CS/386 PROBLEM/SOLUTION

P52   ERROR P52 ON IPL AFTER SELECTING O/S & BEFORE PARTITIONING   HAD 2 7715 W/ SW'S SET TO LEGAL
COMES UP. GOES AWAY IF EITHER 1 OF 2 MXE'S REMOVED.   SET ALL OFF. ADDR & OK.

SRAM 256KB } FAILS IPL BEFORE Mount System Platter W/ SRAM 256KB BAD SIMM IN LOC
DRA } DRA   L10/L14/L27/L43.

SRAM 256KB } FAIL IPL BEFORE Mount System Platter W/ SRAM 256KB BAD SIMM IN LOC
DRAM 4096KB } DRAM 4096KB   L13/L25/L31/L45

Band Printer   BAND PRINTER AT ADDRESS 204 DROPPING & ADDING CHARACTERS   O/S 1.0 FIX IN
MAINT REL 1.03

Not a DS Cabinet - USING DS U~~SINGLE~~ UTILITY IF ~~TRY~~ TO DO Tape Backup OR CHECK CONFIGURATION   6541-2. CHANGED
CONTROLLER & OK.

A01   INTERMITTENT HANG ~~OF~~ A01 ERROR   6541-2. USED 8824
& OK.

DS   INTERMITTENTLY WHEN VERIFY D61 LITE ON DRIVE D21 COMES   6541-2. USED 8824
ON & VICE VERSA.   & OK.

A05 IF EDIT/RECALL LONG LINE.   R&D WORKING

I92   TO DS IF KEY RESET FROM ANY TERMINAL WHILE ACCESSING.   MULTIPLE OF SAME ADDR IN DEVICE TABLE. ADDR MAY APPEAR ONLY ONCE.

Edit/Recall GET GARBAGE- BAD MXD   REPLACED W/ MXE & OK

I92   INTERMITTENT USING 6541-2   No PROB W/ R3

Hangs Loading O/S - TRIPLE CONTROLLER WON'T WORK AS 1ST TERMINAL   FIXED W/ 1.0B

Hangs Loading O/S - CABLE TO TERMINAL 1 LOOSE

Drops Power - APPEARS TO LOOSE POWER AT 126V - REPLACED PS & 386 BRD & NO CHANGE   INSTALLED TOPAZ & OK

I92   INTERMITTENT DOING DISK COPIES   386 BOARD
TOO DEEP

Int hangs - I/O BOARDS NOT SEATING PROPERLY/REPLACED CPU & OK   MBRD TOO FAR AWAY.

Hangs Booting W/ MXD BEFORE CBOOT MENU WITH EITHER LOADING BLINKING OR BLANK SCREEN.   DATA LINES HAVE
RESTRICTIONS IN LINE 9020 FOR SIZE. CMVP COULD NOT BE > 24 CHAR MSG.

2200 BASIC COMMANDS

SELECT T ON - ACTIVATES THE DATE/TIME STAMP FOR DISK FILES WHEN SAVING/RESAVING

SELECT T OFF - DEACTIVATES THE DATE/TIME STAMP

LIST SELECT - SHOWS ALL ACTIVE SELECTIONS

SELECT H ON - WILL HOG JUST ADDRESS SPECIFIED w/ $OPEN #dd + $CLOSE #dd

SELECT H OFF - DISABLES PLATTER HOG FUNCTION

SELECT NEW - ALLOWS ALL PROGRAMS SAVED TO BE PUT IN 386 FORMAT

SELECT OLD - ALL PROGRAMS SAVED PUT IN STANDARD 2200 FORMAT

SELECT DRIVER 204 - TURNS PRINTER DRIVER IF INSTALLED IN @GENPART ON

SELECT DRIVER 204 OFF - TURNS PRINTER DRIVER OFF

LOAD LOAD LOAD - TO ACCESS MXE COMMANDS

    ? RETURN

    B SYSTEM #BAUD RETURN } TO CHANGE BAUD RATE VIA S/W

    Y RETURN

$OPEN!#dd - HOGS ONLY EXACT ADDRESS SPECIFIED

$CLOSE!#dd - DISABLES HOG TO ADDRESS SPECIFIED

INSTALLING AN O/S FIX FOR VLSI WITH MDU SYSTEM

● ① POWER UP:

