 MOV TDATA,GDATA ;THE TEST DATA IS NORMALLY THE GOOD DATA TOO
7092
7093 026304 BGNSEG
(3) 026304 104404 ; TRAP C1BSEG
7094
7095 ; ***** STEP C *****
7096
7097 026306 004537 004322 JSR RS,WRITE ;LOAD T1L-L(ADR 04)

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TEST 15 -- VIA'S T1 DATA READ/WRITE

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7098 026312 120004          T1CL
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            T1LL
7106 026324 002312            BDATA
7107 026326 123737 002310 002312  CMPB      GDATA,BDATA          ;AND CHECK IT
7108 026334 001407            BEQ      21          ;IF OK, PROCEED
7109 026336 012737 000006 002334  MOV      #6,REGNUM          ;IDENTIFY THE FAILING REGISTER &
7110 026344            GEDF      EM20,ERR7          ; REPORT FAILURE
7111          ;          "DEVICE FATAL" ERROR # 32
7112          ;
7113          ;          TRAP      C1ERDF
7114          ;          .WORD    32
7115          ;          .WORD    EM20
7116          ;          .WORD    ERR7
7117
7118          ; ***** STEP E *****
7119
7120 026354 004537 004076      21:      JSR      R5,READ          ;READ T1C-L(ADDR 04)
7121 026360 120004            T1CL
7122 026362 002312            BDATA
7123 026364 123737 002310 002312  CMPB      GDATA,BDATA          ;AND CHECK IT. SEEING AS THE TIMER IS RUNNING,
7124 026372 001017            BNE      41          ;THIS MUST NOT EQUAL THE SET VALUE!
7125 026374 004537 004076      JSR      R5,READ          ;IF IT IS, MAYBE WE JUST READ IT AT THE WRONG
7126 026400 120004            T1CL          ;TIME! RE-READ AND CHECK ONE MORE TIME.
7127 026402 002312            BDATA
7128 026404 123737 002310 002312  CMPB      GDATA,BDATA          ;CHECK IT AGAIN, SAM.
7129 026412 001007            BNE      41          ;THIS TIME IT SHOULD BE DIFFERENT.
7130          ;OTHERWISE, WE HAVE A LEGITIMATE FAILURE
7131          ; IDENTIFY THE FAILING REGISTER &
7132          ; REPORT FAILURE
7133          ;          "DEVICE FATAL" ERROR # 33
7134          ;
7135          ;          TRAP      C1ERDF
7136          ;          .WORD    33
7137          ;          .WORD    EM20A
7138          ;          .WORD    ERR7
7139
7140          ; ***** STEP F *****
7141
7142 026432 105137 002306      41:      COMB      TDATA          ;USE THE ONE'S COMPLEMENT THIS TIME
7143 026436 105137 002310      COMB      GDATA          ;THE EXPECTED DATA IS ALSO THE COMPLEMENT
7144 026442 004537 004322      JSR      R5,WRITE          ;LOAD T1L-L(ADDR 06)
7145 026446 120006            T1LL
7146 026450 002306            TDATA          ;THE TEST DATA FROM "TDATA"
7147
7148          ; ***** STEP G *****
7149
7150 026452 004537 004076      61:      JSR      R5,READ          ;READ T1L-L(ADDR 06)
7151 026456 120006            T1LL
7152 026460 002312            BDATA
7153 026462 123737 002310 002312  CMPB      GDATA,BDATA          ;AND CHECK IT
7154 026470 001407            BEQ      81          ;IF OK, PROCEED
7155 026472 012737 000006 002334  MOV      #6,REGNUM          ;IDENTIFY THE FAILING REGISTER &

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TEST 15 -- VIA'S T1 DATA READ/WRITE

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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

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TEST 15 -- VIA'S T1 DATA READ/WRITE

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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
7196          ;          "DEVICE FATAL" ERROR # 37
7197          ;
7198          ;
7199          ;
7200          ;
7201 026710 104455              TRAP      C$ERDF
7202 026712 000045              .WL'D 37
7203 026714 015255              .WORD  EM20
7204 026716 006624              .WORD  ERR7
7205
7206          ; ****--*** STEP M ****--***
7207
7208          ;
7209 026720 104405              10000$: TRAP      C$ESEG
7210
7211          ;
7212 026722 000402              BR      21$
7213 026724 000137 026272      20$: JMP      T16.LP
7214 026730 077303              21$: SOB      R3,20$
7215          ;IF MORE DATA, DO ANOTHER BYTE
7216          ;ELSE, EXIT SUBTEST
7217          ;
7218          ;
7219 026732 104403              ENDSUB
7220          ;
7221          ;
7222 026732 104403              L10051: TRAP      C$ESUB
7223
7224          ;
7225 026734 104402              BGNSUB
7226          ;BEGIN THE SECOND SUBTEST
7227          ;
7228 026736 012701 002526      MOV      #PATB,R1
7229 026742 012103              MOV      (R1)+,R3
7230          ;POINT TO THE APPROPRIATE PATTERN TABLE
7231          ;EXTRACT THE BYTE COUNT FROM THE TABLE
7232          ;
7233          ;
7234 026744 112137 002306 002310 T16.L1: MOVB      (R1)+,TDATA
7235 026750 013737 002306 002310      MOV      TDATA,GDATA
7236          ;GET ONE BYTE OF THE TEST DATA
7237          ;THE TEST DATA IS NORMALLY THE GOOD DATA TOO
7238          ;
7239          ;
7240          ; ****--*** STEP A ****--***
7241
7242          ;
7243 026756 004537 004334      JSR      R5,WRITEI
7244 026762 120007              T1LH
7245 026764 000000              0
7246          ;CLEAR T1L-H(ADDR 07)
7247          ;THE TEST DATA FROM "TDATA"
7248          ;
7249          ;
7250 026766 104404              BGNSEG
7251          ;
7252          ;
7253 026766 104404              TRAP      C$BSEG
7254
7255          ; ****--*** STEP B ****--***
7256
7257          ;
7258 026770 004537 004322      JSR      R5,WRITE
7259 026774 120006              T1LL
7260          ;LOAD T1L-L(ADDR 06)

```

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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
              ;          "DEVICE FATAL" ERROR # 38
              ;          TRAP      C$ERDF
              ;          .WORD    38
              ;          .WORD    EM20
              ;          .WORD    ERR7
(2)
(6) 027026 104455
(7) 027030 000046
(7) 027032 015255
(7) 027034 006624
7240
7241          ; ***---*** STEP D ***---***
7242
7243 027036 004537 004076      21:      JSR      R5,READ          ;READ T1L-H(ADDR 07)
7244 027042 120007              T1LH
7245 027044 002312              BDATA
7246 027046 105737 002312      TSTB     BDATA              ;AND CHECK IT -- THIS SHOULD STILL BE ZERO
7247 027052 001411              BEQ      101             ;IF OK, PROCEED
7248 027054 005037 002310      CLR      GDATA
7249 027060 012737 000007 002334 MOV      #7,REGNUM      ;IDENTIFY THE FAILING REGISTER &
7250 027066              GEDF     EM20B,ERR7              ; REPORT FAILURE
              ;          "DEVICE FATAL" ERROR # 39
              ;          TRAP      C$ERDF
              ;          .WORD    39
              ;          .WORD    EM20B
              ;          .WORD    ERR7
(2)
(6) 027066 104455
(7) 027070 000047
(7) 027072 015367
(7) 027074 006624
7251
7252          ; ***---*** STEP E ***---***
7253
7254 027076              101:      ENDSEG
              ;          100001:
              ;          TRAP      C$ESEG
(3) 027076
(3) 027076 104405
7255
7256 027100 000402              BR      211
7257 027102 000137 026744      JMP      T16.L1
7258 027106 077303              SOB     R3,201
7259              ;          ;IF MORE DATA, DO ANOTHER BYTE
              ;          ;ELSE, EXIT SUBTEST
              ;          L10052:
              ;          TRAP      C$ESUB
7260 027110              ENDSUB
(3) 027110
(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          ;POINT TO THE APPROPRIATE PATTERN TABLE
7265 027120 012103              MOV      (R1)+,R3          ;EXTRACT THE BYTE COUNT FROM THE TABLE
7266
7267 027122              T16.L2:
7268 027122 112137 002306      MOVB     (R1)+,TDATA      ;GET ONE BYTE OF THE TEST DATA

```

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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 E
7294 027204      GEDEF      EM20,ERR7      ; REPORT FAILURE
(2)
(6) 027204 104455      ; "DEVICE FATAL" ERROR # 40
(7) 027206 000050      TRAP      C$ERDF
(7) 027210 015255      .WORD      40
(7) 027212 006624      .WORD      EM20
7295      .WORD      ERR7
7296
7297      ; ***** STEP D *****
7298 027214 004537 004076      10$: JSR      R5,READ      ;READ T1L-L(ADDR 06)
7299 027220 120006      T1LL
7300 027222 002312      BDATA
7301 027224 105737 002312      TSTB      BDATA
7302 027230 001411      BEQ      2$      ;AND CHECK IT
7303 027232 005037 002310      CLR      GDATA      ;IF OK, PROCEED
7304 027236 012737 000006 002334      MOV      #6,REGNUM      ;IDENTIFY THE FAILING REGISTER E
7305 027244      GEDEF      EM20B,ERR7      ; REPORT FAILURE
(2)
(6) 027244 104455      ; "DEVICE FATAL" ERROR # 41
(7) 027246 000051      TRAP      C$ERDF
(7) 027250 015367      .WORD      41
(7) 027252 006624      .WORD      EM20B
7306      .WORD      ERR7
7307
7308      ; ***** STEP E *****
7309 027254      2$: ENDSEG
(3) 027254      10000$:
(3) 027254 104405      TRAP      C$ESEG
7310
7311 027256 000402      BR      21$

```

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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 C1ESUB

ENDTST

L10050:

TRAP C1ETST

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TEST 16 -- VIA'S SR DATA READ/WRITE

```

7330 .SBTTL TEST 16 -- VIA'S SR DATA READ/WRITE
(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

;*****
;*
;* 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::
; 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 L10054-.
;
; 304: MOV #PATB,R1 ;POINT TO PATTERN TABLE
; MOV (R1)+,R3 ;GET # OF ENTRIES IN TABLE
;
; T18.LP:
; BGNSUB ;THE SUBTEST ONLY TESTS THE ONE PATTERN
;
; T16.1:
; TRAP C#BSUB
;
; MOVB (R1),TDATA ;SETUP TEST DATA BYTE FOR "STREG"
; MOVB (R1)+,GDATA ;SETUP EXPECTED DATA BYTE FOR "STREG"
; MOV #SR,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 L10054-.
;
; 104: ENDSUB
;
; L10055:
; TRAP C#ESUB
;
; SOB R3,T18.LP ;IF THERE IS IN FACT MORE DATA, LOOP BACK TO
; TEST IT. ELSE, FALL OUT OF LOOP AND TEST
;
; ENDTST
;
; L10054:
; TRAP C#ETST

```

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TEST 17 -- VIA'S ACR DATA READ/WRITE

```

.SBTL 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
;
; JSR PC,MSTCLR ;INIT DMV & START UP THE HAIINT. LOOP
; BCC 30$ ;IF AN ERROR OCCURED,
; ERROR ;REPORT IT &
;
; ESCAPE TST ; EXIT
;
; TRAP C$ERROR
; TRAP C$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
;
; ESCAPE TST ; EXIT FROM THE TEST. "CKLOOP" IS IMPLIED
;
; TRAP C$ERROR
; TRAP C$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

```

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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)
(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

```

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TEST 19 -- VIA'S IER DATA READ/WRITE

```

7449 .SBTTL TEST 19 -- VIA'S IER DATA READ/WRITE
(2)
(2)
(2)
(2)
(2)
(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

```

```

*****
;
; 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
;
; JSR PC,MSTCLR ;INIT DMV & START UP THE MAINT. LOOP
; BCC 304 ;IF AN ERROR OCCURED.
; ERROR ;REPORT IT &
;
; ESCAPE TST ; EXIT
;
; TRAP C$ERROR
;
; TRAP C$ESCAPE
; .WORD L10062-.
;
304: 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$BSUB
;
; MOVB (R1)+,TDATA ;SETUP TEST DATA BYTE FOR "STREG"
; MOVB (R2)+,GDATA ;SETUP EXPECTED DATA BYTE FOR "STREG"
; MOV #IENR,R0 ;SPECIFY THE REGISTER BEING TESTED
; JSR PC,STREG ;PERFORM STATIC TEST OF THE SPECIFIED REGISTER
; BCC 104 ;WAS AN ERROR FOUND?
; ERROR ;YES, REPORT IT AND
;
; TRAP C$ERROR
; ESCAPE TST ; EXIT FROM THE TEST. "CKLOOP" IS IMPLIED
;
; TRAP C$ESCAPE
; .WORD L10062-.
;
104: ENDSUB
;
; L10063:
; TRAP C$ESUB

```

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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

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TEST 20 -- VIA'S ORB/DOORB MASTER CLEAR TEST

```

7488 .SBTTL TEST 20 -- VIA'S ORB/DOORB MASTER CLEAR TEST
(2)
(2)
(2)
(2)
(2)
(3)
(3)
(3)
(3)
(3)
(3)
(3)
(2)
(2)
(2)
(2)
(5) 027610
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 104460 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$: MOV #377,GDATA ;SETUP FOR CALL TO STREG
7496 027632 013737 002310 002306 MOV GDATA,TDATA
7497
7498 ; WE'LL USE "STREG" TO LOAD & CHECK "DOORB" WITH 377 THEREBY SETTING UP
7499 ; "ORB" FOR BI-DIRECTIONAL TRANSFERS
7500
7501 027640 012700 120002 MOV #DOORB,R0 ;POINT TO ORB
7502 027644 004737 005046 JSR PC,STREG ;LOAD & TEST IT
7503 027650 103003 BCC 4$ ;IF OK, PROCEED WITH TESTING
7504 027652 104460 ERROR ;ELSE, REPORT THE ERROR
(3) 027652 104460 TRAP C$ERROR
7505 027654 104410 ESCAPE TST ; & QUIT
(3) 027654 104410 TRAP C$ESCAPE
(3) 027656 000216 .WORD L10064-.
7506
7507 ; NOW WE'LL USE "STREG" TO SET & CHECK "ORB"
7508
7509 027660 012700 120000 4$: MOV #ORB,R0 ;POINT TO DOORB
7510 027664 004737 005046 JSR PC,STREG ;LOAD & TEST "ORB"
7511 027670 103003 BCC 5$ ;IF NO ERROR HERE, PROCEED
7512 027672 104460 ERROR ;ELSE, REPORT THE ERROR
(3) 027672 104460 TRAP C$ERROR
7513 027674 104410 ESCAPE TST ; & QUIT
(3) 027674 104410 TRAP C$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
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TEST 20 -- VIA'S ORB/DORB MASTER CLEAR TEST

```

(3) 027706 104460
7518 027710          ESCAPE TST          I      & QUIT          TRAP      C!ERROR
(3) 027710 104410          TRAP      C!ESCAPE
(3) 027712 000162          .WORD      L10064-.
7519
7520 027714 005037 002310      104:    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      124          ;IF NO ERROR READING IT, PROCEED
7526 027732          ERROR          ;ELSE, REPORT IT
(3) 027732 104460          TRAP      C!ERROR
7527 027734          ESCAPE TST          I      & QUIT          TRAP      C!ESCAPE
(3) 027734 104410          .WORD      L10064-.
(3) 027736 000136
7528
7529 027740 123737 002312 002310      124:    CMPB     BDATA,GDATA          ;DID IT GET CLEARE?
7530 027746 001407          BEQ      144          ;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)          ; "DEVICE FATAL" ERROR # 42
(6) 027756 104455          TRAP      C!ERDF
(7) 027760 000052          .WORD      42
(7) 027762 014527          .WORD      EMS
(7) 027764 006624          .WORD      ERR7
7533
7534 027766 012737 000377 002310      144:    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      164          ;IF OK, PROCEED WITH TESTING
7543 030014          ERROR          ;ELSE, REPORT THE ERROR
(3) 030014 104460          TRAP      C!ERROR
7544 030016          ESCAPE TST          I      & QUIT          TRAP      C!ESCAPE
(3) 030016 104410          .WORD      L10064-.
(3) 030020 000054
7545
7546 030022 005037 002310      164:    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      184          ;IF NO ERROR READING IT, PROCEED
7551 030040          ERROR          ;ELSE, REPORT IT
(3) 030040 104460          TRAP      C!ERROR
7552 030042          ESCAPE TST          I      & QUIT          TRAP      C!ESCAPE
(3) 030042 104410          .WORD      L10064-.
(3) 030044 000030
7553
7554 030046 123737 002310 002312      184:    CMPB     GDATA,BDATA          ;WAS IT PROPERLY RESET?
7555 030054 001407          BEQ      324          ;YES, THIS TEST IS DONE, EXIT
7556 030056 012737 000000 002334          MOV      @ORB<17>,REGNUM          ;NO! BUILD REGISTER # POINTER

```

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TEST 20 -- VIA'S ORB/DOOB MASTER CLEAR TEST

```

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

```

```

TRAP      C$ERDF
.WORD     43
.WORD     EM5
.WORD     ERR7

```

(3) 030074 104401

(3) 030074

TRAP C3ETST

CVDMACO DMV11 MCTRL DIAG #1
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TEST 21 -- VIA'S DDRB MASTER CLEAR TEST