MDU CPU   POWER ON

     Mount System Platter

     Press Reset   RESET

     Key SF?   @ MDU   SF'2   (ADDR 320)

     MDU Utility 7/13/81

Development CPU   POWER ON

     Mount System Platter

     Press Reset   RESET   SF'2   (ADDR D21)

     Multiuser BASIC-2   RUN   (3.4 O/S)

     STANDARD @ GENPART   (DEVELOPMENT PARTITION MUST BE 56K)

     Ready (BASIC-2) PART 1   LOAD RUN   RET

     Master Start Up Menu

② INITIALIZING THE SYSTEM

Master Start Up Menu   SELECT `MICRO-CODE DEVELOPMENT' RUN

Micro-code Development Util   SELECT `2600 MICRO-CODE UTIL'   RUN

2600 Development Util   SELECT `2600 MDU'   RUN

"2600 EXECUTING"   KEY SF'15   (STEP) IF WON'T STEP REBOOT SYS.

Screen with STEP AT TOP LEFT & AUX REG 00-1F SHOWN

Debug Command?   KEY SF'15 (STEP)

     (USUALLY WILL HANG HERE) RESET (IF NOT HUNG GOTO ★)

Ready (Basic-2)   CLEARV RET

:_   RUN RET

     BACK TO SCREEN WITH STEP AT TOP LEFT & AUX REG 00-1F SHOWN

Debug Command?   KEY SF'15 (STEP) TO VERIFY NOT HUNG

★ Debug Command?   SF'23   (II INITIALIZE INSTRUCTIONS) CLEAR CM

Debug Cmmd? II

Start Address: 0000   RET

End Address: 0000   7DFF RET (CODE IN MDU CPU STARTS AT 7E00)

(ADDRESS 7E∅∅ SPECIFIED BY SWITCHES ON MDU BOARD)

INITIALIZE VALUE: 8∅∅∅∅∅   RET (WRITES ∅s FROM ∅ - 7E∅∅)

DEBUG COMMAND?   SF'19 (ID INITIALIZE DATA) CLEAR DM

DEBUG COMMAND? ID

START ADDRESS: 0000   RET

END ADDRESS: 0000   FFFF RET (FIRST 64K USER MEM)

INITIALIZE VALUE: 00   RET

DEBUG COMMAND?   SF'8 (LD LOAD FROM DISK)

DISK ADDRESS: 320   D21 RET (ADDRESS WHERE O/S TO EDIT IS)

FILENAME: @@   @MVP RET

     LOADING MULTI-USER BASIC-2 REL 3.4

     COPYWRIGHT WANG LABS ∴ EOF -LD- DISK ADDR D21

         SF'30 (IC SETTING INSTRUCT COUNTER)

DEBUG COMMAND? IC

IC: ∅∅∅3   RET

     BACK TO AUX REG SCREEN WITH IC AT TOP LEFT

DEBUG COMMAND?

SEE ✰✰ BELOW   ✰✰ CHECK AUX REG 1A (WITHIN AUX 18-1F)

TO CHANGE ADDR   SHOULD BE BOOT ADDR OF MDU CPU (320 IN THIS CASE)

IF WRONG   "AUX 18-1F 2000 FFCF (0320) 6000 0018 0000 2001 0000"

    ✰✰✰ DEBUG COMMAND?   SF'31 (GO GENPART UP ON MDU CPU)

     "2600 EXECUTING"

MDU CPU   VERIFY MDU CPU RUNNING BY BRINGING UP TO READY

    ✰✰ TO CHANGE ADDR OF AUX REG 1A (DEVELOPMENT CPU)

     DEBUG COMMAND?   SF'1 (CR CHANGE REGISTER)

     DEBUG COMMAND? CR

     REG (CR IF DONE)?   1A RET

     VALUE: xxxx   0320 RET (BOOT ADDR OF MDU CPU)

     REG (CR IF DONE)?   RET (IF CORRECT)

     VERIFY AUX REG 1A IS SET TO CORRECT ADDR (320 IN THIS CASE)

     DEBUG COMMAND?   RETURN TO ✰✰✰ ABOVE

③ Finding Module in O/S Listing where Change was made

IDENTIFY FILE WHERE CHANGE MADE

IN THIS CASE BPMVP43

First in Book 1 is a listing by memory location

Second listing in Book 1 shows order files found in

FIND BPMVP43 BY USING ORDER IN 2ND LISTING

COMPARE CODE CHANGE WITH LISTING (SHOULD COMPARE EXCLUDING CHANGES)

COMPARE DOCUMENTED CODE WITH CODE IN Development System

Debug Command? GO   SF' 15 (STEP)
Debug Command?   SF' 6 (LI LIST INSTRUCTION)
Debug Command? LI
Address: ∅∅∅∅   3731 RET (ADDR FROM LISTING WHERE CHANGE IS)

CODE IS NOT THE SAME, DOES NOT COMPARE

- IF CODE DID COMPARE WHICH IT SHOULD OF THE CHANGE SHOULD
    BE TESTED BEFORE GOING ON TO INSURE FIX CORRECTS PROBLEM
- WOULD NEED TO SHUT OFF CHECKSUM TO PREVENT ERRORS
    WHEN PUTTING CHANGE IN
- IF CHECKSUM OK & CODE COMPARES THOUGH LISTING DIFFERENT
    CODE CAN BE EDITED & ASSEMBLED & SHOULD WORK

5 EDITING THE CODE FOR ASSEMBLY
DEBUG COMMAND?   RESET, CLEARV, CLEAR, LOAD RUN

MASTER START UP MENU   SELECT `MICRO-CODE DEVELOPMENT´   RUN
MICRO-CODE DEVELOPMENT UTIL   SELECT `EDITOR´   RUN
SOURCE EDITOR, START UP
        INITIALS   INPUT 2 INITIALS   RET   (MB)
WORK DISK D21   D61 (ADDRESS OF SOURCE CODE) RET
NAME FOR LOGON FILE MBAØE201
DATE 04/22/91   RET
CODE Z80   BLANK OUT W/ SPACE BAR   RET
SOURCE EDIT FILE MB.QDPUØØ BP.MVP43 (FILE WHERE CHANGE IS) RET
      MUST ADD PERIOD BETWEEN BP & MVP43 NOT FOUND IN ACTUAL FILE
4/22/91 DISK D25   D61 RET (ADDRESS OF SOURCE CODE)
LOAD Y   RET (LOADS FILE)
FIRST SCREEN OF FILE LOADS IN KEY NEXT KEY UNTIL GET TO LINE
      WHERE CHANGES ARE TO BE MADE (LINE NUMBER AT BOTTOM)

EDITING

    USE SPACE BAR TO MOVE CURSOR TO LINE ~~_____~~
    EXECUTE KEY WILL ADD NEW LINE FOLLOWING LINE CURSOR WAS ON
    * KEYED IN 1ST POSITION FOR A COMMENT

    MAKE LINE CHANGE
    SF'Ø LIST OF COMMANDS

                         SF'1 (ALLOWS OPTIONS TO SAVE, LOAD, CREATE)
(S) SAVE, (L) LOAD, (C) CREATE S S RET (TO SAVE CHANGE)
DISK D61 BP.MVP43 (IN THIS CASE)   CHECK FILENAME IS CORRECT
OVER WHAT FILE   RET
      REPEAT THESE STEPS UNTIL ALL CHANGES MADE
                         SF'16 (TO EXIT)
DO YOU WANT TO LOG OFF Y RET
MASTER START UP MENU (CHANGE HAS BEEN MADE, NOW MUST BE ASSEMBLED)

⑥ ASSEMBLING THE CODE WITH THE CHANGES MADE

MASTER START UP MENU	SELECT `MICRO-CODE DEVELOPMENT` RUN
MICRO-CODE DEVELOPMENT UTIL	SELECT `2600 MICRO-CODE UTIL` RUN
2600 DEVELOPMENT UTIL	SELECT `BLOCK ASSEMBLER` RUN
OPERATOR'S INITIALS	INPUT 2 INITIALS RET MB
ASSEMBLER OUTPUT	000 RET (PRINTER ADDR IF WANT HARD COPY)
SOURCE EDIT FILE B60	D61 RET (ADDRESS OF SOURCE CODE)
EXTERNAL SYMBOL FILES	D61 RET
OBJECT FILE	D61 RET
BLOCK WORK FILE	D61 RET