```

7573 .SBTTL TEST 21 -- VIA'S DDRB MASTER CLEAR TEST
(2)
(2)
(2)
(2)
(2)
(3)
(3)
(3)
(3)
(3)
(3)
(3)
(3)
(3)
(2)
(2)
(2)
(2)
(5) 030076
7574
7575 030076 004737 003774 JSR PC,MSTCLR ;INIT DMV & START UP THE MAINT. LOOP
7576 030102 103003 BCC 10 ;IF AN ERROR OCCURED,
7577 030104 104460 ERROR ;REPORT IT &
(3) 030104 104460 TRAP C$ERROR
7578 030106 104410 ESCAPE TST ; EXIT
(3) 030106 104410 TRAP C$ESCAPE
(3) 030110 000114 .WORD L10065-.
7579
7580 030112 012737 000377 002310 10: MOV #377,GDATA ;SETUP FOR CALL TO STREG
7581 030120 013737 002310 002306 MOV GDATA,TDATA
7582 030126 012700 120002 MOV #DDRB,R0
7583
7584 ; NOW WE'LL USE "STREG" TO SET & CHECK "DDRB"
7585
7586 030132 004737 005046 JSR PC,STREG ;LOAD & TEST "DDRB"
7587 030136 103003 BCC 50 ;IF NO ERROR HERE, PROCEED
7588 030140 104460 ERROR ;ELSE, REPORT IT
(3) 030140 104460 TRAP C$ERROR
7589 030142 104410 ESCAPE TST ; & QUIT
(3) 030142 104410 TRAP C$ESCAPE
(3) 030144 000060 .WORD L10065-.
7590
7591 030146 004737 003774 50: JSR PC,MSTCLR ;ISSUE THE MASTER CLEAR (STAY IN M-LOOP)
7592 030152 103003 BCC 100 ;IF NO ERROR HERE, PROCEED
7593 030154 104460 ERROR ;ELSE, REPORT IT
(3) 030154 104460 TRAP C$ERROR
7594 030156 104410 ESCAPE TST ; & QUIT
(3) 030156 104410 TRAP C$ESCAPE
(3) 030160 000044 .WORD L10065 .
7595
7596 030162 005037 002310 100: CLR GDATA ;FOR TESTING PURPOSES LATER
7597 030166 004537 004076 JSR R5,READ ;NOW READ THE "RESET" VALUE OF "DDRB"
7598 030172 120002 DDRB
7599 030174 002312 BDATA
7600
7601 030176 123737 002310 002312 CMPB GDATA,BDATA ;WAS IT PROPERLY RESET?

```

CVDMACO DMV11 MCTRL DIAG #1
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TEST 21 -- VIA'S DDRB MASTER CLEAR TEST

7602	030204	001407		BEG	324		YES, THIS TEST IS DONE, EXIT
7603	030206	012737	000002 002334	MOV	#DDRBE<17>,REGNUM		NO! BUILD REGISTER # POINTER
7604	030214			GEDF	EMS,ERR7		REPORT MASTER CLEAR FAILURE
(2)							"DEVICE FATAL" ERROR # 44
(6)	030214	104455					TRAP C1ERDF
(7)	030216	000054					.WORD 44
(7)	030220	014527					.WORD EMS
(7)	030222	006624					.WORD ERR7
7605							
7606	030224			324:	ENDTST		
(3)	030224					L10065:	
(3)	030224	104401				TRAP	C1ETST

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TEST 22 -- VIA'S DDRA MASTER CLEAR TEST

7617
(2)
(2)
(2)
(2)
(2)
(3)
(3)
(3)
(3)
(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.
;*
*****

```

BGNTST

T22::

7618
7619
7620
7621
(3)
7622
(3)
(3)
7623
7624
7625
7626
7627
7628
7629
7630
7631
7632
(3)
7633
(3)
(3)
7634
7635
7636
7637
(3)
7638
(3)
(3)
7639
7640
7641
7642
7643
7644
7645
7646
7647
7648

030226

030226	004737	003774
030232	103003	
030234		
030234	104460	
030236		
030236	104410	
030240	000114	

```
JSR      PC,MSTCLR
BCC      14
ERROR
```

```
;INIT DMV & START UP THE MAINT. LOOP
;IF AN ERROR OCCURED,
;REPORT IT &
```

TRAP C\$ERROR

ESCAPE TST

```

; EXIT

```

TRAP C\$ESCAPE
.WORD L10066-.

030242	012737	000377	002310
030250	013737	002310	002306
030256	012700	120003	

```
14:  MOV    #377,GDATA      ;SETUP FOR CALL TO STREG
      MOV    GDATA,TDATA
      MOV    #DDRA,RO
```

; NOW WE'LL USE "STREG" TO SET & CHECK "DDRA"

030262	004737	005046
030266	103003	
030270		
030270	104460	
030272		
030272	104410	
030274	000060	

```
JSR      PC,STREG
BCC      54
ERROR
```

```

;LOAD & TEST "DORA"
;IF NO ERROR HERE, PROCEED
;ELSE, REPORT IT

```

TRAP C\$ERROR

ESCAPE TST

1 EQUIT

```

TRAP      C$ESCAPE
.WORD     L10066-.

```

030276	004737	003774
030302	103003	
030304		
030304	104460	
030306		
030306	104410	
030310	000044	

```
54:      JSR      PC,MSTCLR
        BCC      104
        ERROR
```

```

;ISSUE THE MASTER CLEAR (STAY IN M-LOOP)
;IF NO ERROR HERE, PROCEED
;ELSE, REPORT IT

```

TRAP C\$ERROR

ESCAPE TST

I QUIT

TRAP C\$ESCAPE
.WORD L10066-.

030312 005037 002310
030316 004537 004076
030322 120003
030324 002312

```

104: CLR      GDATA
      JSR      R5,READ
      DDRA
      BDATA

```

```

;FOR TESTING PURPOSES LATER
;NOW READ THE "RESET" VALUE OF "DDRA"

```

030326	123737	002310	002312
030334	001407		
030336	012737	000003	002334
030344			

```

CMPB      GDATA,BDATA
BEQ       324
MOV       @DDRAE<17>,
GEDE      EMS.ERR7

```

```

; WAS IT PROPERLY RESET?
; YES, THIS TEST IS DONE. EXIT
; NO! BUILD REGISTER # POINTER
; REPORT MASTER CLEAR FAILURE

```

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TEST 22 -- VIA'S DDRA MASTER CLEAR TEST

;"DEVICE FATAL" ERROR # 45

(2)
(6) 030344 104455
(7) 030346 000055
(7) 030350 014527
(7) 030352 006624

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

7649

7650 030354

324: ENDTST

L10066:

(3) 030354

(3) 030354 104401

TRAP C\$ETST

CVDMACO DMV11 MCTRL DIAG #1
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TEST 23 -- VIA'S SR MASTER CLEAR TEST

```

7661 .SBTTL TEST 23 -- VIA'S SR MASTER CLEAR TEST
(2)
(2)
(2)
(2)
(2)
(3)
(3)
(3)
(3)
(3)
(2)
(2)
(2)
(2)
(5) 030356
7662
7663 030356 004737 003774 JSR PC,MSTCLR ;INIT DMV & START UP THE MAINT. LOOP
7664 030362 103003 BCC 10 ;IF AN ERROR OCCURED,
7665 030364 104460 ERROR ;REPORT IT &
(3) 030364 104460 TRAP C$ERROR
7666 030366 ESCAPE TST ; EXIT
(3) 030366 104410 TRAP C$ESCAPE
(3) 030370 000120 .WORD L10067-.
7667
7668 030372 004537 004334 10: JSR R5,WRITEI ;FORCE SR TO MODE 0
7669 030376 120013 ACR
7670 030400 000000 0
7671 030402 012737 000123 002310 MOV #123,GDATA ;SETUP FOR CALL TO STREG
7672 030410 013737 002310 002306 MOV GDATA,TDATA
7673 030416 012700 120012 MOV #SR,R0
7674
7675 ; NOW WE'LL USE "STREG" TO SET & CHECK "SR"
7676
7677 030422 004737 005046 JSR PC,STREG ;LOAD & TEST "SR"
7678 030426 103003 BCC 50 ;IF NO ERROR HERE, PROCEED
7679 030430 104460 ERROR ;ELSE, REPORT IT
(3) 030430 104460 TRAP C$ERROR
7680 030432 104410 ESCAPE TST ; & QUIT
(3) 030432 000054 TRAP C$ESCAPE
(3) 030434 000054 .WORD L10067-.
7681
7682 030436 004737 003774 50: JSR PC,MSTCLR ;ISSUE THE MASTER CLEAR (STAY IN M-LOOP)
7683 030442 103003 BCC 100 ;IF NO ERROR HERE, PROCEED
7684 030444 104460 ERROR ;ELSE, REPORT IT
(3) 030444 104460 TRAP C$ERROR
7685 030446 104410 ESCAPE TST ; & QUIT
(3) 030446 000040 TRAP C$ESCAPE
(3) 030450 000040 .WORD L10067-.
7686
7687 030452 004537 004076 100: JSR R5,READ ;NOW READ THE "RESET" VALUE OF "SR"
7688 030456 120012 SR ; (IT SHOULDN'T HAVE CHANGED)
7689 030460 002312 BDATA
7690
7691 030462 123737 002310 002312 CMPB GDATA,BDATA ;WAS IT PROPERLY RESET?
7692 030470 001407 BEQ 320 ;YES, THIS TEST IS DONE, EXIT

```

CVDMAC0 DMV11 MCTRL DIAG #1 MACY11 30A(1052) 16-AUG-84 14:51 PAGE 73-1
CVDMAC.P11 16-AUG-84 13:59 TEST 23 -- VIA'S SR MASTER CLEAR TEST

7693	030472	012737	000012	002334	MOV	#SR&<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
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TEST 24 -- VIA'S ACR MASTER CLEAR TEST

```

7707 .SBTTL TEST 24 -- VIA'S ACR MASTER CLEAR TEST
(2)
(2)
(2)
(2)
(2)
(3)
(3)
(3)
(3)
(3)
(2)
(2)
(2)
(2)
(5) 030512
7708
7709 030512 004737 003774 JSR PC,MSTCLR ;INIT DMV & START UP THE MAINT. LOOP
7710 030516 103003 BCC 1$ ;IF AN ERROR OCCURED,
7711 030520 ERROR ;REPORT IT &
(3) 030520 104460 TRAP C$ERROR
7712 030522 ESCAPE TST ; EXIT TRAP C$ESCAPE
(3) 030522 104410 .WORD L10070-.
(3) 030524 000114
7713
7714 030526 012737 000252 002310 1$: MOV #252,GDATA ;SETUP FOR CALL TO STREG
7715 030534 013737 002310 002306 MOV GDATA,TDATA
7716 030542 012700 120013 MOV #ACR,R0
7717
7718 ; NOW WE'LL USE "STREG" TO SET & CHECK "ACR"
7719
7720 030546 004737 005046 JSR PC,STREG ;LOAD & TEST "ACR"
7721 030552 103003 BCC 5$ ;IF NO ERROR HERE, PROCEED
7722 030554 ERROR ;ELSE, REPORT IT
(3) 030554 104460 TRAP C$ERROR
7723 030556 ESCAPE TST ; & QUIT TRAP C$ESCAPE
(3) 030556 104410 .WORD L10070-.
(3) 030560 000060
7724
7725 030562 004737 003774 5$: JSR PC,MSTCLR ;ISSUE THE MASTER CLEAR (STAY IN M-LOOP)
7726 030566 103003 BCC 10$ ;IF NO ERROR HERE, PROCEED
7727 030570 ERROR ;ELSE, REPORT IT
(3) 030570 104460 TRAP C$ERROR
7728 030572 ESCAPE TST ; & QUIT TRAP C$ESCAPE
(3) 030572 104410 .WORD L10070-.
(3) 030574 000044
7729
7730 030576 005037 002310 10$: CLR GDATA ;FOR TESTING PURPOSES LATER
7731 030602 004537 004076 JSR R5,READ ;NOW READ THE "RESET" VALUE OF "ACR"
7732 030606 120013 ACR
7733 030610 002312 BDATA
7734
7735 030612 123737 002310 002312 CMPB GDATA,BDATA ;WAS IT PROPERLY RESET?
7736 030620 001407 BEQ 32$ ;YES, THIS TEST IS DONE, EXIT
7737 030622 012737 000013 002334 MOV #ACR<17>,REGNUM ;NO! BUILD REGISTER & POINTER
7738 030630 GEDF EMS,ERR7 ;REPORT MASTER CLEAR FAILURE

```

K12

SEQ 153

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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

! "DEVICE FATAL" ERROR # 47

```

TRAP      C$ERDF
.WORD     47
.WORD     EM5
.WORD     ERR7

```

324: ENDTST

L10070:

TRAP CSETST

CVDMAC0 DMV11 MCTRL DIAG #1
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TEST 25 -- VIA'S PCR MASTER CLEAR TEST

.SBTTL TEST 25 -- VIA'S PCR MASTER CLEAR TEST

```

*****
;*
;*      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.
;-----

```

; BGNTST

T25::

```

7751 (2)
7752 (2)
7753 (2)
7754 (2)
7755 (2)
7756 (3)
7757 (3)
7758 (3)
7759 (2)
7760 (2)
7761 (2)
7762 (2)
7763 (5) 030642
7752 030642 004737 003774 JSR PC,MSTCLR ;INIT DMV & START UP THE MAINT. LOOP
7753 030646 103003 BCC 10 ;IF AN ERROR OCCURED,
7754 030650 ERROR ;REPORT IT &
7755 030650 104460 TRAP C#ERROR
7756 030652 ESCAPE TST ; EXIT
7757 030652 104410 TRAP C#ESCAPE
7758 030654 000114 .WORD L10071-.
7759 030656 012737 000377 002310 10: MOV #377,GDATA ;SETUP FOR CALL TO STREG
7760 030664 013737 002310 002306 MOV GDATA,TDATA
7761 030672 012700 120014 MOV #PCR,R0
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
7767 030704 104460 TRAP C#ERROR
7768 030706 ESCAPE TST ; & QUIT
7769 030706 104410 TRAP C#ESCAPE
7770 030710 000060 .WORD L10071-.
7771 030712 004737 003774 50: JSR PC,MSTCLR ;ISSUE THE MASTER CLEAR (STAY IN M-LOOP)
7772 030716 103003 BCC 100 ;IF NO ERROR HERE, PROCEED
7773 030720 104460 ERROR ;ELSE, REPORT IT
7774 030722 ESCAPE TST ; & QUIT
7775 030722 104410 TRAP C#ESCAPE
7776 030724 000044 .WORD L10071-.
7777 030726 005037 002310 100: CLR GDATA ;FOR TESTING PURPOSES LATER
7778 030732 004537 004076 JSR R5,READ ;NOW READ THE "RESET" VALUE OF "PCR"
7779 030736 120014 PCR BDATA
7780 030740 002312
7781 030742 123737 002310 002312 CMPB GDATA,BDATA ;WAS IT PROPERLY RESET?
7782 030750 001407 BEQ 320 ;YES, THIS TEST IS DONE, EXIT
7783 030752 012737 000014 002334 MOV #PCR<17>,REGNUM ;NO! BUILD REGISTER # POINTER
7784 030760 GE0F EMS,ERR7 ;REPORT MASTER CLEAR FAILURE

```

M12

SEQ 155

CVDMACO DMV11 MCTRL DIAG #1
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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

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

7783
7784 030770
(3) 030770
(3) 030770 104401

324: ENDTST

L10071:
TRAP C#ETST

CVDMACO DMV11 MCTRL DIAG #1
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TEST 26 -- VIA'S IER MASTER CLEAR TEST

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

```

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

```

BGNTST

T26::

```

7795 (2)
7796 (2)
7797 (2)
7798 (2)
7799 (2)
7800 (3)
7801 (3)
7802 (3)
7803 (2)
7804 (2)
7805 (2)
7806 (5) 030772
7796 030772 004737 003774 JSR PC,MSTCLR ;INIT DMV & START UP THE MAINT LOOP
7798 030776 103003 BCC 10 ;IF AN ERROR OCCURED,
7799 031000 104460 ERROR ;REPORT IT &
7800 031002 ESCAPE TST ; EXIT TRAP C$ERROR
7801 031002 104410 TRAP C$ESCAPE
7802 031004 000122 .WORD L10072-.
7803 031006 105077 151340 10: CLRB 00SELO ;MAKE SURE NO Q-BUS INTERRUPTS RESULT FROM
7804 031012 012737 000377 002310 MOV #377,GDATA ; TESTING THE IER REGISTER
7805 031020 013737 002310 002306 MOV GDATA,TDATA ;SETUP FOR CALL TO STREG
7806 031026 012700 120016 MOV #IER,R0
7807 ; NOW WE'LL USE "STREG" TO SET & CHECK "IER"
7808 JSR PC,STREG ;LOAD & TEST "IER"
7809 BCC 50 ;IF NO ERROR HERE, PROCEED
7810 031032 004737 005046 ERROR ;ELSE, REPORT IT
7811 031036 103003
7812 031040 104460 TRAP C$ERROR
7813 031042 ESCAPE TST ; & QUIT
7814 031042 104410 TRAP C$ESCAPE
7815 031044 000062 .WORD L10072-.
7816 031046 004737 003774 50: JSR PC,MSTCLR ;ISSUE THE MASTER CLEAR (STAY IN M-LOOP)
7817 031052 103003 BCC 100 ;IF NO ERROR HERE, PROCEED
7818 031054 104460 ERROR ;ELSE, REPORT IT
7819 031056 104410 TRAP C$ERROR
7820 031060 000046 ESCAPE TST ; & QUIT
7821 031062 000200 002310 100: MOV #200,GDATA ;FOR TESTING PURPOSES LATER
7822 031070 004537 004076 JSR R5,READ ;NOW READ THE "RESET" VALUE OF "IER"
7823 031074 120016 IENR
7824 031076 002312 BDATA
7825 031100 123737 002310 002312 CMPB GDATA,BDATA ;WAS IT PROPERLY RESET?
7826 031106 001407 BEQ 320 ;YES, THIS TEST IS DONE, EXIT

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CVDMACO DMV11 MCTRL DIAG #1 MACY11 30A(1052) 16-AUG-84 14:51 PAGE 76-1
 CVDMAC.P11 16-AUG-84 13:59 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						L10072:
(3)	031126	104401					TRAP C#ETST
7831							

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TEST 27 -- VIA TIMER @ 1 ONE-SHOT MODE

.SBITL TEST 27 -- VIA TIMER 0 1 ONE-SHOT MODE

TEST 27 -- VIA TIMER # 1 ONE-SHOT MODE

THIS TEST VERIFIES THAT THE TIMER 1 COUNTER IS OPERATIONAL IN ONE-SHOT MODE. IN EACH OF TWO SUBTESTS.

IN THE FIRST SUBTEST, THE FOLLOWING IS PERFORMED :

A MASTER CLEAR IS DONE AND THE TIMER IS PLACED IN ONE-SHOT MODE BY SETTING BOTH ACR7 & ACR6 TO 0.

THE PROGRAM CHECKS FOR THE "T1" FLAG (BIT 6) IN THE IFR TO BE INITIALLY CLEARED.

T1L-L (ADR 04) & T1C-H (ADR 05) ARE BOTH LOADED WITH 252 (OCTAL). (THIS IS EQUIVALENT TO AAAA (HEX) OR 43,690 (DECIMAL).) LOADING T1C-H STARTS THE COUNTER.

THE PROGRAM PERIODICALLY CHECKS THE COUNTER TO VERIFY THAT IT IS DECREMENTING AND THAT IT EVENTUALLY UNDERFLOWS PAST 0 AND CONTINUES TO DECREMENT.

T1L-L (ADR 04) IS LOADED WITH 001 & T1C-H (ADR 05) IS LOADED WITH 000 IN ORDER TO SET "T1" WITH A QUICK UNDERFLOW. THE "T1" FLAG BIT IN IFR IS READ AND CHECKED TO BE SET.

T1C-H, T1L-L, & T1L-H (ADDR'S 05, 06, & 07 RESP.) ARE READ AND AFTER EACH THE "T1" INTERRUPT FLAG IS CHECKED TO BE STILL SET.

T1C-L (ADDR 04) IS READ AND "T1" IS CHECKED TO BE CLEARED.

T1C-H IS LOADED WITH 0 AGAIN TO INITIATE A NEW COUNT DOWN (WHICH SHOULD UNDERFLOW ALMOST IMMEDIATELY) AND THE "T1" BIT IN IFR IS CHECKED TO BE SET AGAIN.

T1L-L IS LOADED WITH 125 (OCTAL) AND "T1" BIT IS CHECKED TO BE STILL SET.

T1C-H IS LOADED WITH 125, AND THE "T1" BIT IS READ AND CHECKED TO BE CLEARED BY THE LOADING OF T1C-H.

IN THE SECOND SUBTEST, ALL OF THE ABOVE OPERATIONS ARE REPEATED, WITH ACR BIT 7 SET TO 1, AND ACR BIT 6 SET TO 0. "PB7" (BIT 7 OF ORB) WILL BE MONITORED FOR ITS EXPECTED LEVELS DURING THIS SUBTEST.

127::

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TRAP C:BSUB

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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     14              ;IF NO ERROR, PROCEED WITH TESTING
7884 031140              ERROR              ;ELSE, REPORT ERROR
      (3) 031140 104460              TRAP    C#ERROR
7885 031142              ESCAPE TST        ;    & EXIT TEST
      (3) 031142 104410              TRAP    C#ESCAPE
      (3) 031144 004742              .WORD   L10073-.
7886 031146 004537 004672      14: JSR     R5,INITT1      ;INITIALIZE TIMER # 1
7887 031152 000000              0              ;    0 ==> 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              TRAP    C#ERROR
7891 031162              ESCAPE TST        ;    AND EXIT THIS TEST
      (3) 031162 104410              TRAP    C#ESCAPE
      (3) 031164 004722              .WORD   L10073-.
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   L10074-.
7895 031200 103143              BCC     64
7896 031202 004537 004076      JSR     R5,READ      ;NO, GOOD.
7897 031206 120004              T1CL              ;GET T1CL FOR ERROR MESSAGE
7898 031210 002450              TMP4
7899 031212 103003              BCC     .+10      ;IF NO ERROR, PROCEED
7900 031214              ERROR              ;ELSE, REPORT IT
      (3) 031214 104460              TRAP    C#ERROR
7901 031216              ESCAPE TST        ;    AND EXIT THIS TEST
      (3) 031216 104410              TRAP    C#ESCAPE
      (3) 031220 004666              .WORD   L10073-.
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              TRAP    C#ERROR
7907 031236              ESCAPE TST        ;    AND EXIT THIS TEST
      (3) 031236 104410              TRAP    C#ESCAPE
      (3) 031240 004646              .WORD   L10073-.
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              TRAP    C#ERROR
7913 031256              ESCAPE TST        ;    AND EXIT THIS TEST
      (3) 031256 104410              TRAP    C#ESCAPE
      (3) 031260 004626              .WORD   L10073-.
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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TEST 27 -- VIA TIMER # 1 ONE-SHOT MODE

PC	Address	Hex	Label	Op	Op2	Op3	Op4	Op5	Op6	Op7	Op8	Op9	Op10	Op11	Op12	Op13	Op14	Op15	Op16	Op17	Op18	Op19	Op20	Op21	Op22	Op23	Op24	Op25	Op26	Op27	Op28	Op29	Op30	Op31	Op32	Op33	Op34	Op35	Op36	Op37	Op38	Op39	Op40	Op41	Op42	Op43	Op44	Op45	Op46	Op47	Op48	Op49	Op50	Op51	Op52	Op53	Op54	Op55	Op56	Op57	Op58	Op59	Op60	Op61	Op62	Op63	Op64	Op65	Op66	Op67	Op68	Op69	Op70	Op71	Op72	Op73	Op74	Op75	Op76	Op77	Op78	Op79	Op80	Op81	Op82	Op83	Op84	Op85	Op86	Op87	Op88	Op89	Op90	Op91	Op92	Op93	Op94	Op95	Op96	Op97	Op98	Op99	Op100	Op101	Op102	Op103	Op104	Op105	Op106	Op107	Op108	Op109	Op110	Op111	Op112	Op113	Op114	Op115	Op116	Op117	Op118	Op119	Op120	Op121	Op122	Op123	Op124	Op125	Op126	Op127	Op128	Op129	Op130	Op131	Op132	Op133	Op134	Op135	Op136	Op137	Op138	Op139	Op140	Op141	Op142	Op143	Op144	Op145	Op146	Op147	Op148	Op149	Op150	Op151	Op152	Op153	Op154	Op155	Op156	Op157	Op158	Op159	Op160	Op161	Op162	Op163	Op164	Op165	Op166	Op167	Op168	Op169	Op170	Op171	Op172	Op173	Op174	Op175	Op176	Op177	Op178	Op179	Op180	Op181	Op182	Op183	Op184	Op185	Op186	Op187	Op188	Op189	Op190	Op191	Op192	Op193	Op194	Op195	Op196	Op197	Op198	Op199	Op200	Op201	Op202	Op203	Op204	Op205	Op206	Op207	Op208	Op209	Op210	Op211	Op212	Op213	Op214	Op215	Op216	Op217	Op218	Op219	Op220	Op221	Op222	Op223	Op224	Op225	Op226	Op227	Op228	Op229	Op230	Op231	Op232	Op233	Op234	Op235	Op236	Op237	Op238	Op239	Op240	Op241	Op242	Op243	Op244	Op245	Op246	Op247	Op248	Op249	Op250	Op251	Op252	Op253	Op254	Op255	Op256	Op257	Op258	Op259	Op260	Op261	Op262	Op263	Op264	Op265	Op266	Op267	Op268	Op269	Op270	Op271	Op272	Op273	Op274	Op275	Op276	Op277	Op278	Op279	Op280	Op281	Op282	Op283	Op284	Op285	Op286	Op287	Op288	Op289	Op290	Op291	Op292	Op293	Op294	Op295	Op296	Op297	Op298	Op299	Op300	Op301	Op302	Op303	Op304	Op305	Op306	Op307	Op308	Op309	Op310	Op311	Op312	Op313	Op314	Op315	Op316	Op317	Op318	Op319	Op320	Op321	Op322	Op323	Op324	Op325	Op326	Op327	Op328	Op329	Op330	Op331	Op332	Op333	Op334	Op335	Op336	Op337	Op338	Op339	Op340	Op341	Op342	Op343	Op344	Op345	Op346	Op347	Op348	Op349	Op350	Op351	Op352	Op353	Op354	Op355	Op356	Op357	Op358	Op359	Op360	Op361	Op362	Op363	Op364	Op365	Op366	Op367	Op368	Op369	Op370	Op371	Op372	Op373	Op374	Op375	Op376	Op377	Op378	Op379	Op380	Op381	Op382	Op383	Op384	Op385	Op386	Op387	Op388	Op389	Op390	Op391	Op392	Op393	Op394	Op395	Op396	Op397	Op398	Op399	Op400	Op401	Op402	Op403	Op404	Op405	Op406	Op407	Op408	Op409	Op410	Op411	Op412	Op413	Op414	Op415	Op416	Op41
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CVDMACO DMV11 MCTRL DIAG #1
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TEST 27 -- VIA TIMER # 1 ONE-SHOT MODE

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							
(3)	031450	104410					TRAP	C#ESCAPE
(3)	031452	004434					.WORD	L10073-.
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		
(3)	031466	104460		ESCAPE	TST	; AND EXIT THIS TEST	TRAP	C#ERROR
7959	031470							
(3)	031470	104410					TRAP	C#ESCAPE
(3)	031472	004414					.WORD	L10073-.
7960	031474			GEDF	EM508,ERR50	;YES, REPORT IT'S NOT BEING CLEARED @ INIT.		
(2)						; "DEVICE FATAL" ERROR # 51		
(6)	031474	104455					TRAP	C#ERDF
(7)	031476	000063					.WORD	51
(7)	031500	016147					.WORD	EM508
(7)	031502	010774					.WORD	ERR50
7961	031504			ESCAPE	SUB	;AND EXIT SUBTEST		
(3)	031504	104410					TRAP	C#ESCAPE
(3)	031506	001672					.WORD	L10074-.
7962								
7963								
7964								
7965	031510	004537	004076	66:	JSR	R5,READ		;GET ACP 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
(3)	031522	104460		ESCAPE	TST	; AND EXIT THIS TEST	TRAP	C#ERROR
7970	031524							
(3)	031524	104410					TRAP	C#ESCAPE
(3)	031526	004360					.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		ORB				
7974	031544	002445		TMP2+1				
7975	031546	103003		BCC	.+10	;IF NO ERROR, PROCEED		
7976	031550			ERROR		;ELSE, REPORT IT		
(3)	031550	104460		ESCAPE	TST	; AND EXIT THIS TEST	TRAP	C#ERROR
7977	031552							
(3)	031552	104410					TRAP	C#ESCAPE
(3)	031554	004332					.WORD	L10073-.
7978	031556	112737	000377 002441	MOVB	#377,TMP0+1	;SETUP VALUE FOR ORB		
7979	031564	004537	004322	JSR	R5,WRITE	;DO IT		
7980	031570	120000		ORB				
7981	031572	002441		TMP0+1				
7982	031574	103003		BCC	.+10	;IF NO ERROR, PROCEED		
7983	031576			ERROR		;ELSE, REPORT IT		
(3)	031576	104460		ESCAPE	TST	; AND EXIT THIS TEST	TRAP	C#ERROR
7984	031600							
(3)	031600	104410					TRAP	C#ESCAPE
(3)	031602	004304					.WORD	L10073-.

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TEST 27 -- VIA TIMER # 1 ONE-SHOT MODE

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7985 031604 004537 036110      JSR      R5,LODT1C      ;LOAD TIMER # 1
7986 031610      252      74:      .BYTE      252
7987 031611      252      84:      .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$ESCAPEF
      (3) 031622 001556      .WORD      L10074-.
7994 031624 103404      BCS      94      ;IT IS. (SET BY LOADING DOR8 & OR8 ABOVE)
7995 031626      GEDF      EM50W,ERR1      ;IF NOT, TIMER 1 CLEARED IT!!!
      (2)      ; "DEVICE FATAL" ERROR # 52
      (6) 031626 104455      TRAP      C$EROF
      (7) 031630 000064      .WORD      52
      (7) 031632 017317      .WORD      EM50W
      (7) 031634 005310      .WORD      ERR1
7996 031636 004737 036200      94:      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      T1CL
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      TMP4,74      ;MAKE SURE THE COUNTER IS DECREMENTING
8012 031706 001024      BNE      124      ;IT IS, NOW SEE IF THE HIGH COUNTER IS TOO
8013 031710 004537 004076      JSR      R5,READ      ;GET T1CH FOR ERROR MESSAGE
8014 031714 120005      T1CH
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 T1LL FOR ERROR MESSAGE
8020 031734 120006      T1LL
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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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	EM50D,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	EM50D
(7)	031756	010774					.WORD	ERR50
8026	031760	012703	000100	12:	MOV	#100,R3		
8027	031764	004537	004076	13:	JSR	R5,READ		
8028	031770	120005			T1CH			
8029	031772	002452			TMP5			
8030	031774	103003			BCC	.+10		
8031	031776				ERROR			
(3)	031776	104460						
8032	032000				ESCAPE	TST	:	AND EXIT THIS TEST
(3)	032000	104410					TRAP	C#ERROR
(3)	032002	004104					.WORD	C#ESCAPE
8033	032004	123737	002452	03:611	CMPB	TMP5,8:		DID IT CHANGE FROM THE LOADED VALUE?
8034	032012	001037			BNE	17:		YES, PROCEED WITH TESTING
8035	032014	077315			SQB	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						
8041	032032				ESCAPE	TST	:	AND EXIT THIS TEST
(3)	032032	104410					TRAP	C#ERROR
(3)	032034	004052					.WORD	C#ESCAPE
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						
8047	032052				ESCAPE	TST	:	AND EXIT THIS TEST
(3)	032052	104410					TRAP	C#ERROR
(3)	032054	004032					.WORD	C#ESCAPE
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						
8053	032072				ESCAPE	TST	:	AND EXIT THIS TEST
(3)	032072	104410					TRAP	C#ERROR
(3)	032074	004012					.WORD	C#ESCAPE
8054	032076				GEDF	EM50E,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	EM50E
(7)	032104	010774					.WORD	ERR50
8055	032106				ESCAPE	SUB		IN THAT CASE, WE CAN'T PROCEED WITH TESTING EITHER

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TEST 27 -- VIA TIMER # 1 ONE-SHOT MODE

(3)	032106	104410						TRAP	C#ESCAPE
(3)	032110	001270						.WORD	L10074-.
8056									
8057									
8058	032112	112737	000377	002445	174:	MOVB	#377,TMP2+1		;INITIALIZE ORB FOR INPUT/OUTPUT
8059	032120	004537	004322			JSR	R5,WRITE		
8060	032124	120002				DJRB			
8061	032126	002445				TMP2+1			
8062	032130	103003				BCC	.+10		;IF NO ERROR, PROCEED
8063	032132					ERROR			;ELSE, REPORT IT
(3)	032132	104460				ESCAPE	TST		; AND EXIT THIS TEST
8064	032134							TRAP	C#ERROR
(3)	032134	104410							
(3)	032136	003750						TRAP	C#ESCAPE
8065	032140	123737	002440	002441		CMPB	TMP0,TMP0+1		;CLEAR PB7 BY WRITING INTO ORB
8066	032146	004537	004334			JSR	R5,WRITEI		
8067	032152	120000				ORB			
8068	032154	000030				30			; (THIS CLEARS DTR & RTS! ALSO)
8069	032156	103003				BCC	.+10		;IF NO ERROR, PROCEED
8070	032160					ERROR			;ELSE, REPORT IT
(3)	032160	104460				ESCAPE	TST		; AND EXIT THIS TEST
8071	032162							TRAP	C#ERROR
(3)	032162	104410							
(3)	032164	003722						TRAP	C#ESCAPE
8072	032166	004537	036110			JSR	R5,LODT1C		;RE-LOAD TIMER # 1 WITH A VALUE WHICH CAUSE AN
8073	032172	001		184:		.BYTE	1		;ALMOST IMMEDIATE TIMEOUT
8074	032173	000		194:		.BYTE	0		; (ADDRESS OF HIGH BYTE FOR T1C-H (ADDR 05))
8075									
8076									
8077	032174	004737	036142			JSR	PC,GETT1		;WAS "T1" SET BY THE ABOVE OPERATION?
8078	032200	102002				BVC	.+6		;IF NO ERROR, PROCEED
8079	032202					ESCAPE	SUB		;ELSE, IT'S ALREADY BEEN REPORTED -- EXIT
(3)	032202	104410						TRAP	C#ESCAPE
(3)	032204	001174						.WORD	L10074-.
8080	032206	103426				BCS	204		;YES, OK -- CONTINUE ERROR CHECKING
8081	032210	004537	004076			JSR	R5,READ		;GET T1LH FOR ERROR MESSAGE
8082	032214	120006				TILL			
8083	032216	002454				TMP6			
8084	032220	103003				BCC	.+10		;IF NO ERROR, PROCEED
8085	032222					ERROR			;ELSE, REPORT IT
(3)	032222	104460				ESCAPE	TST		; AND EXIT THIS TEST
8086	032224							TRAP	C#ERROR
(3)	032224	104410							
(3)	032226	003660						TRAP	C#ESCAPE
8087	032230	004537	004076			JSR	R5,READ		;GET T1LM FOR ERROR MESSAGE
8088	032234	120007				T1LM			
8089	032236	002456				TMP7			
8090	032240	103003				BCC	.+10		;IF NO ERROR, PROCEED
8091	032242					ERROR			;ELSE, REPORT IT
(3)	032242	104460				ESCAPE	TST		; AND EXIT THIS TEST
8092	032244							TRAP	C#ERROR
(3)	032244	104410							
(3)	032246	003640						TRAP	C#ESCAPE
8093	032250					GEDF	EM50F,ERR50		;NO, BAD NEWS! REPORT THE FAILURE
(2)									; "DEVICE FATAL" ERROR # 55
(6)	032250	104455						TRAP	C#ERDF

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(7)	032252	000067					.WORD	SE
(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	204:	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	404		;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	404:	JSR	R5,READ		;READ TIC-H (ADDR 05) TO SEE IF THIS CLEARS "T1"
8113	032354	120005			TICH			; (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	214		;IF SET, READING TICH 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, REPORT IT

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TEST 27 -- VIA TIMER # 1 ONE-SHOT MODE

Address	Offset	Hex	Label	Op	Op2	Comment	Trap	Trap Word	Trap Comment
8127	032416	104460		ESCAPE	TST				C#ERROR
	032420					AND EXIT THIS TEST	TRAP		C#ERROR
	032420	104410					TRAP		C#ESCAPE
	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			
	032436	104460					TRAP		C#ERROR
8133	032440			ESCAPE	TST				
	032440	104410				AND EXIT THIS TEST	TRAP		C#ESCAPE
	032442	003444					.WORD		L10073--
8134	032444			GEDF	EM50G,ERR50	;IF CLEARED! BAD VIA CHIP!			
						; "DEVICE FATAL" ERROR # 57			
	032444	104455					TRAP		C#ERDF
	032446	000071					.WORD		57
	032450	016420					.WORD		EM50G
	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			
	032470	104460					TRAP		C#ERROR
8142	032472			ESCAPE	TST				
	032472	104410				AND EXIT THIS TEST	TRAP		C#ESCAPE
	032474	003412					.WORD		L10073--
8143	032476	123737	002454	CMPB	TMP6,18#	;CHECK T1L-L (ADDR 06) AGAINST LOADED 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			
	032520	104460					TRAP		C#ERROR
8150	032522			ESCAPE	TST				
	032522	104410				AND EXIT THIS TEST	TRAP		C#ESCAPE
	032524	003362					.WORD		L10073--
8151	032526			GEDF	EM50H,ERR50	;ELSE, REPORT BAD LOAD OF T1L-L (ADDR 06)			
						; "DEVICE FATAL" ERROR # 58			
	032526	104455					TRAP		C#ERDF
	032530	000072					.WORD		58
	032532	016462					.WORD		EM50H
	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			
	032546	104410					TRAP		C#ESCAPE
	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			

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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      ESCAPE TST      ;      AND EXIT THIS TEST      TRAP      C#ERROR
8163 032570      ;      ;      ;      TRAP      C#ESCAPE
      (3) 032570 104410      ;      ;      ;      .WORD      L10073-.
      (3) 032572 003314      GEDF      EM50I,ERR50      ;NO! BAD VIA CHIP!
8164 032574      ;      ;      ;      ;      "DEVICE FATAL" ERROR # 59
      (2)      ;      ;      ;      ;      ;      ;      TRAP      C#ERDF
      (6) 032574 104455      ;      ;      ;      ;      ;      ;      .WORD      59
      (7) 032576 000073      ;      ;      ;      ;      ;      ;      .WORD      EM50I
      (7) 032600 016550      ;      ;      ;      ;      ;      ;      .WORD      ERR50
      (7) 032602 010774      BR      28#      ;BYPASS THE REST OF THIS SECTION OF TESTING
8165 032604 000433      24# : JSR      R5,READ      ;READ T1L-H (ADDR 07)
8166      ;      ;      ;      ;      ;      ;      ;      ;      ;
8167 032606 004537 004076      T1LH      ;THIS SHOULD RETURN A 000
8168 032612 120007      TMP7      ;IF NO ERROR, PROCEED
8169 032614 002456      BCC      .+10      ;ELSE, REPORT IT
8170 032616 103003      ERROR      ;      ;      ;      TRAP      C#ERROR
8171 032620      ESCAPE TST      ;      AND EXIT THIS TEST      TRAP      C#ESCAPE
      (3) 032620 104460      ;      ;      ;      ;      ;      ;      .WORD      L10073-.
8172 032622      ;      ;      ;      ;      ;      ;      ;      ;      ;
      (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      EM50J,ERR50      ;ELSE, REPORT BAD LOAD OF T1L-H (ADDR 07)
8174 032634 001405      ;      ;      ;      ;      ;      ;      ;      ;      ;
8175 032636      ;      ;      ;      ;      ;      ;      ;      ;      ;
      (2)      ;      ;      ;      ;      ;      ;      ;      ;      ;
      (6) 032636 104455      ;      ;      ;      ;      ;      ;      ;      ;      ;
      (7) 032640 000074      ;      ;      ;      ;      ;      ;      ;      ;      ;
      (7) 032642 016612      ;      ;      ;      ;      ;      ;      ;      ;      ;
      (7) 032644 010774      BR      28#      ;BYPASS THE REST OF THIS SECTION OF TESTING
8176 032646 000412      26# : JSR      PC,GETT1      ;IS "T1" STILL SET?
8177      ;      ;      ;      ;      ;      ;      ;      ;      ;
8178 032650 004737 036142      BVC      .+6      ;IF NO ERROR, PROCEED
8179 032654 102002      ESCAPE SUB      ;ELSE, IT'S ALREADY BEEN REPORTED -- EXIT
8180 032656      ;      ;      ;      ;      ;      ;      ;      ;      ;
      (3) 032656 104410      ;      ;      ;      ;      ;      ;      ;      ;      ;
      (3) 032660 000520      BCS      28#      ;YES, ALL'S OK
8181 032662 103404      GEDF      EM50K,ERR50      ;NO! BAD VIA CHIP!
8182 032664      ;      ;      ;      ;      ;      ;      ;      ;      ;
      (2)      ;      ;      ;      ;      ;      ;      ;      ;      ;
      (6) 032664 104455      ;      ;      ;      ;      ;      ;      ;      ;      ;
      (7) 032666 000075      ;      ;      ;      ;      ;      ;      ;      ;      ;
      (7) 032670 016700      ;      ;      ;      ;      ;      ;      ;      ;      ;
      (7) 032672 010774      ;      ;      ;      ;      ;      ;      ;      ;      ;
8183      ;      ;      ;      ;      ;      ;      ;      ;      ;
8184      ;      ;      ;      ;      ;      ;      ;      ;      ;
8185      ;      ;      ;      ;      ;      ;      ;      ;      ;
8186 032674 004537 004076      28# : JSR      R5,READ      ;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      ;      ;      ;      ;      ;      ;      ;      ;      ;
      ;      ;      ;      ;      ;      ;      ;      ;      ;

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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          294          ;YES, ALL'S OK
8196 032730 004537 004076 JSR          R5,READ      ;GET T1L FOR ERROR MESSAGE
8197 032734 120006          T1LL
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 T1LH FOR ERROR MESSAGE
8203 032754 120007          T1LH
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 294: JSR          R5,WRITE      ;RE-WRITE INTO T1C H (ADDR 05) TO SET T1 AGAIN
8213 033004 120005          T1CH
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          324          ;YES, ALL'S WELL (AGAIN?)
8222 033034 004537 004076 JSR          R5,READ      ;GET T1L FOR ERROR MESSAGE
8223 033040 120006          T1LL
8224 033042 002454          TMP6
8225 033044 103003          BCC          .+10          ;IF NO ERROR, PROCEED
8226 033046          ERROR          ;ELSE, REPORT IT