FILE NAMES:

OBJECT FILE MBOBJCTC MVPC (MUST ALREADY EXIST & BE
APPROXIMATELY 500 SECTORS) RET

BLOCK WORK FILE MBWK.TMP

STARTING MODULE NAME MBLIST 22MVP RET (ALL INSTRUCTS TO DO COMPILE)

DATE & TITLE: 4/22/91 ADD RELEASE NUMBER & PATCH MADE RET

DO YOU WANT THE CODE IN ORDER? Y N RET (FASTER & WORKS)

TAKES 3 TO 4 HOURS TO ASSEMBLE

WHEN FINISHED WILL COME BACK WITH MESSAGE:
1 DISK ERRORS THIS ASSEMBLY (IN THIS CASE HAD 1 SOFT DISK ERROR)
NO ERRORS OR WARNINGS
STOP - END OF ASSEMBLY

GO BACK TO STEP ② & INITIALIZE MEMORY & RELOAD
NEW CODE

⑦ CALCULATE CHECK SUM

DEBUG COMMAND?	SF'15 (STEP)
DEBUG COMMAND?	SF'4 (CALCULATE CHECKSUM)
DEBUG COMMAND?	SF'35 (GO MPU CPU RUNNING)

2600 EXECUTING...

⑧ TEST FIX on MDU CPU

- AFTER KEYING SF'31 AS LAST STEP OF ⑦, GENPART SHOULD HAVE COME UP ON MDU CPU
- BRING CPU UP FROM THIS GENPART AND VERIFY FIX TO O/S THAT WAS EDITED IN AND ASSEMBLED (⑤ & ⑥) CORRECTS THE PROBLEM IT WAS EXPECTED TO FIX.

⑨ IF FIX IS GOOD, SAVE IN STANDARD O/S FORMAT

DEVELOP CPU

DEBUG COMMAND?   SF'15   (STEP)
DEBUG COMMAND?   SF'24   (SAVE DATA) SD
DEBUG COMMAND? SD
DISK ADDRESS: D21   D61 RET (ADDRESS OF WORK DISK)

CMEB   FILE NAME: @MVP (4 CHAR MAX) @MYP RET (WILL WIPEOUT FILE OF SAME NAME
                                       IF EXISTS, MAY USE DIFFERENT NAME)

IF FILE DOES NOT EXIST WILL TELL YOU.

SIZE OF NEW FILE: 500   RET   (500 SECTORS ALLOTTED)

m = 32K MVP (D: 0000-0BFF, I: 0000-7DFF) V = VP
M = MVP (D: 0000-0BFF, I: 0000-65FF) b = 64K BASBOL

c = EDIT COMMENT C = COMMENT I = INSTRUCTIONS D = DATA E = EOF

SAVE WHAT? C   RET (ALLOWS COMMENT TO BE MADE)

COMMENT: (C) COPYWRIGHT, WANG LABORATORIES, DATE   RET

SAVE WHAT? C   D RET

... RECORDING DATA.

   START ADDRESS: 0000   RET

   END ADDRESS: 0000   OBFF RET (SAME AS DEFAULT)

SAVE WHAT? C   I RET

... RECORDING INSTRUCTIONS.

   START ADDRESS: 0000   RET

End Address: 0000   66FF RET (CHANGE FROM DEFAULT OF
                                    65FF, NO LONGER BIG ENOUGH)

IF INSTRUCTION END ADDRESS NOT LARGE ENOUGH, THE
   SAVE WILL APPEAR TO WORK OK, BUT WILL GET PECM ERROR
   WHEN TRY TO BOOT FROM THIS CODE.