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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          ESCAPE TST          ;          AND EXIT THIS TEST          TRAP    C$ERROR
8233 033070          ;          TRAP    C$ESCAPE
(3) 033070 104410          .WORD    L10073-.
(3) 033072 003014          GEDF      EMSOL,ERR50 ;NO! SOMETHING WENT WRONG! REPORT IT
8234 033074          ;          "DEVICE FATAL" ERROR # 63
(2)
(6) 033074 104455          TRAP    C$ERDF
(7) 033076 000077          .WORD    63
(7) 033100 016742          .WORD    EMSOL
(7) 033102 010774          .WORD    ERR50
8235 033104          ESCAPE SUB          ;          AND EXIT FROM THIS SUBTEST
(3) 033104 104410          TRAP    C$ESCAPE
(3) 033106 000272          .WORD    L10074-.
8236
8237 ;-----
8238
8239 033110 112737 000125 002455 32$: MOVB    #125,TMP6+1 ;USING A DIFFERENT VALUE -- 55 HEX..
8240 033116 004537 004322 JSR      R5,WRITE ;RE-LOAD T1L-L (ADDR 06)
8241 033122 120006          T1LL
8242 033124 002455          TMP6+1
8243 033126 103003          BCC      .+10          ;IF NO ERROR, PROCEED
8244 033130          ERROR          ;ELSE, REPORT IT
(3) 033130 104460          ESCAPE TST          ;          AND EXIT THIS TEST          TRAP    C$ERROR
8245 033132          ;          TRAP    C$ESCAPE
(3) 033132 104410          .WORD    L10073-.
(3) 033134 002752          JSR      PC,GETT1 ;IS "T1" STILL SET?
8246 033136 004737 036142 BVC      .+6 ;IF NO ERROR, PROCEED
8247 033142 102002          ESCAPE SUB ;ELSE, IT'S ALREADY BEEN REPORTED -- EXIT
8248 033144          TRAP    C$ESCAPE
(3) 033144 104410          .WORD    L10074-.
(3) 033146 000232          BCS      33$ ;YES, ALL'S STILL OK
8249 033150 103426          JSR      R5,READ ;GET T1LL FOR ERROR MESSAGE
8250 033152 004537 004076 T1LL
8251 033156 120006          TMP6
8252 033160 002454          BCC      .+10          ;IF NO ERROR, PROCEED
8253 033162 103003          ERROR          ;ELSE, REPORT IT
(3) 033164 104460          ESCAPE TST          ;          AND EXIT THIS TEST          TRAP    C$ERROR
8255 033166          ;          TRAP    C$ESCAPE
(3) 033166 104410          .WORD    L10073-.
(3) 033170 002716          JSR      R5,READ ;GET T1LH FOR ERROR MESSAGE
8256 033172 004537 004076 T1LH
8257 033176 120007          TMP7
8258 033200 002456          BCC      .+10          ;IF NO ERROR, PROCEED
8259 033202 103003          ERROR          ;ELSE, REPORT IT
8260 033204          TRAP    C$ERROR
(3) 033204 104460

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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      EMSOM,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      EMSOM
      (7) 033220 010774          .WORD      ERR50
8263 033222          ESCAPE SUB          ;          AND EXIT FROM THIS SUBTEST
      (3) 033222 104410          TRAP      C#ESCAPE
      (3) 033224 000154          .WORD      L10074-.
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          ;IT WAS, ALL'S WELL THAT END'S WELL (I THINK!?)
8278 033270 004537 004076          JSR      R5,READ ;GET T1CL FOR ERROR MESSAGE
8279 033274 120004          T1CL
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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TEST 27 -- VIA TIMER # 1 ONE-SHOT MODE

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(3) 033344 104410
(3) 033346 002540
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 ESCAPE TST ; AND EXIT THIS TEST
8301 033364 (3) 033364 104410 TRAP C#ERROR
(3) 033366 002520 TRAP C#ESCAPE
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 ESCAPE TST ; & EXIT TEST
8313 033414 (3) 033414 104410 TRAP C#ERROR
(3) 033416 002470 TRAP C#ESCAPE
8314 033420 004537 004672 14: JSR R5,INIT1 ;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 ESCAPE TST ; AND EXIT THIS TEST
8319 033434 (3) 033434 104410 TRAP C#ERROR
(3) 033436 002450 TRAP C#ESCAPE
8320 .WORD L10073-.
8321 ; MODE 2 IS ONE-SHOT MODE WITH OUTPUT ON PB7 CONTROLLED BY TIMER 1
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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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		
(3)	033470	104410					TRAP	C#ESCAPE
(3)	033472	002414					.WORD	L10073-.
8334	033474	004537	004076	JSR	RS,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		
(3)	033510	104410					TRAP	C#ESCAPE
(3)	033512	002374					.WORD	L10073-.
8340	033514	004537	004076	JSR	RS,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		
(3)	033530	104410					TRAP	C#ESCAPE
(3)	033532	002354					.WORD	L10073 .
8346	033534	004537	004076	JSR	RS,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		
(3)	033550	104410					TRAP	C#ESCAPE
(3)	033552	002334					.WORD	L10073-.
8352	033554	004537	004076	JSR	RS,READ	;GET T1LM FOR ERROR MESSAGE		
8353	033560	120007		T1LM				
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		
(3)	033570	104410					TRAP	C#ESCAPE
(3)	033572	002314					.WORD	L10073-.
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	RS,WRITE	;INIT TIMER # 1 BY WRITING INTO		
8364	033616	120005		T1CH		;T1C-H (ADDR 05)		
8365	033620	002453		TMP5.1				

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TEST 27 -- VIA TIMER # 1 ONE-SHOT MODE

8366	033622	103003		BCC	.+10	;IF NO ERROR, PROCEED		
8367	033624			ERROR		;ELSE, REPORT IT		
(3)	033624	104460		ESCAPE	TST	; AND EXIT THIS TEST	TRAP	C#ERROR
8368	033626						TRAP	C#ESCAPE
(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	TRAP	C#ESCAPE
(3)	033640	104410					.WORD	L10075-.
(3)	033642	002242						
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		ESCAPE	TST	; AND EXIT THIS TEST	TRAP	C#ERROR
8379	033662						TRAP	C#ESCAPE
(3)	033662	104410					.WORD	L10073-.
(3)	033664	002222						
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		ESCAPE	TST	; AND EXIT THIS TEST	TRAP	C#ERROR
8385	033702						TRAP	C#ESCAPE
(3)	033702	104410					.WORD	L10073-.
(3)	033704	002202						
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		ESCAPE	TST	; AND EXIT THIS TEST	TRAP	C#ERROR
8398	033750						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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TEST 27 -- VIA TIMER # 1 ONE SHOT MODE

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					TRAP	C\$ERROR
8404	033770			ESCAPE	TST	; AND EXIT THIS TEST		
(3)	033770	104410					TRAP	C\$ESCAPE
(3)	033772	002114					.WORD	L10073-.
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					TRAP	C\$ERROR
8410	034010			ESCAPE	TST	; AND EXIT THIS TEST		
(3)	034010	104410					TRAP	C\$ESCAPE
(3)	034012	002074					.WORD	L10073-.
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					TRAP	C\$ESCAPE
(3)	034032	002052					.WORD	L10075-.
8420	034034	103070		BCC	98	;IT IS, GOOD		
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					TRAP	C\$ERROR
8426	034052			ESCAPE	TST	; AND EXIT THIS TEST		
(3)	034052	104410					TRAP	C\$ESCAPE
(3)	034054	002032					.WORD	L10073-.
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					TRAP	C\$ERROR
8432	034072			ESCAPE	TST	; AND EXIT THIS TEST		
(3)	034072	104410					TRAP	C\$ESCAPE
(3)	034074	002012					.WORD	L10073-.
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					TRAP	C\$ERROR
8438	034112			ESCAPE	TST	; AND EXIT THIS TEST		
(3)	034112	104410					TRAP	C\$ESCAPE
(3)	034114	001772					.WORD	L10073-.
8439	034116	004537	004076	JSR	R5,READ	;GET T1LL FOR ERROR MESSAGE		

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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			ERPOR			;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		SUB	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	

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TEST 27 -- VIA TIMER # 1 ONE-SHOT MODE

(3)	034270	104410						TRAP	C#ESCAPE
(3)	034272	001614						.WORD	L10073--
8473	034274	012703	000100	124:	MOV	#100,R3	;INIT. TIMEOUT VALUE		
8474	034300	004537	004076	134:	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			ESCAPE	TST	; AND EXIT THIS TEST	TRAP	C#ERROR
8479	034314								
(3)	034314	104410						TRAP	C#ESCAPE
(3)	034316	001570						.WORD	L10073--
8480	034320	123737	002452	034021	CMPS	TMP5,84	;DID IT CHANGE FROM THE LOADED VALUE?		
8481	034326	001027			BNE	174	;YES, PROCEED WITH TESTING		
8482	034330	077315			SOB	R3,134	;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			ESCAPE	TST	; AND EXIT THIS TEST	TRAP	C#ERROR
8488	034346								
(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			ESCAPE	TST	; AND EXIT THIS TEST	TRAP	C#ERROR
8494	034366								
(3)	034366	104410						TRAP	C#ESCAPE
(3)	034370	001516						.WORD	L10073--
8495	034372				GEDE	EM50E,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	EM50E
(7)	034400	010774						.WORD	ERR50
8496	034402				ESCAPE	SUB	;IN THAT CASE, WE CAN'T PROCEED WITH TESTING EITHER	TRAP	C#ESCAPE
(3)	034402	104410						.WORD	L10075--
(3)	034404	001500							
8497									
8498									
8499	034406	112737	000377	002445	174:	MOVW	#377,TMP2+1	;SETUP DORB FOR DESIRED DIRECTION OF ORB	
8500	034414	004537	004322		JSR	R5,WRITE			
8501	034420	120002			DORB				
8502	034422	002445			TMP2+1				
8503	034424	103003			BCC	.+10	;IF NO ERROR, PROCEED		
8504	034426				ERROR		;ELSE, REPORT IT		
(3)	034426	104460			ESCAPE	TST	; AND EXIT THIS TEST	TRAP	C#ERROR
8505	034430								
(3)	034430	104410						TRAP	C#ESCAPE
(3)	034432	001454						.WORD	L10073--
8506	034434	004537	036110		JSR	R5,LOADTIC	;RE-LOAD TIMER # 1 WITH A VALUE WHICH WILL		
8507	034440	001			184:	.BYTE	1	; CAUSE AN ALMOST IMMEDIATE TIMEOUT	

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TEST 27 -- VIA TIMER # 1 ONE-SHOT MODE

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8508 034441 000      198: .BYTE 0      ; (ADDRESS OF HIGH BYTE FOR T1C-H (ADDR 05))
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$ESCAPE
      (3) 034452 001432      .WORD   L10075-.
8514 034454 103446      BCS     208      ;YES, OK -- CONTINUE ERROR CHECKING
8515 034456 004537 004076      JSR    R5,READ      ;GET T1CL FOR ERROR MESSAGE
8516 034462 120004      T1CL
8517 034464 002450      TMP4
8518 034466 103003      BCC     .+10      ;IF NO ERROR, PROCEED
8519 034470      ERROR      ;ELSE, REPORT IT
      (3) 034470 104460      TRAP    C$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$ESCAPE
      (3) 034554 001332      .WORD   L10073-.
8539 034556      GEDF    EM50F,ERR50      ;NO, BAD NEWS! REPORT THE FAILURE
      (2)                ;      "DEVICE FATAL" ERROR # 71
      (6) 034556 104455      TRAP    C$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      208: JSR    PC,GETPB7      ;GET "PB7". IS IT SET?
8542 034576 102002      BVC     .+6      ;IF NO ERROR, PROCEED

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TEST 27 -- VIA TIMER # 1 ONE-SHOT MODE

8543	034600		ESCAPE	SUB	;ELSE, IT'S ALREADY BEEN REPORTED -- EXIT		
(3)	034600	104410				TRAP	C#ESCAPE
(3)	034602	001302				.WORD	L10075--
8544	034604	103445					
8545	034606	004537	004076	BCS	414		
8546	034612	120004		JSR	R5,READ		
8547	034614	002450		T1CL			
8548	034616	103003		TMP4			
8549	034620			BCC	.+10		
(3)	034620	104460		ERROR			
8550	034622			ESCAPE	TST		
(3)	034622	104410					
(3)	034624	001262					
8551	034626	004537	004076	JSR	R5,READ		
8552	034632	120005		T1CH			
8553	034634	002452		TMP5			
8554	034636	103003		BCC	.+10		
8555	034640			ERROR			
(3)	034640	104460					
8556	034642			ESCAPE	TST		
(3)	034642	104410					
(3)	034644	001242					
8557	034646	004537	004076	JSR	R5,READ		
8558	034652	120006		T1LL			
8559	034654	002454		TMP6			
8560	034656	103003		BCC	.+10		
8561	034660			ERROR			
(3)	034660	104460					
8562	034662			ESCAPE	TST		
(3)	034662	104410					
(3)	034664	001222					
8563	034666	004537	004076	JSR	R5,READ		
8564	034672	120007		T1LH			
8565	034674	002456		TMP7			
8566	034676	103003		BCC	.+10		
8567	034700			ERROR			
(3)	034700	104460					
8568	034702			ESCAPE	TST		
(3)	034702	104410					
(3)	034704	001202					
8569	034706			GEDF	EM50S,ERR50		
(2)							
(6)	034706	104455					
(7)	034710	000110					
(7)	034712	017134					
(7)	034714	010774					
8570	034716	000562		BR	284		
8571	034720	004537	004076	JSR	R5,READ		
8572	034724	120005		T1CH			
8573	034726	002452		TMP5			
8574	034730	103003		BCC	.+10		
8575	034732			ERROR			
(3)	034732	104460					
8576	034734			ESCAPE	TST		
(3)	034734	104410					
(3)	034736	001150					

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TEST 27 -- VIA TIMER # 1 ONE-SHOT MODE

8577	034740	004737	036142		JSR	PC,GETT1		;PUT THE CURRENT "T1" VALUE INTO THE CARRY BIT	
8578	034744	102002			BVC	114		;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		114:	BCS	214		;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	284		;BYPASS THE REST OF THIS SECTION OF TESTING	
8602									
8603	035046	004537	004076	214:	JSR	R5,READ		;READ T1L-L (ADDR 06)	
8604	035052	120006			T1LL				
8605	035054	002454			TMP6			;THIS SHOULD RETURN A 001	
8606	035056	103003			BCC	.+10		;IF NO ERROR, PROCEED	
8607	035060				ERROR			;ELSE, REPORT IT	
(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	TMP6,184		;CHECK T1L-L (ADDR 06) AGAINST LOADED VALUE	
8610	035074	001415			BEQ	234		;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			T1LH				

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TEST 27 -- VIA TIMER # 1 ONE SHOT MODE

PC	PC+1	PC+2	PC+3	PC+4	PC+5	PC+6	PC+7	PC+8	PC+9	PC+10	PC+11	PC+12	PC+13	PC+14	PC+15	PC+16	PC+17	PC+18	PC+19	PC+20	PC+21	PC+22	PC+23	PC+24	PC+25	PC+26	PC+27	PC+28	PC+29	PC+30	PC+31	PC+32	PC+33	PC+34	PC+35	PC+36	PC+37	PC+38	PC+39	PC+40	PC+41	PC+42	PC+43	PC+44	PC+45	PC+46	PC+47	PC+48	PC+49	PC+50	PC+51	PC+52	PC+53	PC+54	PC+55	PC+56	PC+57	PC+58	PC+59	PC+60	PC+61	PC+62	PC+63	PC+64	PC+65	PC+66	PC+67	PC+68	PC+69	PC+70	PC+71	PC+72	PC+73	PC+74	PC+75	PC+76	PC+77	PC+78	PC+79	PC+80	PC+81	PC+82	PC+83	PC+84	PC+85	PC+86	PC+87	PC+88	PC+89	PC+90	PC+91	PC+92	PC+93	PC+94	PC+95	PC+96	PC+97	PC+98	PC+99	PC+100	PC+101	PC+102	PC+103	PC+104	PC+105	PC+106	PC+107	PC+108	PC+109	PC+110	PC+111	PC+112	PC+113	PC+114	PC+115	PC+116	PC+117	PC+118	PC+119	PC+120	PC+121	PC+122	PC+123	PC+124	PC+125	PC+126	PC+127	PC+128	PC+129	PC+130	PC+131	PC+132	PC+133	PC+134	PC+135	PC+136	PC+137	PC+138	PC+139	PC+140	PC+141	PC+142	PC+143	PC+144	PC+145	PC+146	PC+147	PC+148	PC+149	PC+150	PC+151	PC+152	PC+153	PC+154	PC+155	PC+156	PC+157	PC+158	PC+159	PC+160	PC+161	PC+162	PC+163	PC+164	PC+165	PC+166	PC+167	PC+168	PC+169	PC+170	PC+171	PC+172	PC+173	PC+174	PC+175	PC+176	PC+177	PC+178	PC+179	PC+180	PC+181	PC+182	PC+183	PC+184	PC+185	PC+186	PC+187	PC+188	PC+189	PC+190	PC+191	PC+192	PC+193	PC+194	PC+195	PC+196	PC+197	PC+198	PC+199	PC+200	PC+201	PC+202	PC+203	PC+204	PC+205	PC+206	PC+207	PC+208	PC+209	PC+210	PC+211	PC+212	PC+213	PC+214	PC+215	PC+216	PC+217	PC+218	PC+219	PC+220	PC+221	PC+222	PC+223	PC+224	PC+225	PC+226	PC+227	PC+228	PC+229	PC+230	PC+231	PC+232	PC+233	PC+234	PC+235	PC+236	PC+237	PC+238	PC+239	PC+240	PC+241	PC+242	PC+243	PC+244	PC+245	PC+246	PC+247	PC+248	PC+249	PC+250	PC+251	PC+252	PC+253	PC+254	PC+255	PC+256	PC+257	PC+258	PC+259	PC+260	PC+261	PC+262	PC+263	PC+264	PC+265	PC+266	PC+267	PC+268	PC+269	PC+270	PC+271	PC+272	PC+273	PC+274	PC+275	PC+276	PC+277	PC+278	PC+279	PC+280	PC+281	PC+282	PC+283	PC+284	PC+285	PC+286	PC+287	PC+288	PC+289	PC+290	PC+291	PC+292	PC+293	PC+294	PC+295	PC+296	PC+297	PC+298	PC+299	PC+300	PC+301	PC+302	PC+303	PC+304	PC+305	PC+306	PC+307	PC+308	PC+309	PC+310	PC+311	PC+312	PC+313	PC+314	PC+315	PC+316	PC+317	PC+318	PC+319	PC+320	PC+321	PC+322	PC+323	PC+324	PC+325	PC+326	PC+327	PC+328	PC+329	PC+330	PC+331	PC+332	PC+333	PC+334	PC+335	PC+336	PC+337	PC+338	PC+339	PC+340	PC+341	PC+342	PC+343	PC+344	PC+345	PC+346	PC+347	PC+348	PC+349	PC+350	PC+351	PC+352	PC+353	PC+354	PC+355	PC+356	PC+357	PC+358	PC+359	PC+360	PC+361	PC+362	PC+363	PC+364	PC+365	PC+366	PC+367	PC+368	PC+369	PC+370	PC+371	PC+372	PC+373	PC+374	PC+375	PC+376	PC+377	PC+378	PC+379	PC+380	PC+381	PC+382	PC+383	PC+384	PC+385	PC+386	PC+387	PC+388	PC+389	PC+390	PC+391	PC+392	PC+393	PC+394	PC+395	PC+396	PC+397	PC+398	PC+399	PC+400	PC+401	PC+402	PC+403	PC+404	PC+405	PC+406	PC+407	PC+408	PC+409	PC+410	PC+411	PC+412	PC+413	PC+414	PC+415	PC+416	PC+417	PC+418	PC+41
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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    EM50K,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    EM50K
(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    EM50C,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    EM50C
(7) 035326 010774          .WORD    ERR50
8665
8666 ;-----
8667
8668 035330 105037 002445    29# : CLR8     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          DDB8
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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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          ;          TRAP      C$ERROR
8690 035424          ESCAPE TST          ;          AND EXIT THIS TEST          TRAP      C$ESCAPE
(3) 035424 104410          ;          TRAP      C$ESCAPE
(3) 035426 000460          ;          .WORD    L10073-.
8691 035430 004537 004076      JSR      R5,READ      ;GET T1LH FOR ERROR MESSAGE
8692 035434 120007          T1LH
8693 035436 002456          TMP7
8694 035440 103003          BCC      .+10          ;IF NO ERROR, PROCEED
8695 035442          ERROR          ;ELSE, REPORT IT
(3) 035442 104460          ;          TRAP      C$ERROR
8696 035444          ESCAPE TST          ;          AND EXIT THIS TEST          TRAP      C$ESCAPE
(3) 035444 104410          ;          TRAP      C$ESCAPE
(3) 035446 000440          ;          .WORD    L10073-.
8697 035450          GEDF      EMSOL,ERR50      ;NO! SOMETHING WENT WRONG! REPORT IT
(2)          ;          ;          "DEVICE FATAL" ERROR # 79
(6) 035450 104455          ;          TRAP      C$ERDF
(7) 035452 000117          ;          .WORD    79
(7) 035454 016742          ;          .WORD    EMSOL
(7) 035456 010774          ;          .WORD    ERR50
8698 035460          ESCAPE SUB          ;          AND EXIT FROM THIS SUBTEST
(3) 035460 104410          ;          TRAP      C$ESCAPE
(3) 035462 000422          ;          .WORD    L10075-.
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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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		ESCAPE	TST			TRAP	C#ERROR
8713	035532						AND EXIT THIS TEST		
(3)	035532	104410						TRAP	C#ESCAPE
(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	C#ESCAPE
(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		ESCAPE	TST			TRAP	C#ERROR
8723	035566						AND EXIT THIS TEST		
(3)	035566	104410						TRAP	C#ESCAPE
(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	C#ERDF
(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	C#ESCAPE
(3)	035604	000300						.WORD	L10075-
8726									
8727									
8728									
8729	035606	112737	000125	MOVB	#125,TMP5+1		;AND USING THE SAME VALUE AGAIN (55 HEX).		
8730	035614	004537	004322	JSR	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		ESCAPE	TST			TRAP	C#ERROR
8735	035630						AND EXIT THIS TEST		
(3)	035630	104410						TRAP	C#ESCAPE
(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	C#ESCAPE
(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		ESCAPE	TST			TRAP	C#ERROR
8745	035664						AND EXIT THIS TEST		

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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			ERROR			;ELSE, REPORT IT
(3)	035702	104460				TRAP	C#ERROR
8751	035704			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#EROF
(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 T1C-H (ADDR 5) TO START IT AGAIN
8755	035724	120005			T1CH		
8756	035726	002453			TMP5.1		
8757	035730	103003			BCC	.+10	;IF NO ERROR, PROCEED
8758	035732				ERROR		;ELSE, REPORT IT
(3)	035732	104460				TRAP	C#ERROR
8759	035734				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				ESCAPE	SUB	;ELSE, IT'S ALREADY BEEN REPORTED -- EXIT
(3)	035746	104410				TRAP	C#ESCAPE
(3)	035750	000134				.WORD	L10075-.
8763	035752	103054			BCC	488	;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				ERROR		;ELSE, REPORT IT
(3)	035766	104460				TRAP	C#ERROR
8769	035770				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				ERROR		;ELSE, REPORT IT
(3)	036006	104460				TRAP	C#ERROR
8775	036010				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 T1CH FOR ERROR MESSAGE
8777	036020	120005			T1CH		
8778	036022	002452			TMP5		
8779	036024	103003			BCC	.+10	;IF NO ERROR, PROCEED
8780	036026				ERROR		;ELSE, REPORT IT

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TEST 27 -- VIA TIMER # 1 ONE-SHOT MODE

(3)	036026	104460				TRAP	C#ERROR
8781	036030		ESCAPE	TST	; AND EXIT THIS TEST		
(3)	036030	104410				TRAP	C#ESCAPE
(3)	036032	000054				.WORD	L10073 .
8782	036034	004537	004076	JSR	R5,READ	;GET T1LL FOR ERROR MESSAGE	
8783	036040	120006		T1LL			
8784	036042	002454		TMP6			
8785	036044	103003		BCC	.+10	;IF NO ERROR, PROCEED	
8786	036046			ERROR		;ELSE, REPORT IT	
(3)	036046	104460				TRAP	C#ERROR
8787	036050		ESCAPE	TST	; AND EXIT THIS TEST		
(3)	036050	104410				TRAP	C#ESCAPE
(3)	036052	000034				.WORD	L10073-.
8788	036054	004537	004076	JSR	R5,READ	;GET T1LM FOR ERROR MESSAGE	
8789	036060	120007		T1LM			
8790	036062	002456		TMP7			
8791	036064	103003		BCC	.+10	;IF NO ERROR, PROCEED	
8792	036066			ERROR		;ELSE, REPORT IT	
(3)	036066	104460				TRAP	C#ERROR
8793	036070		ESCAPE	TST	; AND EXIT THIS TEST		
(3)	036070	104410				TRAP	C#ESCAPE
(3)	036072	000014				.WORD	L10073-.
8794	036074		GEDF	EM50V,ERR50	;NO, BAD! RPT. PB7 NOT DRIVEN LOW		
(2)					; "DEVICE FATAL" ERROR # 83		
(6)	036074	104455				TRAP	C#ERDF
(7)	036076	000123				.WORD	83
(7)	036100	017252				.WORD	EM50V
(7)	036102	010774				.WORD	ERR50
8795	036104		484:	ENDSUB			
(3)	036104					L10075:	
(3)	036104	104403				TRAP	C#ESUB
8796	036106			ENDTST			
(3)	036106					L10073:	
(3)	036106	104401				TRAP	C#ETST
8797							
8798							
8799							
8800							
8801							
8802							
8803							
8804							
8805							
8806							
8807							
8808							
8809							
8810	036110	112537	002451	LODT1C: MOV8	(R5)+,TMP4+1	;SETUP TO LOAD T1CL	
8811	036114	112537	002453	MOV8	(R5)+,TMP5+1	; AND T1CH	
8812	036120	004537	004322	JSR	R5,WRITE	;LOAD T1C-L (ADDR 04) WITH PASSED PARAMETER	
8813	036124	120004		T1CL			
8814	036126	002451		TMP4+1			
8815	036130	004537	004322	JSR	R5,WRITE	;LOAD T1C-H (ADDR 05) WITH PASSED PARAMETER	
8816	036134	120005		T1CH		; (THIS WILL ALSO RESET "T1" & THE COUNTER)	
8817	036136	002453		TMP5+1			
8818	036140	000205		RTS	R5		

```

;-----
; LODT1C -- LOAD TIMER ONE AT ADDRESSES 04 & 05
;
; CALLING SEQUENCE:
;
;       JSR      R5,LODT1C
;       .BYTE    <VALUE FOR T1L-L (ADDRESS 04)>
;       .BYTE    <VALUE FOR T1C-H (ADDRESS 05)>
;       <NEXT SEQUENTIAL INSTRUCTION>
;-----

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TEST 27 -- VIA TIMER # 1 ONE-SHOT MODE

[illegible]

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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      ;-----
8875      ; GETPB7 -- PUT THE CURRENT SETTING OF "PB7" (BIT 7 OF ORB W/IN THE VIA CHIP)
8876      ; INTO THE CARRY BIT SO IT CAN BE TESTED UPON RETURN.
8877      ;
8878      ; CALLING SEQUENCE:
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
8887 036336 103003      BCC      11      ;IF NO ERROR, PROCEED
8888 036340      ERROR      ;ELSE, REPORT IT
8889      (3) 036340 104460      SEV          TRAP      C1ERROR
8890 036342 000262      RTS      PC      ;FLAG AN ERROR TO MAINLINE ROUTINE
8891 036344 000207      ; AND TAKE AN ABNORMAL RETURN
8892
8892 036346 010046      11:  MOV      R0,-(SP)      ;PRESERVE THIS REGISTER FOR THE CALLER
8893 036350 113700 002440  MOVB     TMO,R0      ;PUT ITS CONTENTS HERE SO WE CAN MANIPULATE IT
8894 036354 106100      ROLB     R0
8895 036356 012600      MOV      (SP)+,R0      ;PUT "PB7" INTO THE CARRY BIT
8896 036360 000207      RTS      PC      ;RESTORE R0 FOR THE CALLER
8897      ;RETURN WITH "PB7" IN THE CARRY BIT

```

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TEST 28 -- VIA TIMER 1 FREE-RUNNING MODE TEST

.SBTL TEST 28 -- VIA TIMER 1 FREE-RUNNING MODE TEST

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TEST 28 -- VIA TIMER 1 FREE-RUNNING MODE TEST

THIS TEST VERIFIES THAT THE TIMER 1 COUNTER IS OPERATIONAL IN
FREE-RUNNING MODE, IN EACH OF TWO SUBTESTS.

THE PROGRAM PERIODICALLY CHECKS THE COUNTER TO VERIFY THAT:

    IT IS DECREMENTING AND EVENTUALLY REACHES 0,
    RELOADS FROM THE LATCHES, AND
    CONTINUES TO DECREMENT.

IN THE FIRST SUBTEST, THE FOLLOWING IS PERFORMED :

    A MASTER CLEAR IS DONE AND THE TIMER IS PLACED IN FREE-RUNNING MODE
    BY SETTING ACR7 TO 0 & ACR6 TO 1 (MODE 1). AND THE PROGRAM CHECKS
    FOR THE "T1" (BIT 6 IN IFR) TO BE INITIALLY CLEARED.

    THEN T1L-L (ADR 04) IS LOADED WITH 125 (OCTAL) AND T1C-H (ADR 05) IS
    LOADED WITH 125 (OCTAL) STARTING THE COUNTER.

    THE COUNT IS ALLOWED TO REACH 0 AGAIN, AND THE "T1" IS READ AND
    CHECKED TO BE SET.

    T1C-H (ADR 05) IS READ AND "T1" IS CHECKED TO BE STILL SET.

    THE COUNTER LO BYTE IS READ AND THE "T1" IS READ AND CHECKED TO BE
    CLEARED BY THE READ OF T1C-L.

    THE COUNT IS ALLOWED TO REACH 0 ONCE MORE AND "T1" IS CHECKED TO BE
    SET AGAIN.

    T1L-L IS LOADED WITH 252 (OCTAL) AND "T1" IS CHECKED TO BE STILL
    SET.

    T1C-H IS LOADED WITH 252 (OCTAL) AND "T1" IS READ AND CHECKED TO BE
    CLEARED BY THE LOADING OF T1C-H.

IN THE SECOND SUBTEST, ALL OF THE ABOVE OPERATIONS ARE REPEATED, WITH
ACR7 = 1, AND ACR6 = 1 (MODE 3). ALSO, PB7 IS VERIFIED FOR PROPER
STATE AT THE PROPER TIME.