SAVE WHAT? C   E RET
... RECORDING EOF.
★☆☆ FILE COMPLETE ✳✳✳
-SD- DISK ADDRESS: D61   SF' 31   (GO COMMAND)
2600 EXECUTING...
DEBUG COMMAND?   RESET
READY (BASIC-2)

⑩ MOVE NEW CMVP FILE TO O/S DISK TO TEST ON MDU SYS
  MOVE NEW CMVP FILE TO DISK TO BOOT MDU SYSTEM FROM
    - IF IN STEP ⑨ NEW FILE CALLED CMVP WILL NEED TO
       RENAME CURRENT CMVP ON BOOT DISK OR USE
       CMOVEFIL UTILITY
    - IF GAVE NEW FILE UNIQUE NAME CAN MOVE TO BOOT DISK
       WITH MOVE + TYPE IN 4 CHARACTER NAME AT
       "KEY SF?" SCREEN, THEN SF' KEY CORRESPONDING TO
       DISK ADDRESS.

TEST MACHINE WHERE CODE RUNS (MDU CARD)
POWER MOUNT SYSTEM PL

KEY SF @MDU PF 2 (320)

DEVELOPMENT STS   MICRO-CODE DEVELOPMENT
        2600 MICRO-CODE UTILITIES
        2600 MDU
                " 2600 EXECUTING "
        KEY SF 15 (STEP)
DEBUG CMMD '15 (STEP) (USUALLY WILL HANG HERE)
        RESET
        CLEARV
        RUN
DEBUG CMMD   SF 23 (INITIALIZE INSTRUCTION) CLEAR CM
START ADDR   0000
END ADDR   7DFF   CODE IN MDU MACH STARTS AT 7E00 (SPECIFIED BY SW'S ON MDU)
INIT VAL   800000 (DEFAULT) RET
DEBUG CMMD   SF '19 (INITIALIZE DATA) CLEAR DM
START ADDR   0000
END ADDR   FFFF   (1ST 64K USER MEM)
INIT VALUE   00   RET (DEFAULT)
DEBUG CMMD   SF '8 (LOAD FROM DISK) (LD)
DISK ADDR   D21 (ADDRESS WHERE 3.4 RESIDES) WILL SHOW LOADING REL 3.4 .. SCREEN
FILE NAME   @MVP (RET)
        SF '30 IC   SETTING INSTRUCTION COUNTER (SHOULD BE 0003)
   IC 0003   CHECK AUX REG 1A (WITHIN 18-1F) SHOULD BE BOOT ADDR OF MDU
        DEBUG CMMD SF '31 GO   (0320) ACTIVE DRIVE

   GENPART SCREEN SHOULD NOW RESIDE ON W/S 1 OF MDU MACHINE
   VERIFY MDU MACHINE RUNNING (BRING UP TO READ BY LOADING A CONFIG)

Test Macro 2600 EXECUTING AT TOP ON SCREEN IF ALL OK

FIND MODULE WHERE CHANGE IS TO BE MADE
File = BPMVP43 = MODULE 43
WITHIN MODULE BOOK FOR LIMITS I

Test Patch First
DEBUG COMD SF6 (LI) LIST INSTRUCT
ADDR   3739   (FROM LISTINGS)
VERIFY CODE MATCHES LISTING (CODE DID NOT MATCH LISTINGS)
        DO COMPARE   WOULD NEED TO SHUT OFF CHECKSUM TO PREVENT ERROR

EDITING CODE

2600 MICRO CODE UTILITIES
            EDITOR
INITIALS (ANY INITIALS)
WORK DISK D61 (ADDRESS OF SOURCE CODE)
LINES UP WITH START UP
                    " "

DATE   xx/xx/xx
    CODE   LEAVE BLANK   RET
SOURCE EDIT FILE BP.MVP43   (FILE TO BE EDITED) • AFTER BP MUST BE THERE
                                                NOT IN ACTUAL FILE
CHECK ADDR D61 RET
    LOAD Y RET   (LOADS FILE)
        KEY NEXT KEY TIL GET TO LINE WHERE CHANGE NEED TO BE MADE
EDITING EXEC DOES INSERT FOR EACH NEW LINE
        * USED FOR COMMENT LINE