```

```

;-----
;
;      BGNTST
;
;
;      BGNSUB
;
;
;      T28::
;
;      T28.1:
;
;      TRAP      C$BSUB
;
;      JSR      PC,MS1CLR      ;INIT DMV & ENTER M 00P
;      BCC      1$             ;IF NO ERROR, PROCEED WITH TESTING

```

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TEST 28 -- VIA TIMER 1 FREE-RUNNING MODE TEST

```

8946 036372          ERROR          ;ELSE, REPORT ERROR
(3) 036372 104460          ESCAPE TST          ; & EXIT TEST          TRAP C#ERROR
8947 036374          ;              ;              ;              ;              ;
(3) 036374 104410          ;              ;              ;              ;              ;
(3) 036376 001514          ;              ;              ;              ;              ;
8948 036400 004537 004672 14: JSR      R5,INITT1 ;INITIALIZE TIMER # 1
8949 036404 000000          ;              ; 0 ==> LATCHES
8950 036406 000100          ;              ; MODE 1 / "T1" INT. ENABLE FLAG CLEARED
8951 036410 103003          ;              ; IF NO ERROR, PROCEED
8952 036412          ;              ; ELSE, REPORT IT
(3) 036412 104460          ;              ;              ;              ;              ;
8953 036414          ESCAPE TST          ;              ; AND EXIT THIS TEST          TRAP C#ERROR
(3) 036414 104410          ;              ;              ;              ;              ;
(3) 036416 001474          ;              ;              ;              ;              ;
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          ;              ;              ;              ;              ;
(3) 036430 000414          ;              ;              ;              ;              ;
8957 036432 103006          BCC      24        ;NO, GOOD.
8958 036434          GEDF      EM50A,ERR50 ;YES, REPORT IT'S NOT BEING CLEARED @ INIT.
(2)          ;              ;              ;              ;              ;
(6) 036434 104455          ;              ;              ;              ;              ;
(7) 036436 000125          ;              ;              ;              ;              ;
(7) 036440 016101          ;              ;              ;              ;              ;
(7) 036442 010774          ;              ;              ;              ;              ;
8959 036444          ESCAPE SUB          ; & EXIT TEST          TRAP C#ERROR
(3) 036444 104410          ;              ;              ;              ;              ;
(3) 036446 000376          ;              ;              ;              ;              ;
8960          ;              ;              ;              ;              ;
8961          ;              ;              ;              ;              ;
8962          ;              ;              ;              ;              ;
8963 036450 004537 036110 24: JSR      R5,LODT1C ;RELOAD TIMER 1'S COUNTERS WITH NEW VALUES:
8964 036454 125 125          .BYTE 125,125
8965          ;              ;              ;              ;              ;
8966          ;              ;              ;              ;              ;
8967          ;              ;              ;              ;              ;
8968 036456 005003          CLR      R3
8969 036460 004737 036142 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          ;              ;              ;              ;              ;
(3) 036470 000354          ;              ;              ;              ;              ;
8972 036472 103407          BCS      44        ;YES, GOOD.
8973 036474 077307          SOB      R3,34     ;NO, IF NO TIMEOUT, LOOK AGAIN
8974 036476          GEDF      EM50F,ERR50 ;ELSE, SAY IT WASN'T SET BY T1 TIMEOUT
(2)          ;              ;              ;              ;              ;
(6) 036476 104455          ;              ;              ;              ;              ;
(7) 036500 000126          ;              ;              ;              ;              ;
(7) 036502 016353          ;              ;              ;              ;              ;
(7) 036504 010774          ;              ;              ;              ;              ;
8975 036506          ESCAPE SUB          ;IF ERROR, THE REST OF THIS TEST IS UN-DOABLE!
(3) 036506 104410          ;              ;              ;              ;              ;
(3) 036510 000334          ;              ;              ;              ;              ;
8976          ;              ;              ;              ;              ;
8977 036512 004537 004076 44: JSR      R5,READ ;READING T1CH SHOULDN'T CLEAR "T1"

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TEST 28 -- VIA TIMER 1 FREE-RUNNING MODE TEST

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						TRAP C\$ERROR
8982	036526			ESCAPE	TST			; AND EXIT THIS TEST
(3)	036526	104410						TRAP 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						TRAP C\$ESCAPE
(3)	036542	000302						.WORD L10077-.
8986	036544	103404		BCS	6\$			;IT IS, GOOD.
8987	036546			GEDF	EM50G,ERR50			;Cleared BY READING T1CH!!
(2)								; "DEVICE FATAL" ERROR # 87
(6)	036546	104455						TRAP C\$ERDF
(7)	036550	000127						.WORD 87
(7)	036552	016420						.WORD EM50G
(7)	036554	010774						.WORD ERR50
8988	036556	004737	036200	6\$: JSR	PC,KICKT1			;KICK IT OFF AGAIN SO WE CAN PRESERVE T1.ING
8989	036562	103003		BCC	.+10			;IF NO ERROR, PROCEED
8990	036564			ERROR				;ELSE, REPORT IT
(3)	036564	104460						TRAP C\$ERROR
8991	036566			ESCAPE	TST			; AND EXIT THIS TEST
(3)	036566	104410						TRAP C\$ESCAPE
(3)	036570	001322						.WORD L10076-.
8992								
8993								;WAIT FOR IT TO FINISH:
8994	036572	005003		CLR	R3			;INITIALIZE TIMEOUT COUNTER
8995	036574	004737	036142	7\$: JSR	PC,GETT1			; "T1" SHOULD BE SET. IS IT?
8996	036600	102002		BVC	.+6			;IF NO ERROR, PROCEED
8997	036602			ESCAPE	SUB			;ELSE, IT'S ALREADY BEEN REPORTED -- EXIT
(3)	036602	104410						TRAP C\$ESCAPE
(3)	036604	000240						.WORD L10077-.
8998	036606	103402		BCS	8\$			;YES, GOOD.
8999	036610	077307		S0B	R3,7\$			;NO, IF NO TIMEOUT, LOOK AGAIN
9000	036612	000422		BR	10\$			;IF TIMEOUT, BYPASS NEXT CHECK (THIS DONE ABOVE)
9001	036614	004537	004076	8\$: JSR	R5,READ			;READING T1CL SHOULD CLEAR "T1"
9002	036620	120004		T1CL				
9003	036622	002450		TMP4				; (WE DON'T CARE WHAT THIS IS EITHER)
9004	036624	103003		BCC	.+10			;IF NO ERROR, PROCEED
9005	036626			ERROR				;ELSE, REPORT IT
(3)	036626	104460						TRAP C\$ERROR
9006	036630			ESCAPE	TST			; AND EXIT THIS TEST
(3)	036630	104410						TRAP C\$ESCAPE
(3)	036632	001260						.WORD L10076-.
9007	036634	004737	036142	JSR	PC,GETT1			;CHECK "T1" -- IT SHOULD BE CLEARED NOW
9008	036640	102002		BVC	.+6			;IF NO ERROR, PROCEED
9009	036642			ESCAPE	SUB			;ELSE, IT'S ALREADY BEEN REPORTED -- EXIT
(3)	036642	104410						TRAP C\$ESCAPE
(3)	036644	000200						.WORD L10077-.
9010	036646	103004		BCC	10\$			;IT IS, GOOD.
9011	036650			GEDF	EM50C,ERR50			;NOT CLEARED! REPORT IT.
(2)								; "DEVICE FATAL" ERROR # 88
(6)	036650	104455						TRAP C\$ERDF

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TEST 28 -- VIA TIMER 1 FREE-RUNNING MODE TEST

PC	Address	Offset	Label	Instruction	Comment	Trap	Word
9012	036652	000130		CLR R3	;RE-INITIALIZE THE TIMEOUT COUNTER		
9013	036654	016215		JSR PC,GETT1	;WAIT FOR "T1" TO GET SET AGAIN		
9014	036656	010774		BVC .+6	;IF NO ERROR, PROCEED		
9015	036670	102002		ESCAPE SUB	;ELSE, IT'S ALREADY BEEN REPORTED -- EXIT		
(3)	036670	104410				TRAP	C\$ESCAPE
(3)	036672	000152				.WORD	L10077-
9016	036674	103407		BCS 14\$	;GOT IT -- GOOD.		
9017	036676	077307		SUB R3,12\$	;NOT YET. IF NO TIMEOUT, TRY AGAIN.		
9018	036700			GEDF EM50X,ERR50	;ELSE, REPORT "T1" NOT RESET		
(2)					; "DEVICE FATAL" ERROR # 89		
(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	;IF ERROR, CAN'T CONTINUE THIS TEST		
(3)	036710	104410				TRAP	C\$ESCAPE
(3)	036712	000132				.WORD	L10077-
9020	036714	112737	000252	MOVB #252,TMP6+1	;SETUP FOR AND		
9021	036722	004537	004322	JSR R5,WRITE	; LOAD T1LL (ADDR 6)		
9022	036726	120006		T1LL			
9023	036730	002455		TMP6+1	; WITH 252 OCTAL		
9024	036732	103003		BCC .+10	;IF NO ERROR, PROCEED		
9025	036734			ERROR	;ELSE, REPORT IT		
(3)	036734	104460				TRAP	C\$ERROR
9026	036736			ESCAPE TST	; AND EXIT THIS TEST		
(3)	036736	104410				TRAP	C\$ESCAPE
(3)	036740	001152				.WORD	L10076-
9027	036742	004737	036142	JSR PC,GETT1	;THIS SHOULDN'T CLEAR "T1"		
9028	036746	102002		BVC .+6	;IF NO ERROR, PROCEED		
9029	036750			ESCAPE SUB	;ELSE, IT'S ALREADY BEEN REPORTED -- EXIT		
(3)	036750	104410				TRAP	C\$ESCAPE
(3)	036752	000072				.WORD	L10077-
9030	036754	103406		BCS 16\$	;IT DIDN'T -- GOOD.		
9031	036756			GEDF EM50M,ERR50	;WOOPS, IT DID!! REPORT FAILURE		
(2)					; "DEVICE FATAL" ERROR # 90		
(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	; THE REST OF THIS TEST IS INVALID TOO!		
(3)	036766	104410				TRAP	C\$ESCAPE
(3)	036770	000054				.WORD	L10077-
9033	036772	112737	000252	MOVB #252,TMP7+1	;SETUP FOR AND		
9034	037000	004537	004322	JSR R5,WRITE	; LOAD T1LH (ADDR 7)		
9035	037004	120007		T1LH			
9036	037006	002457		TMP7+1	; WITH 252 OCTAL		
9037	037010	103003		BCC .+10	;IF NO ERROR, PROCEED		
9038	037012			ERROR	;ELSE, REPORT IT		
(3)	037012	104460				TRAP	C\$ERROR
9039	037014			ESCAPE TST	; AND EXIT THIS TEST		
(3)	037014	104410				TRAP	C\$ESCAPE
(3)	037016	001074				.WORD	L10076-
9040	037020	004737	036142	JSR PC,GETT1	;THIS SHOULD CLEAR "T1"		

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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      EM50A,ERR50      ;NOP! REPORT: "T1" NOT CLEARED BY LOADING T1LH
      (2)                                     ; "DEVICE FATAL" ERROR # 91
      (6) 037034 104455          TRAP      C$ERDF
      (7) 037036 000133          .WORD    91
      (7) 037040 016101          .WORD    EM50A
      (7) 037042 010774          .WORD    ERR50
9045 037044          18$:      ;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          JSR      PC,MSTCLR      ;INIT DMV & ENTER M-LOOP
      (3) 037046 104402          BCC      1$          ;IF NO ERROR, PROCEED WITH TESTING
9049 037050 004737 003774          ERROR          ;ELSE, REPORT ERROR
9050 037054 103003          ESCAPE TST          ; & EXIT TEST
9051 037056 104460          TRAP      C$ERROR
      (3) 037056          TRAP      C$ESCAPE
9052 037060 104410          .WORD    L10076-.
      (3) 037062 001030          ;SETUP DDRB SUCH THAT ORB IS AN INPUT/OUTPUT REG
9053 037064 112737 000377 002445 1$: MOVB      #377,TMP2+1
9054 037072 004537 004322          'R      R5,WRITE
9055 037076 120002          L      ORB
9056 037100 002445          TMP2+1
9057 037102 103003          BCC      .+10          ;IF NO ERROR, PROCEED
9058 037104          ERROR          ;ELSE, REPORT IT
      (3) 037104 104460          TRAP      C$ERROR
9059 037106          ESCAPE TST          ; AND EXIT THIS TEST
      (3) 037106 104410          TRAP      C$ESCAPE
      (3) 037110 001002          .WORD    L10076-.
9060 037112 112737 000030 002441 MOVB      #30,TMP0+1
9061 037120 004537 004322          JSR      R5,WRITE
9062 037124 120000          ORB
9063 037126 002441          TMP0+1
9064 037130 103003          BCC      .+10          ;IF NO ERROR, PROCEED
9065 037132          ERROR          ;ELSE, REPORT IT
      (3) 037132 104460          TRAP      C$ERROR
9066 037134          ESCAPE TST          ; AND EXIT THIS TEST
      (3) 037134 104410          TRAP      C$ESCAPE
      (3) 037136 000754          .WORD    L10076-.
9067 037140 004537 004672          JSR      R5,INITT1
9068 037144 000000          0          ;INITIALIZE TIMER # 1
9069 037146 000300          BIT7+BIT6          ; 0 ==> LATCHES
9070 037150 103003          BCC      .+10          ; MODE 3 & "T1" INT. ENABLE FLAG CLEARED
9071 037152          ERROR          ;IF NO ERROR, PROCEED
      (3) 037152 104460          ;ELSE, REPORT IT
9072 037154          ESCAPE TST          ; AND EXIT THIS TEST
      (3) 037154 104410          TRAP      C$ESCAPE
      (3) 037156 000734          .WORD    L10076-.
9073 037160 004737 036142          JSR      PC,GETT1      ;IS "T1" SET?

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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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TEST 28 -- VIA TIMER 1 FREE-RUNNING MODE TEST

```

(3) 037276 104410
(3) 037300 000610
9105
9106
9107
9108 037302 004537 004076
9109 037306 120005
9110 037310 002452
9111 037312 103003
9112 037314
(3) 037314 104460
9113 037316
(3) 037316 104410
(3) 037320 000572
9114 037322 004737 036142
9115 037326 102002
9116 037330
(3) 037330 104410
(3) 037332 000556
9117 037334 103406
9118 037336
(2)
(6) 037336 104455
(7) 037340 000137
(7) 037342 016420
(7) 037344 010774
9119 037346
(3) 037346 104410
(3) 037350 000540
9120
9121
9122
9123 037352 005003
9124 037354 004737 036142
9125 037360 102002
9126 037362
(3) 037362 104410
(3) 037364 000524
9127 037366 103407
9128 037370 077307
9129 037372
(2)
(6) 037372 104455
(7) 037374 000140
(7) 037376 016742
(7) 037400 010774
9130 037402
(3) 037402 104410
(3) 037404 000504
9131
9132
9133
9134 037406
9135 037406 004737 036326
9136 037412 102002
9137 037414

36$: JSR R5,READ ;READING T1CH SHOULDN'T CLEAR "T1"
      T1CH
      TMP5 ; (WE DON'T CARE WHAT THIS IS)
      BCC .+10 ;IF NO ERROR, PROCEED
      ERROR ;ELSE, REPORT IT
      ESCAPE TST ; AND EXIT THIS TEST
      JSR PC,GETT1 ;CHECK "T1" -- IT SHOULD STILL BE SET
      BVC .+6 ;IF NO ERROR, PROCEED
      ESCAPE SUB ;ELSE, IT'S ALREADY BEEN REPORTED -- EXIT
      BCS 37$ ;IT IS, GOOD.
      GEDF EMS0G,ERR50 ;CLEARED BY READING T1CH!!
      ; "DEVICE FATAL" ERROR # 95
      TRAP C$ERDF
      .WORD 95
      .WORD EMS0G
      .WORD ERR50
      ESCAPE SUB ; ALLOW RESTART OF THIS SUBTEST
      TRAP C$ESCAPE
      .WORD L10100-.

37$: CLR R3 ;INITIALIZE TIMEOUT COUNTER AGAIN
38$: JSR PC,GETT1 ;WAIT FOR "T1" TO BE SET AGAIN
      BVC .+6 ;IF NO ERROR, PROCEED
      ESCAPE SUB ;ELSE, IT'S ALREADY BEEN REPORTED -- EXIT
      TRAP C$ESCAPE
      .WORD L10100-.
      BCS 39$ ;GOT IT -- NO CHECK PB7
      SOB R3,38$ ;NOT YET. IF NO TIMEOUT, LOOK AGAIN.
      GEDF EMS0L,ERR50 ;ELSE, TIMER NOT REALLY WORKING RIGHT!
      ; "DEVICE FATAL" ERROR # 96
      TRAP C$ERDF
      .WORD 96
      .WORD EMS0L
      .WORD ERR50
      ESCAPE SUB
      TRAP C$ESCAPE
      .WORD L10100-.

39$: JSR PC,GETPB7 ;GET "PB7". IS IT SET?
      BVC .+6 ;IF NO ERROR, PROCEED
      ESCAPE SUB ;ELSE, IT'S ALREADY BEEN REPORTED -- EXIT

```

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TEST 28 -- VIA TIMER 1 FREE-RUNNING MODE TEST

```

(3) 037414 104410
(3) 037416 000472
9138 037420 103404
9139 037422
(2)
(6) 037422 104455
(7) 037424 000141
(7) 037426 017503
(7) 037430 010774
9140
9141
9142
9143 037432 004737 036200
9144 037436 103003
9145 037440
(3) 037440 104460
9146 037442
(3) 037442 104410
(3) 037444 000446
9147
9148
9149 037446 005003
9150 037450 004737 036142
9151 037454 102002
9152 037456
(3) 037456 104410
(3) 037460 000430
9153 037462 103402
9154 037464 077307
9155 037466 000442
9156 037470 004537 004076
9157 037474 120004
9158 037476 002450
9159 037500 103003
9160 037502
(3) 037502 104460
9161 037504
(3) 037504 104410
(3) 037506 000404
9162 037510 004737 036142
9163 037514 102002
9164 037516
(3) 037516 104410
(3) 037520 000370
9165 037522 103006
9166 037524
(2)
(6) 037524 104455
(7) 037526 000142
(7) 037530 016215
(7) 037532 010774
9167 037534
(3) 037534 104410
(3) 037536 000352
9168 037540 005003
9169 037542 004737 036142

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```

BCS 64
GEDF EM50Z,ERR50
;YES, GOOD.
;NO, REPORT "PB7" NOT SET AFTER SECOND CYCLE
; "DEVICE FATAL" ERROR # 97
TRAP C$ERDF
WORD 97
WORD EM50Z
WORD ERR50

```

```

-----
64: JSR PC,KICKT1 ;KICK IT OFF AGAIN SO WE CAN PRESERVE TIMING
BCC .+10 ;IF NO ERROR, PROCEED
ERROR ;ELSE, REPORT IT
TRAP C$ERROR
ESCAPE TST ; AND EXIT THIS TEST
TRAP C$ESCAPE
WORD L10076-.

```

```

;WAIT FOR IT TO FINISH:
74: CLR R3 ;INITIALIZE TIMEOUT COUNTER
JSR PL GETT1 ;"T1" SHOULD BE SET. IS IT?
BVC .+1 ;IF NO ERROR, PROCEED
ESCAPE SUB ;ELSE, IT'S ALREADY BEEN REPORTED -- EXIT
TRAP C$ESCAPE
WORD L10100-.

```

```

BCS 84
SOB R3,74 ;YES, GOOD.
RR 144 ;NO, IF NO TIMEOUT, LOOK AGAIN
84: JSR R5,PEAD ;IF TIMEOUT, BYPASS NEXT CHECK (THIS DONE ABOVE)
T1CL ;READING T1CL SHOULD CLEAR "T1"
TMP4 ; (WE DON'T CARE WHAT THIS IS EITHER)
BCC .+10 ;IF NO ERROR, PROCEED
ERROR ;ELSE, REPORT IT
TRAP C$ERROR
ESCAPE TST ; AND EXIT THIS TEST
TRAP C$ESCAPE
WORD L10076-.

```

```

JSR PC,GETT1 ;CHECK "T1" -- IT SHOULD BE CLEARED NOW
BVC .+6 ;IF NO ERROR, PROCEED
ESCAPE SUB ;ELSE, IT'S ALREADY BEEN REPORTED -- EXIT
TRAP C$ESCAPE
WORD L10100-.

```

```

BCC 94
GEDF EM50C,ERR50 ;IT IS, GOOD.
;NOT CLEARED! REPORT IT.
; "DEVICE FATAL" ERROR # 98
TRAP C$ERDF
WORD 98
WORD EM50C
WORD ERR50

```

```

ESCAPE SUB ;IF THIS ERROR OCCURED, EXIT SUBTEST
TRAP C$ESCAPE
WORD L10100-.

```

```

94: CLR R3 ;RE-INITIALIZE THE TIMEOUT COUNTER
124: JSR PC,GETT1 ;WAIT FOR "T1" TO GET SET AGAIN

```

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TEST 28 -- VIA TIMER 1 FREE-RUNNING MODE TEST

PC	Address	Offset	Op	Op2	Op3	Op4	Op5	Op6	Op7	Op8	Op9	Op10	Op11	Op12	Op13	Op14	Op15	Op16	Op17	Op18	Op19	Op20	Op21	Op22	Op23	Op24	Op25	Op26	Op27	Op28	Op29	Op30	Op31	Op32	Op33	Op34	Op35	Op36	Op37	Op38	Op39	Op40	Op41	Op42	Op43	Op44	Op45	Op46	Op47	Op48	Op49	Op50	Op51	Op52	Op53	Op54	Op55	Op56	Op57	Op58	Op59	Op60	Op61	Op62	Op63	Op64	Op65	Op66	Op67	Op68	Op69	Op70	Op71	Op72	Op73	Op74	Op75	Op76	Op77	Op78	Op79	Op80	Op81	Op82	Op83	Op84	Op85	Op86	Op87	Op88	Op89	Op90	Op91	Op92	Op93	Op94	Op95	Op96	Op97	Op98	Op99	Op100	Op101	Op102	Op103	Op104	Op105	Op106	Op107	Op108	Op109	Op110	Op111	Op112	Op113	Op114	Op115	Op116	Op117	Op118	Op119	Op120	Op121	Op122	Op123	Op124	Op125	Op126	Op127	Op128	Op129	Op130	Op131	Op132	Op133	Op134	Op135	Op136	Op137	Op138	Op139	Op140	Op141	Op142	Op143	Op144	Op145	Op146	Op147	Op148	Op149	Op150	Op151	Op152	Op153	Op154	Op155	Op156	Op157	Op158	Op159	Op160	Op161	Op162	Op163	Op164	Op165	Op166	Op167	Op168	Op169	Op170	Op171	Op172	Op173	Op174	Op175	Op176	Op177	Op178	Op179	Op180	Op181	Op182	Op183	Op184	Op185	Op186	Op187	Op188	Op189	Op190	Op191	Op192	Op193	Op194	Op195	Op196	Op197	Op198	Op199	Op200	Op201	Op202	Op203	Op204	Op205	Op206	Op207	Op208	Op209	Op210	Op211	Op212	Op213	Op214	Op215	Op216	Op217	Op218	Op219	Op220	Op221	Op222	Op223	Op224	Op225	Op226	Op227	Op228	Op229	Op230	Op231	Op232	Op233	Op234	Op235	Op236	Op237	Op238	Op239	Op240	Op241	Op242	Op243	Op244	Op245	Op246	Op247	Op248	Op249	Op250	Op251	Op252	Op253	Op254	Op255	Op256	Op257	Op258	Op259	Op260	Op261	Op262	Op263	Op264	Op265	Op266	Op267	Op268	Op269	Op270	Op271	Op272	Op273	Op274	Op275	Op276	Op277	Op278	Op279	Op280	Op281	Op282	Op283	Op284	Op285	Op286	Op287	Op288	Op289	Op290	Op291	Op292	Op293	Op294	Op295	Op296	Op297	Op298	Op299	Op300	Op301	Op302	Op303	Op304	Op305	Op306	Op307	Op308	Op309	Op310	Op311	Op312	Op313	Op314	Op315	Op316	Op317	Op318	Op319	Op320	Op321	Op322	Op323	Op324	Op325	Op326	Op327	Op328	Op329	Op330	Op331	Op332	Op333	Op334	Op335	Op336	Op337	Op338	Op339	Op340	Op341	Op342	Op343	Op344	Op345	Op346	Op347	Op348	Op349	Op350	Op351	Op352	Op353	Op354	Op355	Op356	Op357	Op358	Op359	Op360	Op361	Op362	Op363	Op364	Op365	Op366	Op367	Op368	Op369	Op370	Op371	Op372	Op373	Op374	Op375	Op376	Op377	Op378	Op379	Op380	Op381	Op382	Op383	Op384	Op385	Op386	Op387	Op388	Op389	Op390	Op391	Op392	Op393	Op394	Op395	Op396	Op397	Op398	Op399	Op400	Op401	Op402	Op403	Op404	Op405	Op406	Op407	Op408	Op409	Op410	Op411	Op412	Op413	Op414	Op415	Op416	Op417	
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CVDMACO DMV11 MCTRL DIAG #1
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TEST 28 - VIA TIMER 1 FREE-RUNNING MODE TEST

9200	037712	120004			T1CL						
9201	037714	002450			TMP4						
9202	037716	103003			BCC	..10		IF NO ERROR, PROCEED			
9203	037720				ERROR			ELSE, REPORT IT			
(3)	037720	104460							TRAP	C#ERROR	
9204	037722				ESCAPE	TST		AND EXIT THIS TEST			
(3)	037722	104410							TRAP	C#ESCAPE	
(3)	037724	000166							.WORD	L10076-	
9205	037726	004537	004076		JSR	R5,READ		GET T1CH FOR ERROR MESSAGE			
9206	037732	120005			T1CH						
9207	037734	002452			TMP5						
9208	037736	103003			BCC	..10		IF NO ERROR, PROCEED			
9209	037740				ERROR			ELSE, REPORT IT			
(3)	037740	104460							TRAP	C#ERROR	
9210	037742				ESCAPE	TST		AND EXIT THIS TEST			
(3)	037742	104410							TRAP	C#ESCAPE	
(3)	037744	000146							.WORD	L10076-	
9211	037746	004537	004076		JSR	R5,READ		GET T1LL FOR ERROR MESSAGE			
9212	037752	120006			T1LL						
9213	037754	002454			TMP6						
9214	037756	103003			BCC	..10		IF NO ERROR, PROCEED			
9215	037760				ERROR			ELSE, REPORT IT			
(3)	037760	104460							TRAP	C#ERROR	
9216	037762				ESCAPE	TST		AND EXIT THIS TEST			
(3)	037762	104410							TRAP	C#ESCAPE	
(3)	037764	000126							.WORD	L10076-	
9217	037766	004537	004076		JSR	R5,READ		GET T1LM FOR ERROR MESSAGE			
9218	037772	120007			T1LM						
9219	037774	002456			TMP7						
9220	037776	103003			BCC	..10		IF NO ERROR, PROCEED			
9221	040000				ERROR			ELSE, REPORT IT			
(3)	040000	104460							TRAP	C#ERROR	
9222	040002				ESCAPE	TST		AND EXIT THIS TEST			
(3)	040002	104410							TRAP	C#ESCAPE	
(3)	040004	000106							.WORD	L10076-	
9223	040006				GEDF	EM50Y,ERR50		IT WAS! REPORT IT BEING RESET BY WRITTING T1LL			
(2)								"DEVICE FATAL" ERROR # 101			
(6)	040006	104455							TRAP	C#ERDF	
(7)	040010	000145							.WORD	101	
(7)	040012	017431							.WORD	EM50Y	
(7)	040014	010774							.WORD	ERR50	
9224											
9225											
9226											
9227											
9228											
9229	040016	112737	000252	002457	170:	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		WITH 252 OCTAL			
9233	040034	103003				BCC	..10	IF NO ERROR, PROCEED			
9234	040036					ERROR		ELSE, REPORT IT			
(3)	040036	104460							TRAP	C#ERROR	
9235	040040				ESCAPE	TST		AND EXIT THIS TEST			
(3)	040040	104410							TRAP	C#ESCAPE	
(3)	040042	000050							.WORD	L10076-	

AT THE ABOVE "PB7" TEST, IT SHOULD BE LOW. NOT BECAUSE OF ANY READ/WRITE
OPERATION, BUT BECAUSE OF WHERE WE ARE IN THE CYCLING OF TIMER # 1. "PB7"
SHOULD BE LOW HERE UNTIL T1 TIMES OUT.

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TEST 28 -- VIA TIMER 1 FREE RUNNING MODE TEST

```

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     181      ;IT DID -- GOOD.
9240 040060      GEDF    EM50A,ERR50 ;NOP! REPORT: "T1" NOT CLEARED BY LOADING T1LM
      (2)      ;          "DEVICE FATAL" ERROR # 102
      (6) 040060 104455      TRAP     C#ERDF
      (7) 040062 000146      .WORD    102
      (7) 040064 016101      .WORD    EM50A
      (7) 040066 010774      .WORD    ERR50
9241 040070      ESCAPE SUB
      (3) 040070 104410      TRAP     C#ESCAPE
      (3) 040072 000016      .WORD    L10100
9242 040074 004537 004672      181: 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      ;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

```

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HARDWARE PARAMETER CODING SECTION

.SBTTL HARDWARE PARAMETER CODING SECTION

9254
9255
9256
9257
9258
9259
9260
9261
9262
9263
9264
9265

```

////////////////////////////////////
; 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.
////////////////////////////////////

```

9266 040114
(3) 040114 000015
(3) 040116
9267
9268 040116
(4) 040116 000031
(4) 040120 040150
(4) 040122 160020
(4) 040124 177776
9269 040126
(4) 040126 001031
(4) 040130 040176
(4) 040132 000000
(4) 040134 000674
9270 040136
(4) 040136 002032
(4) 040140 040227
(4) 040142 007000
(4) 040144 000000
(4) 040146 000007

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#HILIM

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

.WORD T#CODE
.WORD VECTOR
.WORD T#LOLIM
.WORD T#HILIM

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

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

9271
9272 040150
(2)
(3) 040150

ENDHRD

.EVEN
L10101:

9273
9274
9275 040150 042504 044526 042503
9276 040176 042504 044526 042503
9277 040227 104 053105 041511
9278
9279

```

.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
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SOFTWARE PARAMETER CODING SECTION

.SBTTL SOFTWARE PARAMETER CODING SECTION

9281
9282
9283
9284
9285
9286
9287
9288
9289
9290
9291
9292
9293

9294 040260
(3) 040260 000000
(3) 040262
9295 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

ENDSFT

```

;WORD L10102-L$SOFT/2
L$SOFT::
;EVEN
L10102:

```

CVDMAC0 DMV11 MCTRL DIAG #1
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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

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CROSS REFERENCE TABLE -- USER SYMBOLS

ACR	=	120013		3700#	4771	4780	7382	7669	7716	7732	7737	7921	7966	8329	8406	
ADDRES	=	040150		9268	9275#											
ADR	=	000020	G	3563#												
AD.HIT	=	020334		5514	5536#											
AD.OK	=	020330		5532	5534#											
ASSEMB	=	000010		3454												
BDATA	=	002312		4014#	4836	4839	4922	4961	5002	5200	5682*	5776*	5838*	5890*	5947*	5955*
				5998*	6005*	6012*	6019*	6035*	6051*	6060*	6069*	6076*	6116*	6166*	6168	6176*
				6178	6186*	6818	6822	6832	6836	6857	6858	6867	6871	7106	7107	7116
				7117	7121	7122	7140	7141	7161	7162	7171	7175	7191	7192	7235	7236
				7245	7246	7290	7291	7300	7301	7524	7529	7549	7554	7599	7601	7643
				7645	7689	7691	7733	7735	7777	7779	7823	7825				
BIT0	=	000001	G	3563#	3596	3614	3634	3645	3715	5124	5442	5906	6541			
BIT00	=	000001	G	3563#												
BIT01	=	000002	G	3563#												
BIT02	=	000004	G	3563#												
BIT03	=	000010	G	3563#												
BIT04	=	000020	G	3563#												
BIT05	=	000040	G	3563#												
BIT06	=	000100	G	3563#												
BIT07	=	000200	G	3563#												
BIT08	=	000400	G	3563#												
BIT09	=	001000	G	3563#												
BIT1	=	000002	G	3563#	3595	3609	3714	5109	6295	6297	6562	6564	6567	6596		
BIT10	=	002000	G	3563#												
BIT11	=	004000	G	3563#												
BIT12	=	010000	G	3563#												
BIT13	=	020000	G	3563#												
BIT14	=	040000	G	3563#												
BIT15	=	100000	G	3563#												
BIT2	=	000004	G	3563#	3594	3608	3713	5078	5088	5120	6332	6334	6562	6596	6598	6602
BIT3	=	000010	G	3563#	3577	3593	3712									
BIT4	=	000020	G	3563#	3592	3635	3711									
BIT5	=	000040	G	3563#	3591	3710										
BIT6	=	000100	G	3563#	3590	3644	3709	4749	4759	4762	4776	5161	8950	9069		
BIT7	=	000200	G	3563#	3589	3643	3659	3708	4749	4776	5161	8316	8401	9069		
BIT8	=	000400	G	3563#												
BIT9	=	001000	G	3563#												