    SF1 TO GIVES YOU OPTION OF SAVE, LOAD, CREATE
    S FOR SAVE
    GIVES FILENAME TO BE SAVED KEY RET FILE USUALLY SAME
    SF 16 TO EXIT
DO YOU WANT TO LOG OFF (RET)
        CHANGE MADE (NOW MUST BE ASSEMBLED)

2600 Micro code Util
Block Assembler

Oper Init   Any Initials Ret

    Assem out 000   ZIS can be used for printout
    Source Edit D61
    Ext sym file D61
    Obj file   D61
    Blk work file D61

   Obj File MVPC (must already existing & be approx 500 sect
   Blk Work File BPWK.TMP
   Start module name ZZMVP (all instructions to do compile)

Date & Title 4/22/1991 Rel 3.4 & Limits patch Ret
Do you want code in order? N faster & works Ret
   Takes 3-4 hours to compile

Message

when completed. 1 Disk Errors This Assembly (Assumed to be soft error)
   No Errors or Warnings

   STOP - End of Assembly

INITIALIZE MEMORY & RELOAD NEW CODE
   Same as beginning

   Calculate Check Sum
Debug Cmnd SF'4

   Try It
   Test Fix on MDU CPU

  If OK now will SAVE in Standard O/S format
⭐⭐ SF'15 to put in STEP
Debug Cmnd SD SF'24 save data

Disk Address D61   Work Disk
File   CNDA   Will wipe out existing file if already exists
Size of File 500   Should verify size (500) OK
Save What? C   Comment
Comment CS/2200 O/S Sys 3.4 & LIMITS   (seen when loading) Ret
Save What? C
Comment   COPYWRIGHT etc WANG Ret
Save What M   For MVP (Save constants & instructions) DEFAULT
Saving MVP   FOR STANDARD
                                                        MVP but no
        RECORDING   longer big enough.
          ''   ''   MUST DO
          ''   ''   INDIVIDUALLY as
          ''   ''   BELOW
                                                        SAVE DATA:
                                                        SAVE INSTRUCT
                                                        & INCREASE INSTRUCT
MOVE NEW O/S File to MDU CPU   SIZE
MOVET/D61,
                                                        PROGRAM THAT USED
Got PECM error trying to LOAD CNDA   LOAD "2600SD" TO SAVE CHANGE
DEFAULTS were not big enough for file DOES NOT LINE 404
                                      TELL YOU
REPEAT FROM ★★ (Bottom of previous page) WHEN SAVING CHANGE
                                      CHANGE
                                      NOT BIG E# = HEX (65 FF)
→ Save What? D   (Data)   ENOUGH
     Start Addr 0000   TO
     End   0BFF (same as before)   E# = HEX (66 FF)
Save What? I   RESAVE T "2600SD"
     Start Addr. 0000
     End Addr. 66FF   (change from deflt of 65FF) Ret
Save What? E   (end of file)
      FILE COMPLETE
      Debug Cmmd? 60   SF'31
           2600 EXECUTING

MOVE T/D61, "CNDA" TO T/D21,

6.5.10A.   If the Data Exchange Utility (DATACON.EXE) is on a virtual file, mount the PC virtual file resident on the VS system using the PC/VS Server Utility (VSACCESS). Indicate the VS file, library, volume, and mode (READONLY) for the PC/VS Data Exchange Utility (datacon) and suspend emulation.

6.5.10B.   If the Data Exchange Utility (DATACON.EXE) is on your hard drive, leave all VSACCESS fields blank and suspend emulation to leave VSACCESS active.

6.5.11.   Run the datacon program from the BIN subdirectory of your PC virtual disk or from the directory on your hard disk. Specify the source data file as a "VS Consecutive File" and the destination data file as a "PC Stream File" and press EXECute. Enter the pathname of the source file on the VS system and the pathname of the destination file on the PC and press EXECute. The file will be transferred and converted to a PC stream file.

6.5.12.   Dismount the PC virtual disk when you are done.

6.5.13.   Run File Formatter which is a menu pick found under PC PLD Programming Utilities by running run_pps.bat.

6.5.14.   After running File Formatter, select FORMAT and 2200.

6.5.15.   Continue at section 5.1.2 in this document.