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CROSS REFERENCE TABLE -- USER SYMBOLS

[illegible]

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CROSS REFERENCE TABLE -- USER SYMBOLS

	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										
C\$ERMR= 000056	3454#												
C\$ERRO= 000060	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	7958	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	9039	9051	9058	9065	9071	9112	9145
	9160	9181	9197	9203	9209	9215	9221	9234	9246				
C\$ERSF= 000054	3454#												
C\$ERSO= 000057	3454#												
C\$ESCA= 000010	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	843										

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CROSS REFERENCE TABLE -- USER SYMBOLS

[illegible]

[illegible]

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[illegible]

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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

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F\$PWR	=	000017	34540											
F\$RPT	=	000012	34540											
F\$SEG	=	000003	34540	7093	7199	7223	7254	7278	7309					
F\$SOFT	=	000005	34540	9294	9295									
F\$SRV	=	000010	34540	4859	4872	4886	4899							
F\$SUB	=	000002	34540	5986	6027	6029	6083	6900	6910	6938	6948	6984	6994	7085
			7208	7260	7263	7315	7340	7350	7378	7388	7416	7426	7460	7470
			8304	8309	8795	8943	9046	9048	9248					7879
F\$SW	=	000014	34540	3552	3553									
F\$TEST	=	000001	34540	5590	5616	5658	5688	5700	5781	5795	5851	5859	5896	5905
			5985	6084	6099	6195	6210	6205	6485	6698	6726	6878	6877	6915
			6953	6967	6999	7060	7317	7330	7355	7368	7393	7406	7430	7449
			7488	7559	7573	7606	7617	7650	7661	7696	7707	7740	7751	7784
			7830	7878	8796	8942	9249							7795
GDATA		002310	40130	45260	45620	46010	46610	4839	4922	4938	4950	4961	5002	5199
			57750	58170	58290	5831	5832	58890	59500	59580	59990	60060	60130	60200
			60500	60590	60680	60750	61170	61680	61690	61780	61790	61880	68240	68290
			68600	68730	69030	69410	69870	70910	7107	7117	7122	71310	7141	71490
			7175	71820	7192	72140	7236	72480	72690	7291	73030	73430	73810	74190
			74950	7496	75200	7529	75340	7535	75460	7554	75800	7581	75960	7601
			7625	76400	7645	76710	7672	7691	77140	7715	77300	7735	77580	7759
			7779	78040	7805	78200	7825							77740
GETBSR		004446	4487	46860	4863	4890	5683	5777	5839	5891	5948	5956	6036	6167
			6187											6177
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
			8577	8621	8646	8660	8681	8714	8736	88260	8954	8969	8983	8995
			9013	9027	9040	9073	9088	9114	9124	9150	9162	9169	9183	9236
GETWSR		004610	4525	4561	4600	4660	47070	6045						
G\$CNT0	=	000200	34540											
G\$DELM	=	000372	34540											
G\$DISP	=	000003	34540											
G\$EXCP	=	000400	34540											
G\$HILI	=	000002	34540											
G\$LOLI	=	000001	34540											
G\$ND	=	000000	34540											
G\$OFFS	=	000400	34540	9268	926									

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[illegible]

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```

J$JMP      = 000167
KICKT1     036200
LODT1C     036110
LOE        = 040000 G
LOGDEV     002322
LOT        = 000010 G
LSIDCL     = 000002
LSIMLT     = 000020
LU1MOD     002000 G
L$ACP      002110 G
L$AP1      002036 G
L$AU       020364 G
L$AUT      002070 G
L$AUTO     020216 G
L$CCP      002106 G
L$CLEA     020342 G
L$CO       002032 G
L$DEPO     002011 G
L$DESC     003542 G
L$DESP     002076 G
L$DEVP     002060 G
L$DISP     002124 G
L$DLY      002116 G
L$DTP      002040 G
L$DTYP     002034 G
L$DU       020360 G
L$DUT      002072 G
L$DVTY     003522 G
L$EF       002052 G
L$ENVI     002044 G
L$ERRT     002236 G
L$ETP      002102 G
L$EXP1     002046 G
L$EXP4     002064 G
L$EXP5     002066 G
L$HARD     040116 G
L$HIME     002120 G
L$HPCP     002016 G
L$HPTP     002022 G
L$HW       002216 G
L$ICP      002104 G
L$INIT     017634 G

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7416	7424	7430#	7449#	7453	7460	7468	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	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	8309	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#	8942#	8943	8947	8953	8982	8991	9006	9026	9039	9048	9052	9059
9066	9072	9113	9146	9161	9182	9198	9204	9210	9216	9222	9235	9249#
3454#												
7996	8452	8469	8852#	8988	9143							
7985	8072	8411	8506	8810#	8963	9082						
3563#												
4018#	5440#	5446#	5447	5533								
3563#												
3595#												
3592#												
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3491#												
3491#												
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3491	5513#											
3491#												
3491	5546#											
3491#												
3491#												
3491	4417#											
3491#												
3491#												
3491	3507#											
3491#												
3491#												
3491#												
3491	5558#											
3491#												
3491	4410#											
3491#												
3491#												
3491	3979#											
3491#												
3491#												
3491#												
3491	9266#											
3491#												
3491#												

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L\$LADP	002026	G	34910						
L\$LAST	040374	G	3491	93080					
L\$LOAD	002100	G	34910						
L\$LUN	002074	G	34910						
L\$MREV	002050	G	34910						
L\$NAME	002000	G	34910						
L\$PRIO	002042	G	34910						
L\$PROT	017626	G	3491	53920					
L\$PRT	002112	G	34910						
L\$REPP	002062	G	34910						
L\$REV	002010	G	34910						
L\$SOFT	040262	G	92940						
L\$SPC	002056	G	34910						
L\$SPCP	002020	G	34910						
L\$SPTP	002024	G	34910						
L\$STA	002030	G	34910						
L\$SM	002236	G	35520						
L\$TEST	002114	G	34910						
L\$TIML	002014	G	34910						
L\$UNIT	002012	G	34910						
L10000	002234		3524	35430					
L10001	002236		3552	35530					
L10002	005232		48720						
L10003	005304		48940						
L10004	005314		49150						
L10005	005424		49250						
L10006	005436		49320						
L10007	005562		49540						
L10010	005660		49630						
L10011	006622		49930						
L10012	006734		50040						
L10013	007114		50330						
L10014	010034		50960						
L10015	011306		51830						
L10017	020204		54870						
L10020	020332		55350						
L10021	020356		55490						
L10022	020362		55610						
L10023	020364		55720						
L10024	020522		56160						
L10025	020652		56320						
L10026	021240		56880						
L10027	021432		57810						
L10030	021574		58510						
L10031	021716		58960						
L10032	022130		59630						
L10033	022640		6040	60840					
L10034	022350		60270						
L10035	022636		60830						
L10036	023206		6120	6172	6182	6191	61950		
L10037	023374		6214	6226	62550				
L10040	025134		6489	6513	6529	6554	6578	6588	66980
L10041	025756		6800	6827	6840	6863	6876	68780	
L10042	026040		6894	6908	69150				
L10043	026034		69100						
L10044	026122		6932	6946	69530				

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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									
MKDY	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					

SEQ 214

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[illegible]

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[illegible]

CVDMACO DMV11 MCTRL DIAG #1
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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	5409	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	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	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

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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									
SWPBOT= 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*	
TMPE 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*						
TMPO 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		
TMPE 002476	4135*	5109	6261*	6295	6297*	6332	6334*	6498*	6562	6564*	6567*	6596	6598*
	6602*												
TMPO 002440	4120*	5515*	5531	5536*	6495*	6519	6521	6624	6663	7978*	7981	8065	8886
	8893	9060*	9063										
TMPI 002442	4121*												
TMPI 002444	4122*	5011	6215*	6247*	6248	6275	6318	6373	6376	7971*	7974	8058*	8061
	8392*	8395	8499*	8502	8668*	8671	9053*	9056					
TMPI 002446	4123*	6259*	6277*	6320*	6379	6390	6397	6407	6410*				
TMPI 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					
TMPI 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		
TMPI 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		
TMPI 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

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CROSS REFERENCE TABLE -- USER SYMBOLS

		9229*	9232	
TMP8	002460	4128#		
TMP9	002462	4129#	5130	6497*
TXTML7	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#	

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 CVDMAC.P11 16-AUG-84 13:59 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\$HILI= 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	

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	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\$SEK0 = 010000	7093#	7199	7223#	7254	7278#	7309							
T\$SUBN = 000002	3454#	5590#	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#							
T\$TAGL = 177777	3454#												
T\$TAGN = 010103	3454#	3524#	3552#	4859#	4886#	4913#	4919#	4929#	4936#	4958#	4967#	4997#	5008#
	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#							

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CROSS REFERENCE TABLE -- USER SYMBOLS

T:TEST= 000034

T:TEST= 177777

34540	55900	56580	57000	57950	58520	59050	59850	5986	6029	60990	62100	64850
67260	68500	69000	69280	6938	69670	6984	70600	7085	7208	7263	73300	7340
73680	7378	74060	7416	74190	7460	74880	75750	76170	76610	77070	77510	77950
78780	7879	8309	89420	8943	9048	9308						
34540	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

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CROSS REFERENCE TABLE -- USER SYMBOLS

		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										
T\$TSTS=	000001	3454#	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#										
T\$AU =	010023	5571#	5572											
T\$AUT=	010020	5513#	5535											
T\$CLE=	010021	5546#	5549											
T\$DU =	010022	5558#	5561											
T\$HAR=	010101	9266#	9272											
T\$HM =	010000	3524#	3543											
T\$INI=	010017	5405#	5487											
T\$MSG=	010025	4913#	4915	4919#	4925	4929#	4932	4936#	4954	4958#	4963	4967#	4993	4997#
		5004	5008#	5033	5074#	5096	5156#	5183	5627#	5632				
T\$PRO=	010016	5392#												
T\$SEG=	010000	7093#	7199#	7223#	7254#	7278#	7309#							
T\$SOF=	010102	9294#	9295											
T\$SRV=	010003	4859#	4872	4886#	4899									
T\$SUB=	010100	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#	7894
		7940	7961	7993	8055	8079	8094	8097	8120	8156	8180	8194	8220	8235
		8248	8263	8276	8304	8309#	8325	8371	8387	8419	8496	8513	8540	8543
		8579	8623	8648	8662	8683	8698	8704	8716	8725	8738	8762	8795	8943#
		8956	8959	8971	8975	8985	8997	9009	9015	9019	9029	9032	9042	9046
		9048#	9075	9078	9090	9094	9101	9104	9116	9119	9126	9130	9137	9152
		9164	9167	9171	9175	9185	9188	9191	9238	9241	9248			
T\$SM =	010001	3552#	3553											
T\$TES=	010076	5590#	5616	5658#	5688	5700#	5781	5795#	5851	5859#	5896	5905#	5963	5985#
		6040	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	6908	6915	6928#	6932	6946	6953	6967#	6971	6978	6992
		6999	7060#	7067	7077	7317	7330#	7334	7348	7355	7368#	7372	7386	7393
		7406#	7410	7424	7430	7449#	7453	7468	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#	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	8942#
		8947	8953	8982	8991	9006	9026	9039	9052	9059	9066	9072	9113	9146
		9161	9182	9198	9204	9210	9216	9222	9235	9249				
		3724#	4488	4527	4563	4602	4662	4845	6298	6335	8867			
T.EDF =	000001	3725#												
T.EMRD=	000002	3723#												
T.ESF =	000000	3726#												
T.ESFT=	000003	3507	5590#											
T1	020366	3692#	7154	7170	7903	7933	7949	8014	8028	8113	8213	8269	8285	8341
T1CH =	120005	8364	8375	8434	8475	8522	8552	8572	8676	8686	8731	8755	8777	8816
		8858	8978	9109	9206									

[illegible]

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T22	030226 G	3507	76170											
T23	030356 G	3507	76610											
T24	030512 G	3507	77070											
T25	030642 G	3507	77510											
T26	030772 G	3507	77950											
T27	031130 G	3507	78780											
T27.1	031130	78790												
T27.2	033402	83090												
T28	036362 G	3507	89420											
T28.1	036362	89430												
T28.2	037046	90480												
T3	021242 G	3507	57000											
T4	021434 G	3507	57950											
T5	021576 G	3507	58590											
T6	021720 G	3507	59050											
T7	022132 G	3507	59850											
T7.1	022132	59860												
T7.2	022352	60290												
T8	022642 G	3507	60990											
T9	023210 G	3507	62100											
T9.RST	023376	6217	6236	62590										
UAM	= 000200 G	35630												
VECTOR	040176	9269	92760											
WA	= 003346	43890	4390											
WB	= 003350	43900	4391											
WC	= 003352	43910	4392											
WD	= 003354	43920	4393											
WE	= 003356	43930	4394											
WF	= 003360	43940												
WRCRAM	023414	6223	62660											
WRILOC	= 000002	36540	4651	4661	6031	6126	8862							
WRIPAG	= 000004	36560												
WRITE	004322	46270	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	46480	6108	6250	6508	6524	6693	6732	6738	6754	6810	6842	6848	6973
		7150	7219	7274	7668	8056								
WSR0	002246	39840	47070	5227	6047	6051								
WSR10	002256	39920	47110	5229										
WSR12	002260	39940	47120	5229										
WSR14	002262	39960	47130	5229										
WSR16	002264	39980	47140	5229										
WSR2	002250	39860	47080	5227	6055	6060								
WSR4	002252	39880	47090	5227	6065	6069								
WSR6	002254	39900	47100	5227	6073	6076								
W0	= 003322	43790	4380											
W1	= 003324	43800	4381											
W2	= 003326	43810	4382											
W3	= 003330	43820	4383											
W4	= 003332	43830	4384											
W5	= 003334	43840	4385											
W6	= 003336	43850	4386											
W7	= 003340	43860	4387											
W8	= 003342	43870	4388											
W9	= 003344	43880	4389											
XDATA	002314	40150	4922	4961	5002	52000	52010							

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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#													
\$LSTIN= 000001	3460#													
\$LSTTA= 000001	4073#	4078	4079	4081	4082	4084	4085	4087	4088	4090	4091	4093	4094	
\$MPCSR= 150000 G	4096	4097	4099	4100										
	3722#	5590#	5658#	5700#	5795#	5859#	5905#	5985#	6099#	6210#	6485#	6726#	6890#	
\$T = 000034	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	8102	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#		

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CROSS REFERENCE TABLE -- MACRO NAMES

[illegible]

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CROSS REFERENCE TABLE -- MACRO NAMES

ENDSRV	5800	34540	4872	4899											
ENDSUB	5960	34540	6027	6083	6910	6948	6994	7205	7260	7315	7350	7388	7426	7470	8304
	8795	9046	9248												
ENDSW	6140	34540	3553												
ENDTST	6240	34540	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	6420	34540	3563												
ERRDF	7140	34540	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										
ERRHRO	7180	34540													
ERROR	7220	34540	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	7260	34540													
ERRSOF	7300	34540													
ERRTBL	7340	34540	3979												
ESCAPE	7440	34540	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	7710	34540													
FEQUAL	8100	34540													
GEOF	37370	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

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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													
IOSETU	9660	34540													
IOSTAR	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

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CROSS REFERENCE TABLE -- MACHU NAMES

	8386#	8451#	8468#	8495#	8539#	8569#	8600#	8618#	8632#	8643#	8650#	8664#	8697#	8706#	8724#
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M\$ESCA	9166#	9174#	9187#	9223#	9240#										
	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#
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	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#
M\$ESCS	9235#	9238#	9241#												
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	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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M\$EXIT	2014#	3454#													
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M\$EXTJ	2018#	3454#													
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CROSS REFERENCE TABLE -- MACRO NAMES

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CROSS REFERENCE TABLE -- MACRO NAMES

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	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 01
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CROSS REFERENCE TABLE -- MACRO NAMES

	55720	55940	56100	56150	56160	56280	56290	56300	56310	56320	56640	56870	56880	57800	57810
	58010	58400	58510	58670	58820	58940	58960	59160	59230	59520	59600	59630	59860	59890	60260
	60270	60290	60390	60400	60820	60830	60840	61030	61120	61190	61200	61710	61720	61810	61820
	61900	61910	61950	62130	62140	62250	62260	62300	62390	62430	62540	62550	64880	64890	65120
	65130	65280	65290	65470	65530	65540	65650	65770	65780	65870	65880	65990	66970	66980	67290
	67360	67420	67590	67730	67990	68000	68080	68140	68200	68260	68270	68340	68390	68400	68460
	68520	68620	68630	68690	68750	68760	68780	68930	68940	69000	69070	69080	69100	69150	69310
	69320	69380	69450	69460	69480	69530	69700	69710	69770	69780	69840	69910	69920	69940	69990
	70660	70670	70760	70770	70850	70930	71100	71260	71440	71650	71770	71950	71990	72050	72080
	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	87220	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
MIXWORD	92100	92150	92160	92210	92220	92230	92340	92350	92380	92400	92410	92460	92480	92490	
	19940	34540	34910	35070	48640	48510	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	73570	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	92680	92690	92700	9308				
MIXFER	16820	34540													
NEWTST	39470	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	
NTST	39180	5590	5658	5700	5795	5859	5905	5955	6099	6210	6485	6726	6890	6928	6967
	7060	7330	7368	7406	7449	7488	7573	7617	7661	7707	7751	7795	7878	8942	
OPEN	11710	34540													
POINTE	11760	34540	3472												

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 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													
READEP	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												
TGEN	38980	4488	4527	4563	4602	4662	4845	6299	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)